



Generative AI Making Waves

Adoption waves in banking
and capital markets

May 2024

Introduction

A new horizon for financial services powered by generative AI

The financial services industry has been at the forefront of adopting generative artificial intelligence (AI), which could create an additional \$200 billion to \$340 billion in value annually in the banking industry alone, according to McKinsey¹.

Generative AI is making a significant impact on employee and customer experience. It's bringing efficiency gains to financial services institutions managing large volumes of data and documents—reducing routine, repetitive work for professionals and freeing more of their time for creativity and innovation. For example, the global macro fund manager [Bridgewater Associates](#), is creating a large language model-powered investment analyst assistant that is able to generate elaborate charts, compute financial indicators, and create summaries of the results, based on both minimal and complex instructions.

Generative AI can also enable hyper-personalization that strengthens relationships and drives growth. [NatWest Group](#), for example, is using generative AI to create personalized product messaging, resulting in a 900 percent growth in applications for its high interest rate accounts.

We're also seeing use of generative AI to help financial institutions investigate suspected financial crimes and compliance breaches. It is helping to automate and enhance anti-money laundering investigations, reducing time spent on manual tasks from 60 percent to 5-10 percent, as seen with [Verafin](#), a Nasdaq company. Verafin's overall approach delivered a 25 percent reduction in false positives and a 250 percent improvement in wire fraud detection by value.

These early examples highlight the potential of generative AI to transform the financial services industry as new use cases gain traction, including automating the investment management compliance process and automating the extraction and summarization of pertinent parts of local regulations and other supporting documents to clear conditions for loan and insurance underwriting.

¹ McKinsey & Company, [The Economic Potential of Generative AI: The Next Productivity Frontier](#). 2024.

Guidance for the road ahead

It's clear that generative AI is changing the data and analytics landscape rapidly—almost daily. To help financial institutions continue to plan and progress in their journey, Amazon Web Services (AWS) commissioned Celent to develop this report, which defines three distinct generative AI adoption waves in banking and capital markets and identifies strategies for navigating each.

The report is intended to help banks and capital markets organizations develop an actionable framework to harness the potential of generative AI and make informed decisions about prioritization and next steps.

A trusted partner for the journey

Successful implementation of generative AI strategies requires a trusted partner with proven expertise in data, AI, security, and industry-specific regulations.

AWS provides financial services institutions with the services, AI capabilities, infrastructure, and robust security needed to successfully implement and scale generative AI use cases across their organizations. We are innovating across each of these areas to enable and deliver model choice; cost and performance advantages; data privacy, security, and responsible design; and AI developer success in building, training, and deploying generative models for a new generation of AI applications.

AWS is excited to share this research with the industry, and we look forward to continuing to empower, support, and innovate with financial institutions as they progress in their generative AI journey.



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GENERATIVE AI MAKING WAVES

Adoption waves in banking and capital markets

Alenka Grealish and Patrick Wegner
May 2024

This report was commissioned by Amazon Web Services (AWS) at whose request Celent developed this research. The analysis, conclusions and opinions are Celent's alone, and AWS had no editorial control over the report contents.

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A QUICK TOUR OF THE REPORT

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What and Why care?

A level set for what generative AI (GenAI) is and why banking and capital markets professionals should be interested in it.

3

Waves of Adoption

Celent has developed a three-wave adoption framework. For each wave, we strive to crystallize the drivers and outcomes across banking and capital markets.

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Common Use Cases

Given the numerous similarities in business and operating models, Celent finds many common GenAI use cases between banking and capital markets.

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Use Cases in Banking

Celent spotlights the unique corporate and retail banking use cases that exist primarily due to banks' role in credit, payments, and cash management.

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Use Cases in Capital Markets

Celent focuses on trading and investment management and differentiates across businesses within capital markets (e.g., sell side, buy side, wealth).

7

Conclusions and Path Forward

It is clear that GenAI is creating exceptional opportunities to transform business and operating models. The question is how fast and for which use cases. Celent summarizes its learnings.

IN WRITING THIS REPORT, CELENT HAS DRAWN UPON SEVERAL SOURCES OF INFORMATION

Celent proprietary research

Qualitative research: Celent continually speaks with GenAI tech providers and financial institutions (FIs) in the adoption vanguard to better understand adoption trends and underlying drivers. We also draw upon our extensive research on new technology adoption and infrastructure modernization.

Quantitative research: Celent has undertaken surveys of both tech providers and FIs. We also examined data on historical technology adoption curves. In addition, we reviewed surveys undertaken by our parent company, Oliver Wyman.

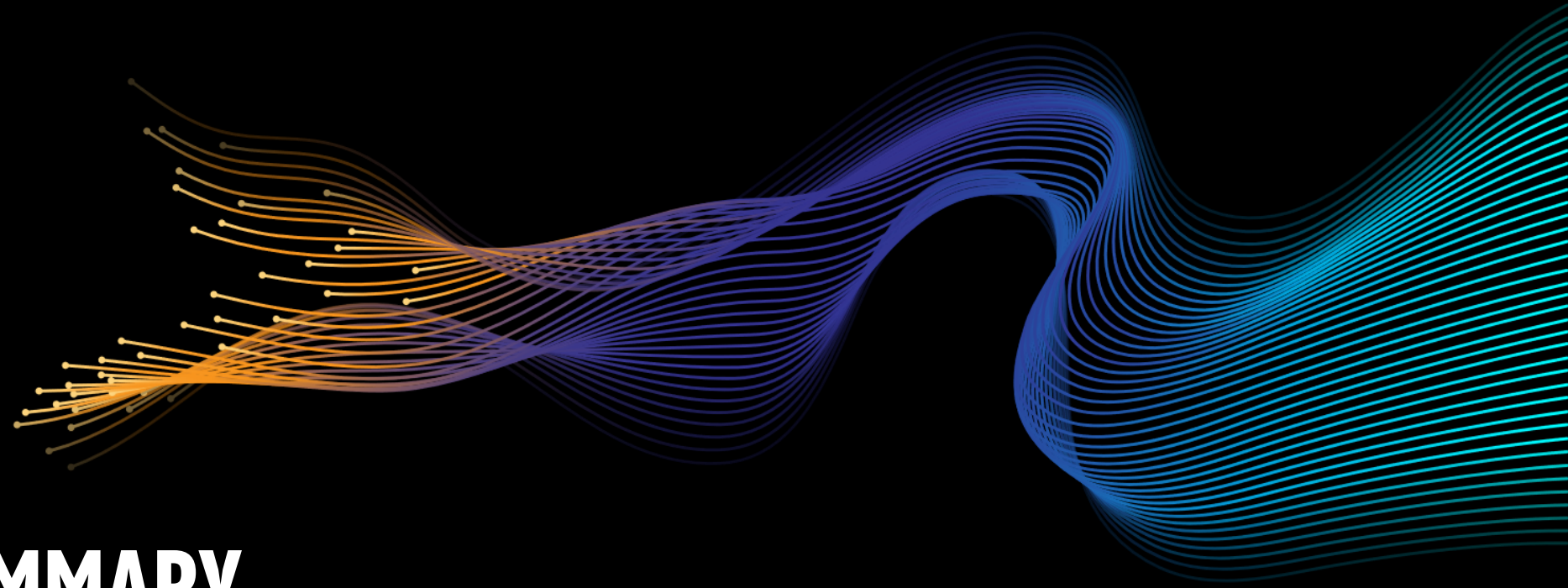
Subject matter expert input: Alenka Grealish and Patrick Wegner are co-leaders of Celent's GenAI research and are responsible for tracking tech developments, factors accelerating and impeding adoption, and FI implementations.

Amazon Web Services insights

Client experience: AWS has shared insights gleaned from working with banks and capital markets firms. It has hands on experience supporting these firms to leverage GenAI across the three layers of the tech stack: applications, large language models, and infrastructure to train and run AI workloads.

Subject matter expert input: Charith Mendis, Head of Worldwide Banking Market Development, and Ruben Falk, Capital Markets Specialist, Data Architecture, Analytics, Machine Learning & AI, provided valuable input to Celent based on their "in the field" experience and take-aways.

01




EXECUTIVE SUMMARY

CATCHING THE GENERATIVE AI WAVES

While it is early days for generative artificial intelligence (GenAI), frontrunners are already pursuing use cases across banking and capital markets. Given its strong potential, developing a GenAI blueprint is the minimum requirement for capital market participants and banks to be competitive.


ChatGPT (a publicly-available generative AI tool) broke technology adoption records within weeks of being released as a consumer good. According to a recent survey, 56% of workers are already using various forms of GenAI ([The Conference Board](#)). We are just at the beginning. [Oliver Wyman](#) estimates that GenAI could add up to \$20 trillion in global GDP by 2030. The report also found enthusiasm among survey respondents, with 42% saying they would use GenAI to help them guide large financial decisions. At the same time, GenAI is unleashing concern regarding risks, triggering regulatory action such as the EU AI Act and the recent U.S. Executive Order on Artificial Intelligence.

GenAI’s potential for financial services is beginning to crystallize as financial institutions (FIs) test use cases and identify those that show the greatest potential. To help FIs distinguish the hype from reality and develop a blueprint to harness GenAI successfully, Celent has developed the **GenAI Adoption WaveGram**. **With this framework, we are striving to help banking and capital markets participants to:**




Determine the factors influencing GenAI development and adoption

Celent endeavors to bring clarity and focus on the factors accelerating and impeding the adoption and evolution of use cases. FIs can then monitor these factors as they are relevant to their use of GenAI.



Develop a strategic plan to harness GenAI

Celent’s WaveGram displays a 10+ year horizon for GenAI trends and use case adoption. We view the waves as structural building blocks that have certain characteristics, drivers, and outcomes.



Make sound decisions regarding next steps and prioritization

We identify use cases that are likely to become mainstream by wave. We create a taxonomy beginning with type (e.g., content summarization) and then pinpoint common use cases and those specific to banking and capital markets.



The technology is changing so fast in front of our eyes that I think it’s almost like the limit is ourselves and being able to rationalize it,...

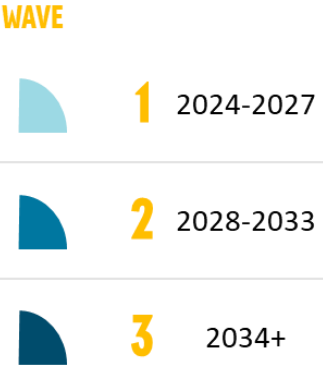
Marco Argenti, CIO Goldman Sachs, [“Goldman Sachs CIO Tests Generative AI”](#). WSJ.com, May 2023

GUIDE TO CELENT'S GENAI ADOPTION WAVEGRAM

Celent's **GenAI Adoption WaveGram** comprises three layers.

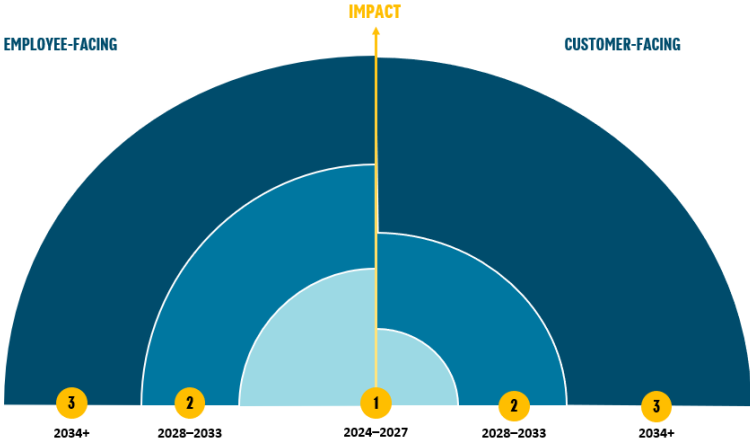
THREE WAVES

Based on conversations with GenAI tech innovators, FIs in the adoption vanguard, and historical tech adoption curves, Celent anticipates that GenAI adoption will occur over three waves, with each wave encompassing specific drivers and outcomes. Drivers include both accelerators and impediments.



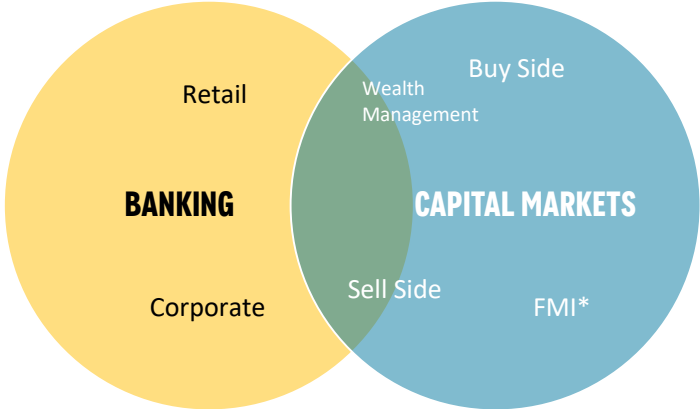
COMMON USE CASES EMPLOYEE AND CUSTOMER-FACING

Across banking and capital markets, there are common use cases. We distinguish between customer-facing and employee-facing use cases since we expect employee-facing applications to progress faster in the medium term due to their relatively lower risk. We add an impact dimension on the vertical axis.



INDUSTRY-SPECIFIC USE CASES BANKING AND CAPITAL MARKETS




Given differences in products/services and profit drivers between banking and capital markets, Celent spotlights use cases that are unique to each. We also recognize that use cases within these industries are not homogenous. Hence, we further distinguish use cases by line of business.



*FMI = Financial Markets Intermediary

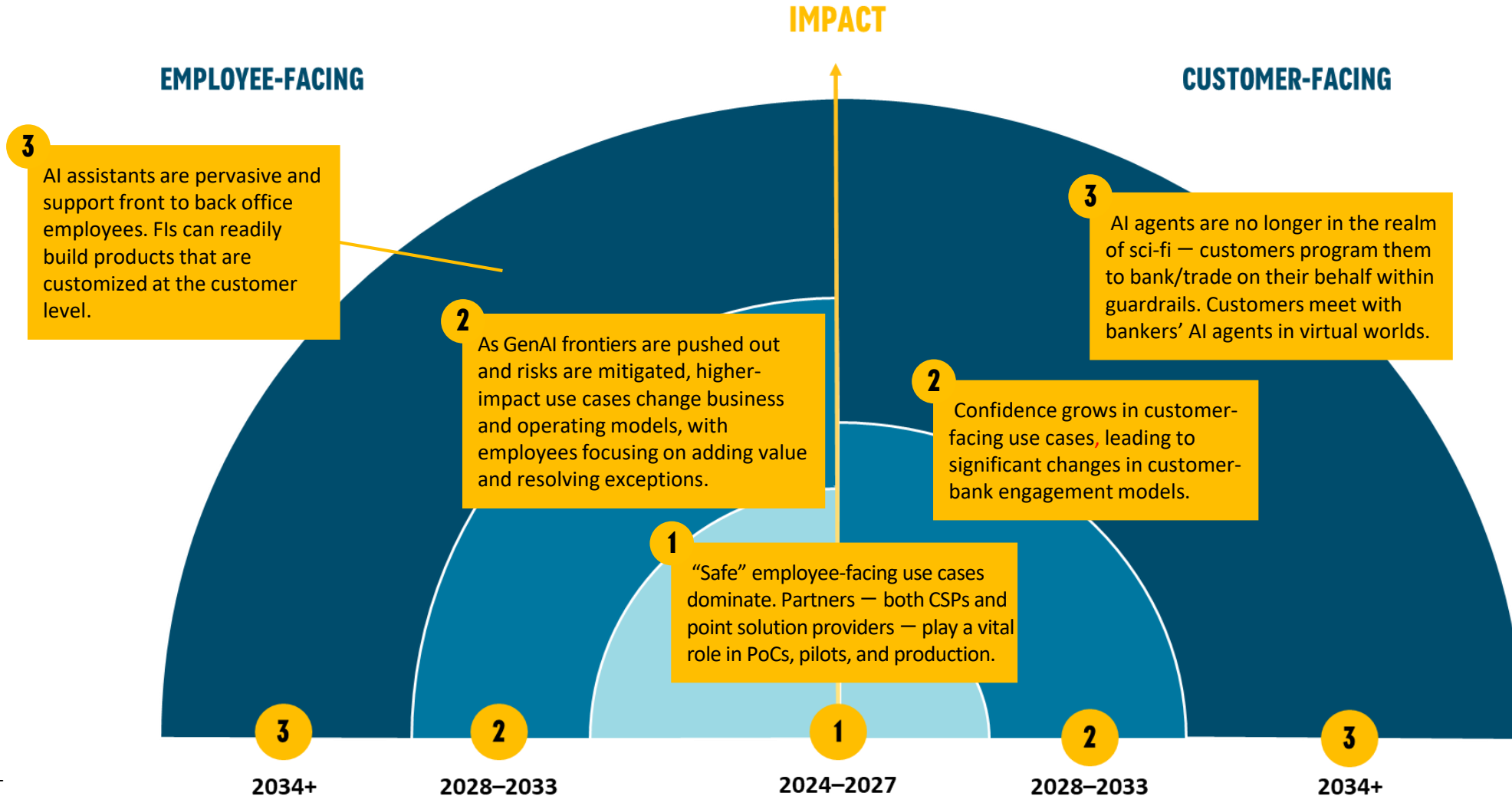
THE WAVES: KEY TAKEAWAYS

Celent anticipates three adoption waves propelled by tech advances (e.g., faster/more efficient compute), competitive pressures, and the maturation of GenAI applications through increasing FI comfort level and regulatory clarity. To help FIs unpack the dynamics influencing GenAI development and adoption, we discuss the factors accelerating and impeding adoption and the evolution of use cases.

ADOPTION WAVE	CHARACTERISTICS
 1 2024–2027	<p>Use cases in the first wave can be described overall as pragmatic. The initial focus is on use cases that promise high productivity/efficiency gains in low-risk areas with relatively low integration costs. Prime examples include code development (e.g., debugging and testing) and AI assistants to interact with large information sources. Early innovators, especially those with lower regulatory burdens, like hedge funds, will execute more advanced use cases that will not experience mainstream adoption until wave two. These players stand to gain a competitive advantage and drive further investment.</p>
 2 2028–2033	<p>The second wave will be characterized by higher-impact applications and deeper integration of GenAI into workflows. Fuelled by adoption accelerators (e.g., increased compute capability, lower cost and risk), FIs will test and implement more use cases and reach new frontiers (e.g., AI assistants for customers and AI generation of RFPs). The concept of augmented humans will be widely embraced across banking and capital markets. FIs will deliver highly personalized interactions via customer-facing applications. As bias and hallucination risks are controlled and model accuracy becomes sufficiently high, FIs will deliver prescriptive analytics (e.g., direct investment and financial advice).</p>
 3 2034+	<p>No one can accurately predict what will transpire in ten years. Instead, Celent offers a few visions of how GenAI could be coupled with other advanced technologies (e.g., quantum computing, distributed ledger technology, and virtual reality) and how AI agents could play a role in financial services. As GenAI matures further, customer-facing use cases will approach the scope and impact of employee-facing use cases. Humans will become comfortable with AI agents that act as their proxy for select activities (e.g., applying for a loan or selecting securities).</p>

THE WAVES + COMMON USE CASES: KEY TAKEAWAYS

Celent places use cases common to capital markets and banking within the three waves. Across the two industries, there are common use cases (e.g., code debugging, training material generation, customer behavior analysis) with overlaps in the value chain. We distinguish between customer-facing and employee-facing use cases since we expect employee-facing applications of GenAI to progress faster in the medium term due to their relatively lower risk. Within each wave, we spotlight use cases that will move into the mainstream. In addition, we evaluate their likely impact by taking into consideration a variety of metrics, including hard metrics (e.g., cost, revenue, and efficiency/productivity gains) as well as soft metrics (e.g., employee and customer satisfaction and ability to “wow” employees and customers).



THE WAVES + INDUSTRY SPECIFIC USE CASES: KEY TAKEAWAYS

Celent has identified several distinct use cases within banking and capital markets. Unsurprisingly, these use cases will become more impactful as the GenAI frontier is pushed out in the second and third waves of adoption. Banking has several key areas — credit, payments, and cash management — in which GenAI could unlock transformative services and customer journeys. Capital markets have an entire value chain link that is tailor-made for GenAI — trading and investment management — which has abundant use cases. Celent anticipates that use cases will vary across the highly differentiated types of participants in capital markets.

Banking

While many inroads have been made to digitize **retail banking**, there remains room for improvement. Credit, particularly complex products like mortgage loans, is a prime example. Employees could better serve customers via an AI assistant that suggests responses and next steps and pulls relevant information. In addition, synthetic data generation could improve a bank's ability to understand customer needs and tailor products and processes accordingly.

Customer-facing use cases are also concentrated in the area of credit. The credit process remains relatively arduous for consumers, meaning an AI assistant that can guide them and expedite the process would be highly beneficial.

GenAI could also greatly expand banks' role in consumer financial wellness. Depending on a customer's bank and third-party permissioned data, an AI assistant could help advise a customer on scenarios like creating a budget or handling an unexpected expense.

Corporate banking involves many complex processes, myriad systems, and extensive integrations. GenAI could streamline existing paper-based processes and digital bottlenecks. AI assistants that further automate processes (client onboarding and credit processes) will drive competitive advantage. AI assistants could also play a more transformative role by helping banks develop customized products for key clients.

Within their core payments business, banks could deliver more "intelligent" services by leveraging AI assistants for not only queries but also higher-value error prevention, detection, and correction.

Banks could greatly improve their support of corporations by providing clients with AI assistants to further digitize and automate their financial supply chain. In the long run, GenAI could be the key to delivering "self-driving" treasury.

Capital Markets

The capital markets sector is in a unique position because it includes trading and investment management, which has tremendous potential for GenAI because of:

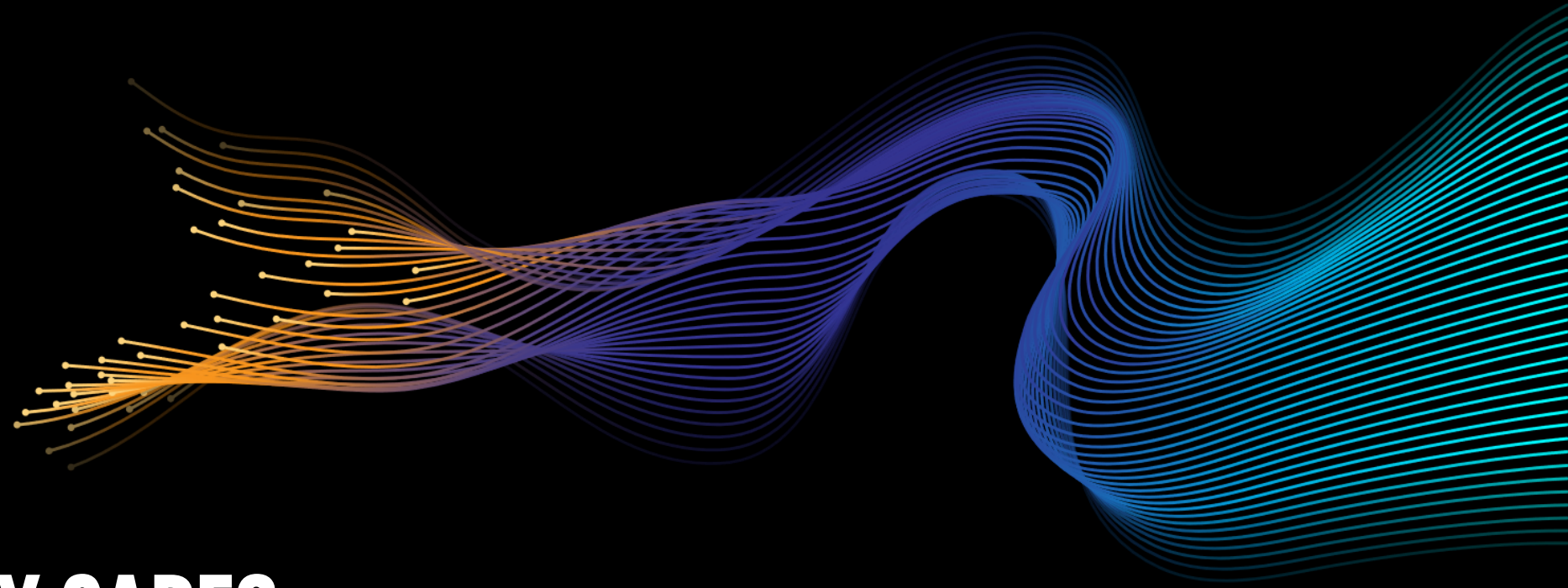
- A huge abundance of information that is underutilized by large swathes of the industry
- A highly competitive environment where asymmetric information and insights are always urgent and can bring large rewards
- A deep understanding of active risk management allows for management of risks associated with GenAI
- The possibility to directly attribute revenues from the investment process to insights or productivity gains extracted by GenAI

As a result, there are many capital markets-specific use cases for GenAI, including data monetization, understanding and predicting market information, investment decision-making, workflow optimization, and insight personalization. While the sector will generally see a high impact from adopting GenAI, results will vary by user and area.

Examples of high-impact use case areas by participant type include:

- **Wealth Management:** Content generation/personalization, information synthesis
- **Buy side:** Data analysis and AI assistants for analysts
- **Sell side:** Synthetic data creation, workflow automation, and error detection
- **FMI:** AI assistants, data analysis, workflow automation

02













WHAT AND WHY CARE?

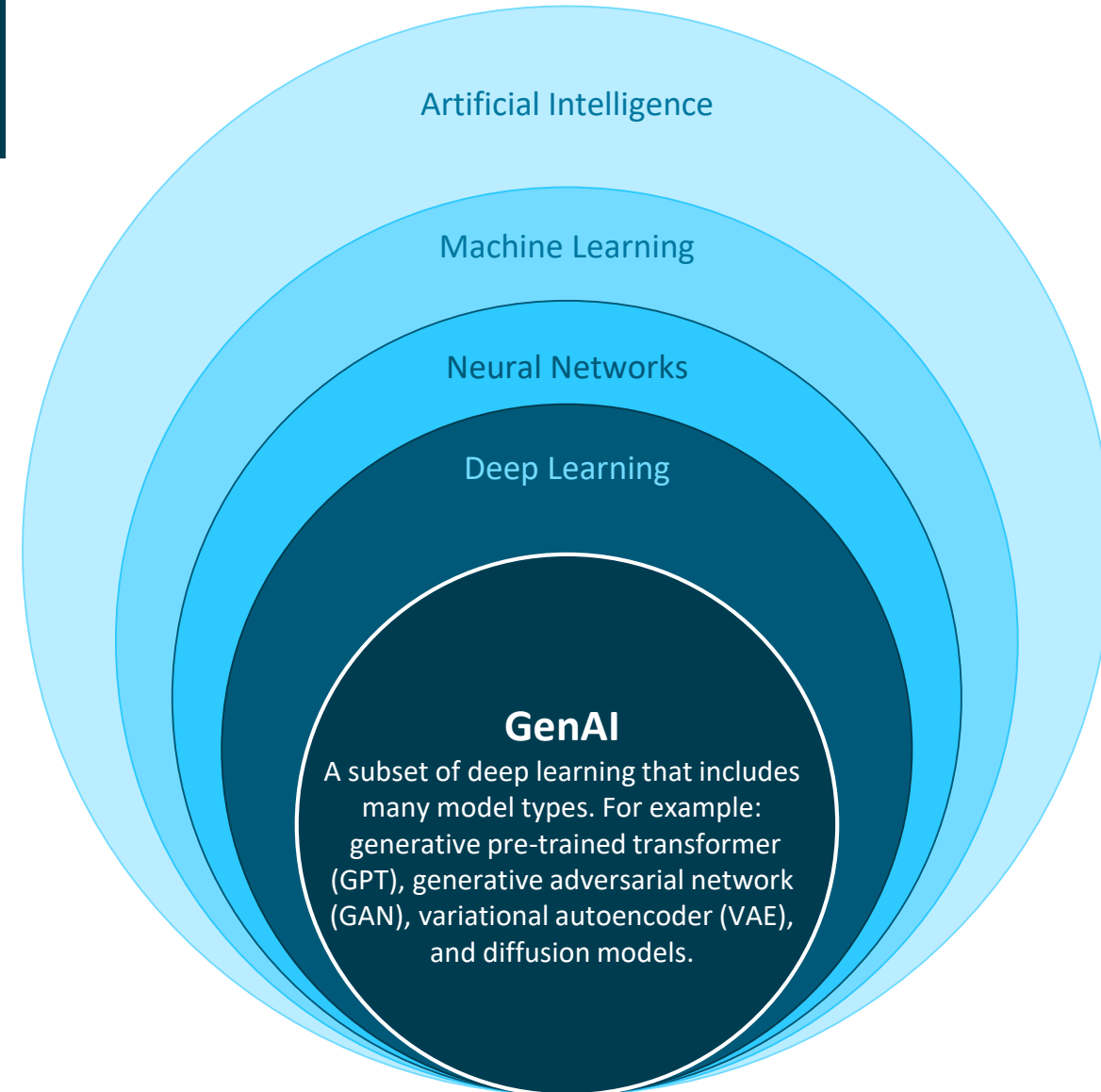
WHAT IS GENAI? A LEVEL SET ON THE TECHNOLOGY AND USE CASES

Generative AI (GenAI)

GenAI is a subset of deep learning that can generate new content based on patterns learned from existing content. Content can include text/data, images, music, video, or other forms of media.

Celent High-Level Use Cases

	Examples
 Content Generation	Document drafting, report generation
 Content Management	Categorization, tagging, curation
 AI Assistant – Knowledge Source	Research assistant, information retrieval
 AI Assistant – Automation	Autofill, next best action suggestions, autonomous agents
 Code Development	Debugging, refactoring, coding
 Information Analysis	Synthesis, summarization
 Data Analysis	Augmentation, visualization
 Synthetic Data Generation	Text versions for analysis, time series data generation, scenario generation
 Workflow Improvements	Suggestions for workflow amendments, automated changes to workflows
 Detection Models	Errors, fraud, problem solving



WHY CARE? STRONG POTENTIAL TO BOOST PERFORMANCE

PRODUCTIVITY AND EFFICIENCY

GenAI is already proving in PoCs and pilots that it can reduce FIs' operating costs and improve productivity. Moreover, FIs are finding that measuring GenAI's impact on costs/productivity is relatively easy, allowing them to build business cases. Examples include:

Front office	<ul style="list-style-type: none"> • Reduce cost to originate • Reduce cost to serve • Scale customer support
Middle and back office	<ul style="list-style-type: none"> • Enable further automation of repetitive tasks • Enhance risk mitigation tools • Reduce the cost to onboard clients
Technology	<ul style="list-style-type: none"> • Lower operating costs • Increase productivity
Functional areas (non-tech)	<ul style="list-style-type: none"> • Further digitize workflows • Reduce the cost of content generation

REVENUE GROWTH

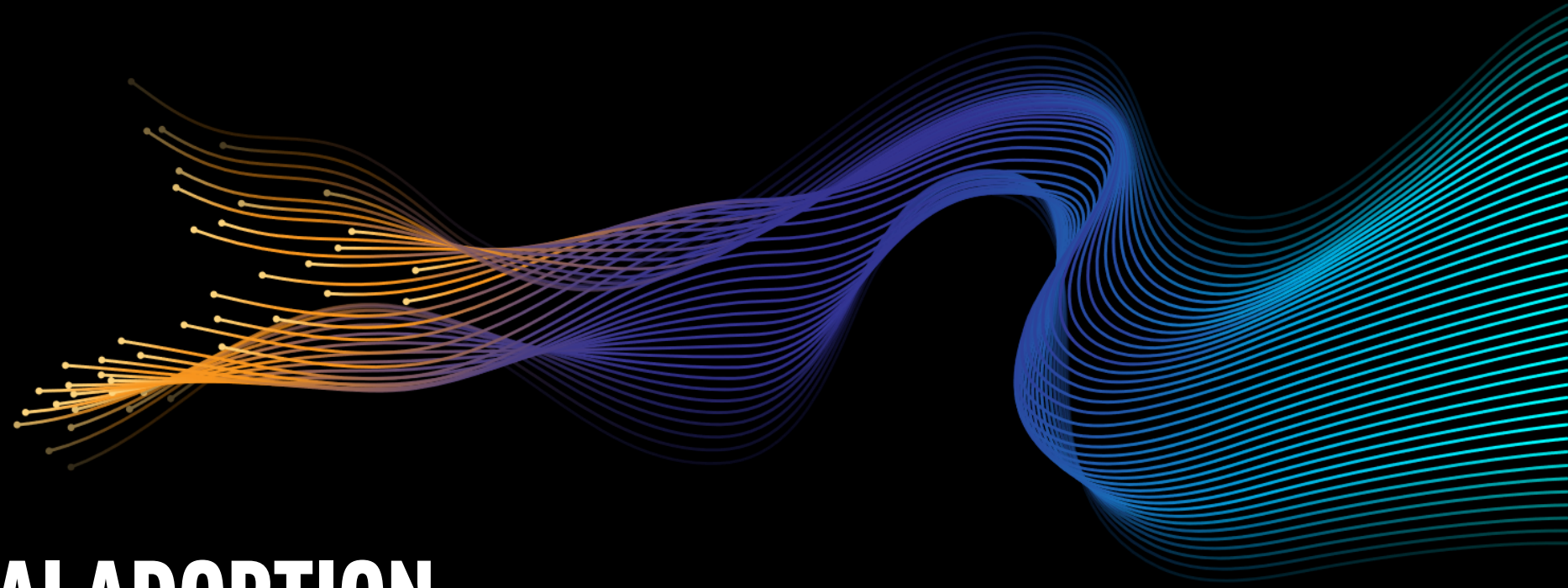
While most FIs are leading with productivity/efficiency use cases, some are blueprinting revenue-based business cases. These FIs tend to be more advanced in their digital journeys and are thereby able to shift their focus to adding value (e.g., richer, better customer experience).

Front office	<ul style="list-style-type: none"> • Shift to higher-value/revenue-adding tasks (e.g., cross-sell) • Achieve non-linear scaling of personalized services • Find new revenue sources by discovering new patterns (trading)
Product staff	<ul style="list-style-type: none"> • Improve revenue impact of product enhancements • Achieve pricing optimization
Current customers	<ul style="list-style-type: none"> • Grow share of wallet (e.g., with improved customer understanding and experience, and personalization) • Achieve trusted adviser status
New customers	<ul style="list-style-type: none"> • Improve prospecting and product selection • Increase engagement and conversion

NEXT-LEVEL PERFORMANCE

Celent anticipates that GenAI will help FIs become data-driven organizations that make faster and smarter decisions. The underlying drivers of this shift include improved overall data access, increased data input, and user-friendly interfaces leading to deeper and more actionable insights. In the long run, as confidence in data/model-driven decisions grows, FIs will implement autonomous workflows that will lead to not only cost reduction and productivity enhancements but, more excitingly, revenue growth as employees can focus more time with the customer or adding value for them. Moreover, GenAI could enable FIs to develop completely new revenue sources (e.g., leasing a financial wellness assistant to a small business or building autonomous AI-driven customized investment vehicles).

03



WAVES OF GENAI ADOPTION

A QUICK TOUR OF THE REPORT

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A level set for what GenAI is and why banking and capital markets professionals should be interested in it.

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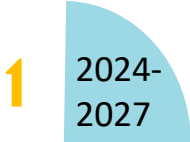


It is clear that GenAI is creating exceptional opportunities to transform business and operating models. The question is how fast and for which use cases. Celent summarizes its learnings.

THREE WAVES

DEFINING AND DESCRIBING THE WAVES

Exceptionally fast-moving technology coupled with regulatory uncertainty makes projecting the adoption of GenAI challenging. To help guide financial institutions, Celent has developed the GenAI Adoption WaveGram. We anticipate three waves of adoption propelled by tech advances (e.g., faster/more efficient compute), the growing maturity of GenAI regulation and business structures, and competitive pressures.

Celent has mapped the waves and overlaid use cases based on conversations with GenAI tech innovators, FIs in the adoption vanguard, and Celent analysis of historical tech adoption curves.

WAVE	CHARACTERISTICS
 1 2024-2027	Use cases in the first wave can be described overall as pragmatic due to regulatory uncertainty and an evolving ecosystem. The focus is on use cases that promise productivity/efficiency gains in low-risk areas with relatively low integration costs. Early innovators will bring more advanced use cases into production that will not experience mainstream adoption until wave two. They stand to gain a competitive advantage and drive further investment.
 2 2028-2033	The second wave will be characterized by higher impact applications and deeper integration of GenAI into workflows. Fuelled by adoption accelerators (e.g., lower cost and risk), FIs will test and implement more use cases and reach new frontiers (e.g., AI assistants for customers and AI generation of RFPs). The concept of augmented humans will be widely embraced across industries and FIs will deliver highly personalized interactions via customer-facing applications.
 3 2034+	No one can accurately predict what will transpire in ten years. Instead, Celent offers a few visions of how GenAI could be coupled with other advanced technologies (e.g., quantum computing, distributed ledger technology, and virtual reality) and how AI agents could play a role in financial services. As GenAI matures further, customer-facing use cases will approach the scope and impact of employee-facing use cases.

Sources: Celent interviews, research, surveys, and analysis

WAVE 1: DRIVERS AND OUTCOMES

Each adoption wave consists of drivers (factors that accelerate or impede adoption) and attendant outcomes. During wave one, the factors that accelerate adoption in banking and capital markets (CM) are those that lower costs (testing and implementation) and risks. The factors that impede adoption are technological readiness as well as legal, regulatory, and trust-related issues. As FIs move from proof-of-concept to pilot and production, they need to address multiple challenges ranging from ensuring compliance to integrating with legacy systems and reengineering processes. Most FIs will initially bring use cases into production slowly but will speed up by the end of this wave. The use cases that move into production first will be low-risk, productivity-related uses of GenAI, particularly those in which traditional AI has already been leveraged, and those with stand-alone applications (e.g., virtual assistants). FIs with a lower regulatory burden, strong competitive advantage, and revenue drivers will lead the way for the rest to follow.

Accelerators

AI models become smaller and faster.

As a result, training and run costs decline, increasing the feasibility of use by FIs.

Third party providers facilitate adoption.

Hyperscalers and AI platforms provide scalable and consistent compute, AI tools, and models to facilitate use case development.

Bank and CM early movers realize a significant edge.

They mitigate risks and build trust by optimizing GenAI/human interactions.

In the EU, regulatory clarity makes it easier to game plan.

The AI Act in Europe and regulation in other geographies reduce ambiguity regarding “safe” use cases.

Methods to lower hallucinations are developed.

A prime example is requiring a GenAI model to retrieve data from a relevant database (known as retrieval augmented generation or RAG).

Impediments

In the US, regulation remains work in progress.

For FIs, the recent AI Executive Order and SEC proposal leave much open to interpretation and additional legislation. Onerous legislation could slow the development of GenAI as foundational models adapt to satisfy regulation.

Computing hurdles inhibit mainstream adoption.

Issues such as the scalability of GPU infrastructure could keep select GenAI use cases from becoming mainstream.

Risk concern is relatively high for FIs.

Concerns regarding bias and hallucinations exclude numerous use cases as regulatory hurdles are high for banking and CM.

Combatting GenAI-enabled fraud and breaches consumes FI resources to the detriment of strategic investment.

Technical debt (especially in data management) persists.

This prevents companies from taking full advantage of GenAI.

Intellectual property concerns slow down select use cases.

For example, this may slow marketing content generation.

Outcomes

Productivity-enhancing use cases lead.

Banking and capital market players will target cost take-outs, in particular:

- Digitizing manual/paper processes
- Improving human-based processes

Sandbox mode dominates.

FIs favor a controlled environment for innovation, allowing business and tech teams to collaborate and build while avoiding regulatory fallout.

Prior AI use cases are enhanced.

GenAI enhances existing AI use cases, e.g., intelligent virtual assistants, in a cost-effective way.

Low-barrier use cases are exhausted.

Early mover FIs experiment with and implement use cases for which risks are contained (e.g., first draft content generation).

Stakeholders establish frameworks to guide FI.

This is particularly relevant in the areas of regulation and governance.

Successful early innovators encourage investment in GenAI by early followers.

WAVE 2: DRIVERS AND OUTCOMES

During wave two, FIs and their tech partners will make significant progress in lowering the costs and risks of GenAI. The complexity of scaling AI will be solved through advancements in computing. There will, however, be impediments that slow adoption, including heightened regulatory scrutiny and diminishing improvements in certain model types. Nevertheless, FIs will continue to build on lessons learned and improve their ability to scale models and embed GenAI across workflows and customer journeys.

Accelerators

Tech advances drive development of use cases.

Progress in computing, improved speed, availability, and reduced environmental footprint make new use cases possible. The scalability of GPU buildout improves, and new chip types are commoditised (e.g., domain specific compute, 3D stacking, etc).

Large language model (LLM) access expands significantly.

LLMs embedded in common business software are used by most employees as the competitive field of AI marketplaces develops and GenAI models are run on personal devices.

Model accuracy continues to improve.

Models built from text, data, video, audio, and images better understand prompts and generate content that is more diverse, accurate, and contextually relevant.

Regulatory clarity is achieved globally.

The main focus is on safety, with regulations driven either by a supranational entity or agreement on global guidelines.

FIs overcome technical debt issues.

Modernized tech infrastructures supercharge the use of internal proprietary data in GenAI models.

Impediments

An FI is fined for lack of compliance with GenAI regulations.

History has proven time and time again that at least one FI will fail to comply with a regulation, heightening regulatory scrutiny and driving new regulation.

Rogue LLMs spur greater regulatory scrutiny.

Given the potential gains, models that support illegal activity are built.

Sources of good training data decline.

Model performance is eroded due to the rising share of AI-generated data in the training data, and acquiring new high-quality training data becomes more costly.

Outcomes

FI comfort level with GenAI applications increases.

A rising number of customer-facing applications move into production.

User interfaces (UIs) migrate from drop-downs and clicks to functionality embedded in AI assistants.

Customers are comfortable with conversation-based interfaces and AI assistants.

Use cases piggyback and are interwoven.

GenAI models are deeply embedded in workflows, often in various steps (e.g., in prospecting workflows beginning with list generation, then email generation and next best action).

The use case frontier is pushed out.

For example, FIs become comfortable providing AI assistants that act as financial wellness advisers to customers.

Competitive advantage from initial use cases is eroded.

Access to models and compute becomes widespread.

Highly specific GenAI models become the norm as costs become manageable.

WAVE 3: DRIVERS AND OUTCOMES

After significant advancements between 2024-2033, pushing the GenAI frontier in 2034 and beyond will require leveraging other technologies such as quantum computing, virtual reality (VR), and distributed ledger. As humans have proven time and again, we readily adopt technology that improves our lives and work and adapt how we communicate and operate. By wave three, Celent expects that the majority of us will be comfortable having personal AI assistants and interacting with trusted AI agents.

Accelerators

Impediments

Outcomes

Battle-tested models reduce risk exposures.

End-user control is virtually guaranteed.

Quantum computing goes into production

Although currently in development, Quantum could go into production and further advance GenAI capabilities.

Effective human vs. AI identifier is launched.

For example, Tools for Humanity, which is currently building tools for the [Worldcoin](#) project, could achieve its ambition.

VR/AR technology is refined and prices drop.

Adoption follows the smartphone adoption curve.

GenAI and Blockchain interact.

For example, GenAI might create a personalized financial product and tokenize it to be traded on a blockchain.

Compute is redefined.

A new, more holistic approach to computing power is developed with increased energy efficiency, learning capability, distributed processing and domain specific optimization. Emerging technologies such as neuromorphic and edge computing could contribute.

Model collapse due to low levels of human-generated data slows advancements.

Marginal cost of proprietary/human-created content increases, reducing ROI of GenAI initiatives.

New risks arise, e.g., autonomous agents increase data breaches.

As a result, FIs have to divert resources away from innovation to risk mitigation.

Higher likelihood that a “black swan” event erodes confidence in AI systems.

The chance that AI systems have ignored a statistically unlikely outcome leads to heavy losses and the erosion of confidence in AI-driven workflows and even individual models.

FI customers are comfortable interacting with AI assistants.

Autonomous agents are mainstream and UIs are interactive and query-based. Customers “hire” and customize AI agents to do their banking and trading.

Sophisticated data analysis supports performance-based pricing for select products.

For example, corporate customers pay for FI services based on cost savings and/or revenue generation.

GenAI allows automation of the entire product life cycle and product customization. E.g., in corporate banking, sophisticated, dynamic liquidity structures.

Coding is completely democratized by natural language interactions.

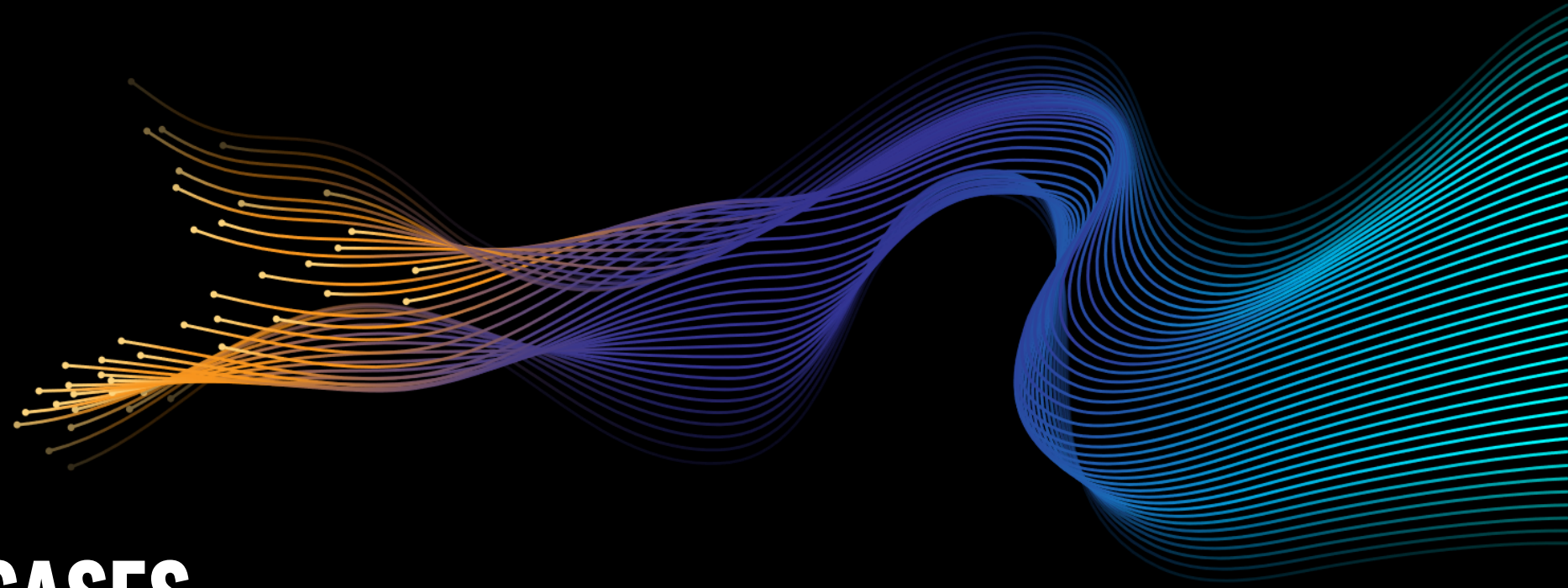
LEADERS IN **CAPITAL MARKETS AND BANKING** AGREE WITH CELENT: WE ARE ONLY AT THE BEGINNING

“

Over the long term, [Generative AI] has the potential to revolutionize all functions across our bank and the industry — changing how we write code, onboard clients, service customers, detect fraud, develop market research and strengthen compliance and controls.

Jane Fraser, CEO Citibank, [Capitalizing on Generative AI](#), July 2023

04



**COMMON USE CASES
ACROSS BANKING AND CAPITAL MARKETS**

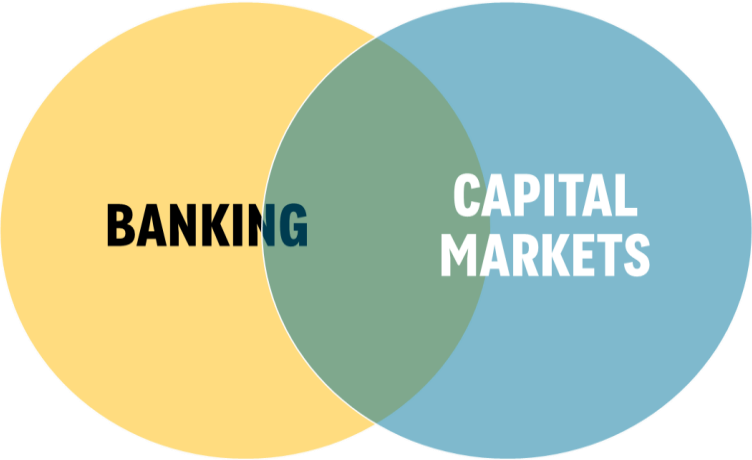
COMMON USE CASES

Celent adds a second layer to its GenAI Adoption WaveGram: common employee and customer-facing use cases across banking and capital markets. Identifying these use cases helps FIs with multiple lines of business prioritize them based on their potential return, whether it is productivity/cost savings or revenue based. For example, an FI that successfully implements a common use case (e.g., call center transcript analysis) in banking can more readily implement other types of transcript analysis in capital markets.

Celent places a use case in a specific wave based on the expectation that it will become **mainstream** during that time period. Banks and capital market participants that pursue these use cases ahead of the mainstream stand to benefit from a competitive advantage. For example, banks that have historically invested in modernizing their data and tech infrastructure or hedge funds that have a lower regulatory burden are likely to be early movers in leveraging GenAI.

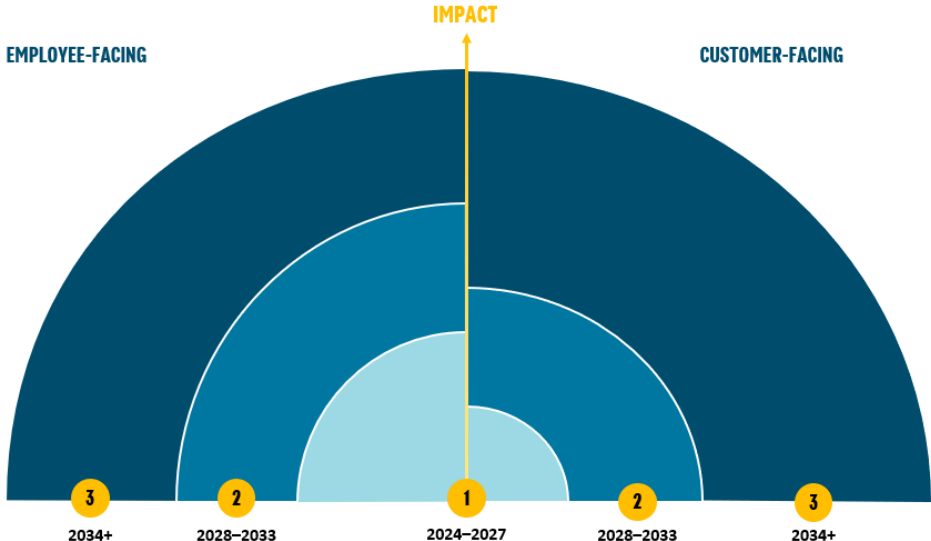
COMMON USE CASES ACROSS BANKING AND CAPITAL MARKETS

Because banking and capital markets share some similar value chain components, there are common GenAI use cases in areas such as, product development, sales/marketing, customer engagement, risk/compliance, and infrastructure (i.e., operations and technology).



EMPLOYEE AND CUSTOMER-FACING DISTINCTION

We distinguish between customer-facing and employee-facing use cases since we expect employee-facing uses of GenAI to progress faster due to their relatively lower risk. To further differentiate these use cases, we add an impact dimension to the vertical axis.



COMMON USE CASES: EMPLOYEE-FACING

Generative AI is an extremely flexible tool that can support employees in myriad areas and levels of sophistication. Celent has arrayed the most promising use cases for each adoption wave. High-level use cases are arrayed on the right. Specific use cases across the value chain are detailed in the next slides. We distinguish three levels of sophistication: basic, intermediate, and advanced.

Wave 1: The overarching theme is pragmatic, i.e., basic use cases that drive operational efficiency and productivity gains.

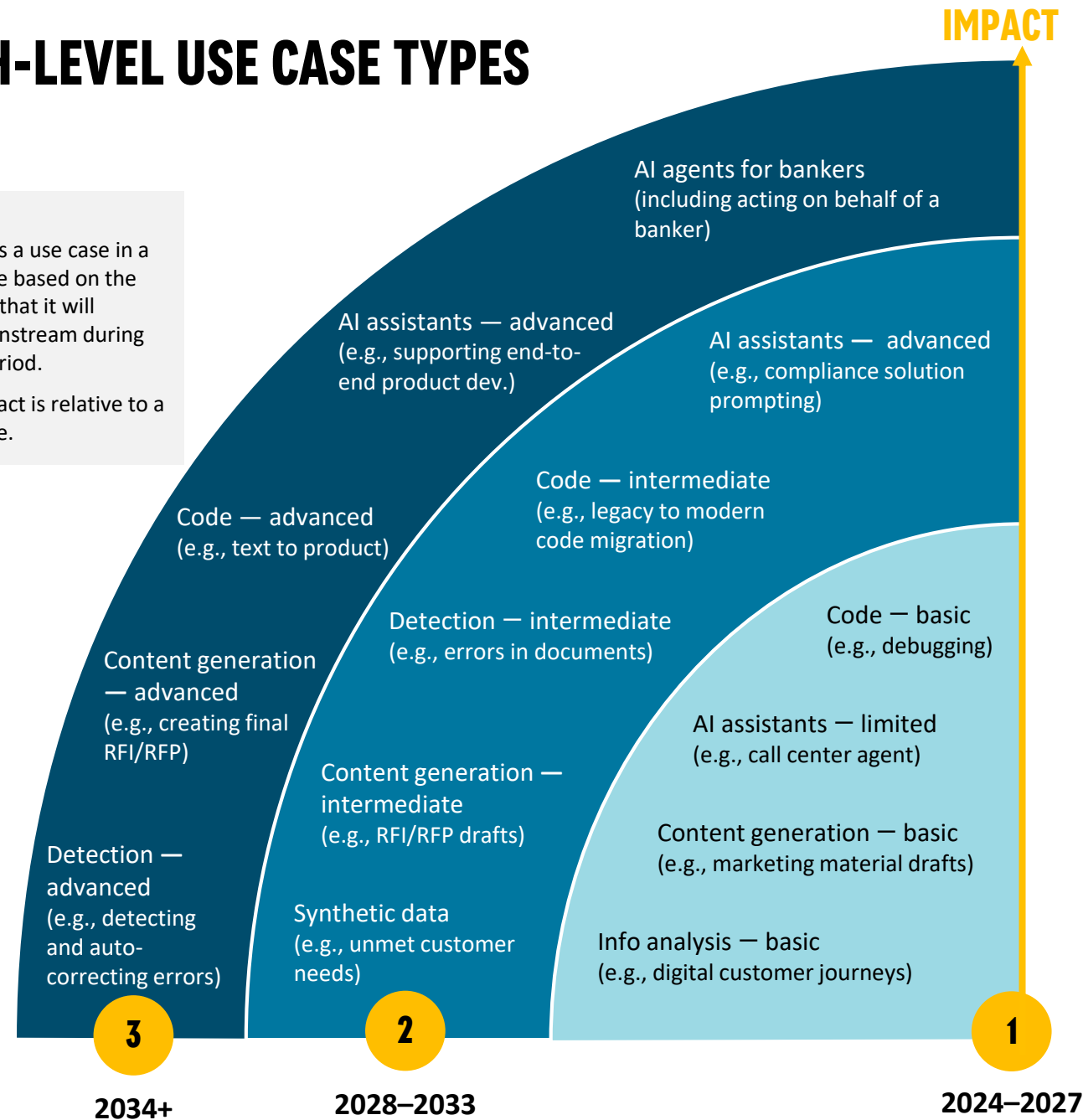
Wave 2: Frontiers are pushed out to moderate- and high-impact use cases that drive revenue growth.

Wave 3: A new world emerges, with humans interacting with AI assistants and “employing” autonomous AI agents on a daily basis.*

*An AI assistant supports a human. An AI agent acts on behalf of a human based on permissions granted by a human.

HIGH-LEVEL USE CASE TYPES

Notes:
Celent places a use case in a specific wave based on the expectation that it will become mainstream during that time period.
Level of impact is relative to a specific wave.



EMPLOYEE-FACING USE CASES: VALUE CHAIN FRAMEWORK

To help FIs pinpoint specific use cases to pursue, Celent organizes use cases:

1. Along the common value chain



2. By high-level use case types

Content generation	AI assistant — automation/decision-making (includes autonomous agents)	Detection models (e.g., errors, fraud) and problem solving	Workflow improvements/redesign/automation
Content management (e.g., tagging, categorization, compliance, curation)	Code development	Information analysis — including synthesis/summarization	
AI assistant — knowledge source	Data analysis — including augmentation/visualization	Synthetic data generation	

3. By relative impact



For each use case, we assess relative impact. In assigning high (3), medium (2), or low (1), we examine three dimensions: suitability, feasibility, and economic impact. Suitability includes factors such as whether GenAI solves a business problem and/or drives an improvement (or transformation) in banking and capital markets. It also includes regulatory and ethical implications. Feasibility includes the availability and affordability of resources required. Economic impact considers the revenue and productivity drivers outlined in [slide 12](#). Celent makes these assessments based on our analysis of prior technology adoption cycles, proprietary research regarding GenAI, conversations with industry leaders, and survey data from the Celent Vendor use case survey ([slide 57](#)).

Product Development & Management



Use Case Type	Avg. Impact	WAVE		
		1	2	3
Content generation		Language translation	Product specifications draft	Product specifications incorporating data and information analysis that reveals customer needs
		Product manuals	Go-to-market plan (final draft)	
		Go-to-market plan (first draft)		
		Persona descriptions		
AI assistants — automation/ decision-making		Product development	Prototype development	
			UI and UX design	
Data analysis — including augmentation/visualization		Demand trend analysis	Customer share of wallet analysis	
Information analysis — including synthesis/ summarization		Summarization and analysis of customer reviews	Customer behavior analysis	
		Customer survey analysis		
		Technical product details		
Synthetic data generation			Granular segment-level feature preferences	Demand simulation based on specific product features
			Unmet customer needs by segment	

Sources: Celent interviews, research, surveys, and analysis
© CELENT

Relative Impact: High Medium Low

Sales/Prospecting/Marketing



Use Case Type	Avg. Impact	WAVE		
		1	2	3
Content generation		Language translation for marketing and prospecting documents	Specific marketing material drafts (e.g., for granular segments)	Dynamically generated marketing/prospecting content for specific customers
		General marketing material drafts	RFIs/RFPs (final drafts)	
		Prospect lists	Sales training with simulated customer conversations	
		Prospect profiles and email drafts		
		RFIs/RFPs (first drafts)		
Content management		Content tagging and categorization	Content curation and workflow	
AI assistants — automation/decision-making		Sales and prospecting support (e.g., document/info/data retrieval)	Sales and prospecting recommendations	AI agents acting on behalf of bankers
Data analysis — including augmentation/visualization		Demand trend analysis	Customer financial performance analysis	
		Customer survey analysis		
Information analysis — including synthesis/summarization		Customer behavior analysis (e.g., digital customer journeys)	Analysis of best sales practices	

Customer Engagement (support for front-office staff)



Use Case Type	Avg. Impact	WAVE		
		1	2	3
Content generation		Language translation	Automated email responses	Final versions of client documents and presentations
		Email drafts	Client presentation drafts (e.g., financial plans)	
			Client contract drafts	
AI assistants — automation/ decision-making		Next best question guidance for customer service agent	Prescreening of customer queries Hybrid banker/AI assistant interactions with customers	AI agent for individual bankers that interacts directly with customers (within boundaries)
AI assistants — knowledge source		Information retrieval for customer service agent	In-call AI assistant for bankers/relationship managers	
Detection/problem solving		Contract reviews	Customer attrition signals	Problem solving
Information analysis — including synthesis/ summarization		CRM content summarization	Contract information extraction and synthesis	
		Call center transcript analysis		
		Sales call summarization		
		Summarization of research		

Relative Impact: High Medium Low

Risk and Compliance (1/2)



Use Case Type	Avg. Impact	WAVE		
		1	2	3
Content generation		Repetitive/structured reports (e.g., suspicious activity)	Drafts of responses to regulatory filings	Final drafts of compliance docs/ regulatory filings
		Compliance training material	Risk Committee plans and agenda drafts	
AI assistants — automation/ decision-making		Enhanced monitoring to avoid compliance breaches	Suggestions on credit actions based on new information gathered	Supporting end-to-end compliance workflows
		Suggestions for rewording correspondence to comply with regulations	Automated updates to compliance rules due to e.g., regulatory changes	
AI assistants — knowledge source		Search/synthesis of compliance/legal documents	AI assistant for natural language querying of compliance data during investigations	
Detection models		Anti-money laundering tools	Fraud (e.g., KYC, payments) identification	



Utilizing AI and underlying technologies like AWS Bedrock we will increasingly enable the automation of investigations, allowing resources to be redirected to priority typologies.

Jeremy Butt - Senior Director, Verafin, a Nasdaq Company



Use Case Type	Avg. Impact	WAVE		
		1	2	3
Information analysis — including synthesis/ summarization		Summarization (e.g., new regulatory requirements and report filings, signals from regulator comments/news, risk review synthesis)	Named entity recognition	
		Credit risk analysis scraping and synthesis	Entity association map	
		Risk review synthesis	Signals from news and other data sources that are leading indicators of heightened risk (e.g., cybersecurity)	
Synthetic data generation			Data for extreme scenario analysis	
			Data for fraud detection models	
			Textual data generation for compliance testing	
Workflow improvements/ redesign/automation		Natural language changes to risk models (e.g., weights and parameter inputs)	Augmented security master updates	AI agent handling end-to-end compliance processes, with humans handling exceptions only
		KYC/onboarding prefill		

Infrastructure (Operations & Technology) (1/2)



Use Case Type	Avg. Impact	WAVE		
		1	2	3
Content generation		Technology documentation draft creation from code	Business plan creation for committee approval	
		Drafting legal, loan, and trade documentation		
Code development		Code debugging	Technology suggestions (vendors, opensource content, archetypes)	Updating code due to vendor updates or data feed changes
		Code refactoring	Explain legacy code for migrations	
		Python VIM clone	Translate legacy code into modern code	
		Draft documentation of systems		
AI assistants — automation/decision-making		Coding AI assistant suggests code, changes, auto debugging etc.	AI assistants supporting specific processes (e.g., customer onboarding; responding to customer service tickets)	Operations/tech managerial AI assistant — automatic task assignment based on skill, time required, etc.
AI assistants — knowledge source		AI operations assistants – creating dynamic exceptions lists, to do lists		
Data analysis			Transaction/data classification and labeling	

Relative Impact: High Medium Low

Infrastructure (Operations & Technology) (2/2)



Use Case Type	Avg. Impact	WAVE		
		1	2	3
Detection/problem solving		Early warning error detection in documentation with possible solutions	Documentation errors with suggested changes	Auto-correction of errors in documents
		Early warning for system malfunction based on user output		
Synthetic data generation			Data for ML model building	
			Data for application testing	
Workflow improvements/redesign/automation		Workflow improvement suggestions based on historical data	GenAI-powered robotics powered automation	Natural language changes to and generation of code base
		AI assistant for workflow creation		Autonomous agents running operations

COMMON USE CASES: CUSTOMER-FACING

Generative AI will transform how FIs engage with customers. With human-like, conversation-based interactions, customers will be increasingly comfortable interacting with AI assistants and eventually autonomous AI agents. * Establishing and maintaining trust, however, is paramount.

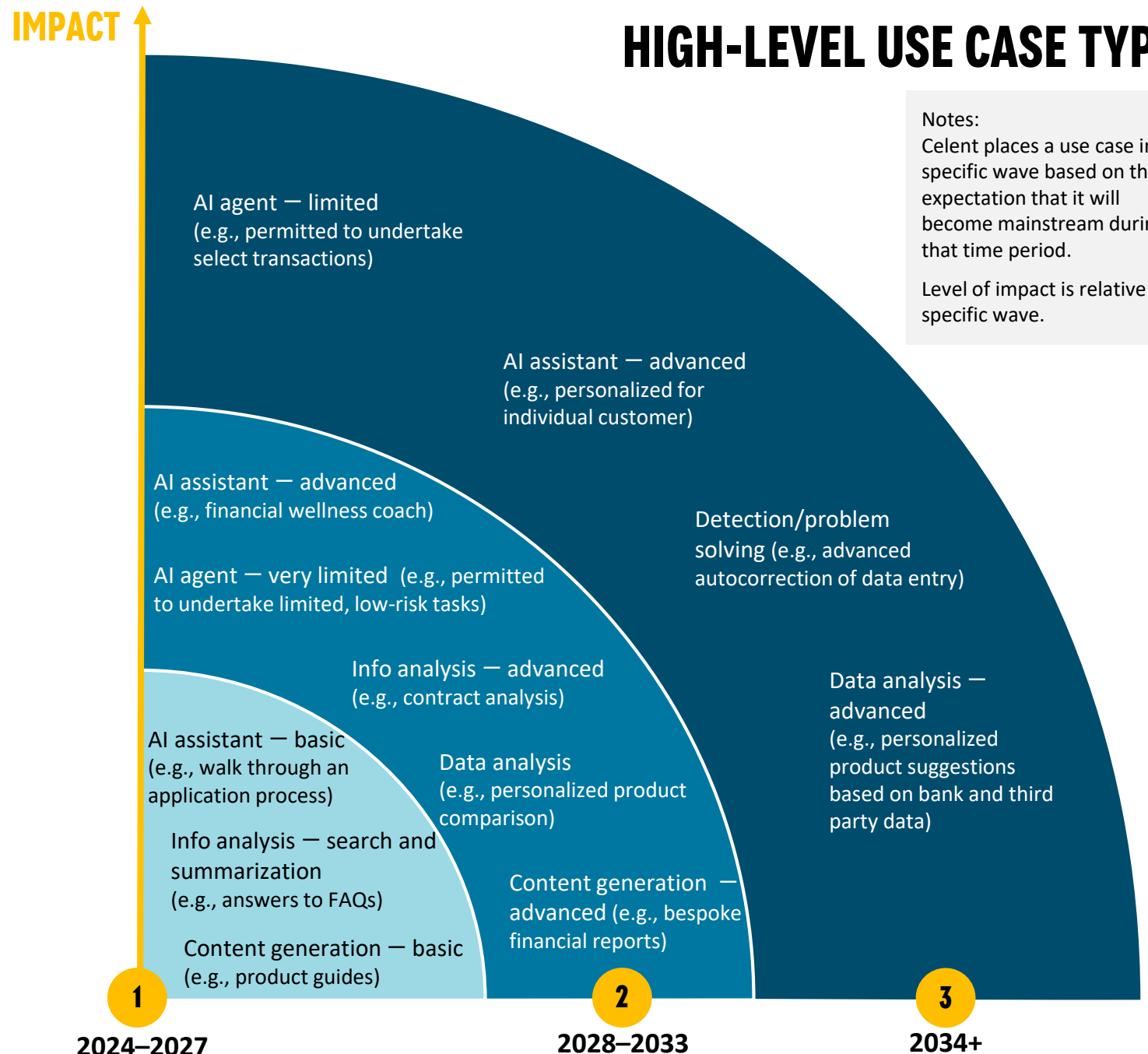
Wave 1: Use cases will focus on “tell me” interactions, i.e., a customer asks for information.

Wave 2: Use cases that add more value to the customer will grow, i.e., “do it for me” and “advise me” requests.

Wave 3: Use cases will become highly advanced and include customers programming personal banking and/or trading AI agents.

*An AI assistant supports a human. An AI agent acts on behalf of a human based on permissions granted by a human.

HIGH-LEVEL USE CASE TYPES



Notes:
 Celent places a use case in a specific wave based on the expectation that it will become mainstream during that time period.
 Level of impact is relative to a specific wave.

2024–2027

2028–2033

2034+

Sources: Celent interviews, research, surveys, and analysis

CUSTOMER-FACING USE CASES: VALUE-ADD FRAMEWORK

To help FIs pinpoint specific use cases to pursue, Celent:

1. Divides use cases into three categories, from relatively low value-add to high value-add for the customer



2. Sorts uses cases by high-level type

Content generation	AI assistant — automation/decision-making (includes autonomous agents)	Detection models (e.g., errors, fraud), problem solving	Workflow improvements/redesign/automation
Content management (e.g., tagging, categorization, compliance, curation)	Code development	Information analysis — including synthesis/summarization	
AI assistant — knowledge source	Data analysis — including augmentation/visualization	Synthetic data generation	

3. Rates use cases by relative impact ● High ● Medium ● Low

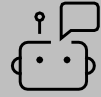
For each use case, we assess relative impact. In assigning high (3), medium (2), and low (1), we examine three dimensions: suitability, feasibility, and economic impact. Suitability includes factors such as whether GenAI solves a business problem and/or drives an improvement (or transformation) in banking and capital markets. It also includes regulatory and ethical implications. Feasibility includes the availability and affordability of resources required. Economic impact considers the revenue and productivity drivers outlined in [slide 12](#). Celent makes these assessments based on our analysis of prior technology adoption cycles, proprietary research regarding GenAI, conversations with industry leaders and survey data from the Celent Vendor use case survey ([slide 57](#)).

Tell Me — Knowledge Transfer



Use Case Type	Avg. Impact	WAVE			
		1	2	3	
Content generation		Language translation	Creation of personalized content (e.g., market updates, etc.) without user input		
		Summarization of bespoke research			Personalized product suggestions
		Produce how-to guides/FAQs			
AI assistants — knowledge source		Training for new products/features	Customer onboarding (information)	Celent anticipates that “tell me” use cases will be exhausted by the end of Wave 2.	
		Product/feature-finding tool			
		FAQ answer finder			
		Natural language data queries (RAG assisted)			
Information analysis — including synthesis/summarization			Summarization of research or news		
Data analysis — including augmentation/visualization		Natural language data visualizations			

Do It for Me — Basic



Use Case Type	Avg. Impact	WAVE		
		1	2	3
Content generation		RAG ¹ assisted bespoke reports with public content	Bespoke reports requiring private and sensitive data (regulatory, trade activity, financials, etc.) repeated or ad hoc	Basic “do it for me” use cases will be exhausted by Wave 3.
AI assistants — automation/decision-making			Customer onboarding (e.g., autofill) Personalized/nonstandard forms for standard processes	
Data analysis — including augmentation/visualization		RAG ¹ assisted personalized natural language data analysis (e.g., “generate a chart showing my spending in these categories”)	Non-RAG assisted personalized natural language information gathering and data analysis	
Information analysis — including synthesis/summarization			Contract analysis	

1. Retrieval augmented generation, aka [retrieval augmented language modeling](#)

Sources: Celent interviews, research, surveys, and analysis

© CELENT

Relative Impact:



High



Medium



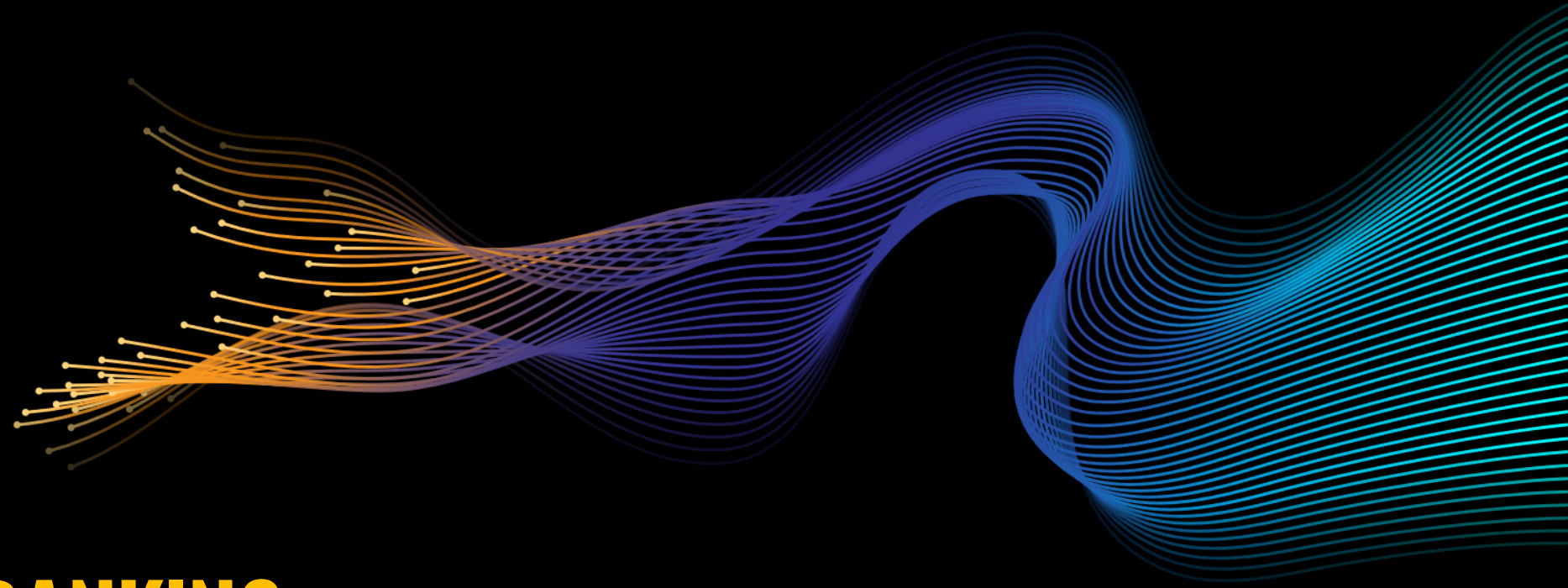
Low

Advise Me and Do It for Me — Advanced



Use Case Type	Avg. Impact	WAVE		
		1	2	3
Content generation			Personalized prescriptive report	
AI assistants — automation/decision-making		Given the current risks in using GenAI and the heavy regulatory burden around advice in banking and capital markets, we do not anticipate mainstream adoption of direct-to-customer “Advise Me” use cases. More regulatory clarity and model improvements are necessary.	Personalized engagement	Personalized AI assistant for individual customers
			Document input recommendation enhancement	GenAI pushes the frontiers of:
			Personalized product suggestions/comparisons	• Liquidity optimization advice across accounts and venues
			Personalized next best action	• Hedging optimization/automation
			Customer onboarding (e.g., recommendations)	
Data analysis			Personalized product recommendations based on bank data	Personalized product recommendations based on third party data
Detection/problem-solving			Solution prompting	GenAI pushes the frontiers of:
			Transaction error detection and troubleshooting	• Autocorrecting customer data entry errors
				• Automatic problem solving

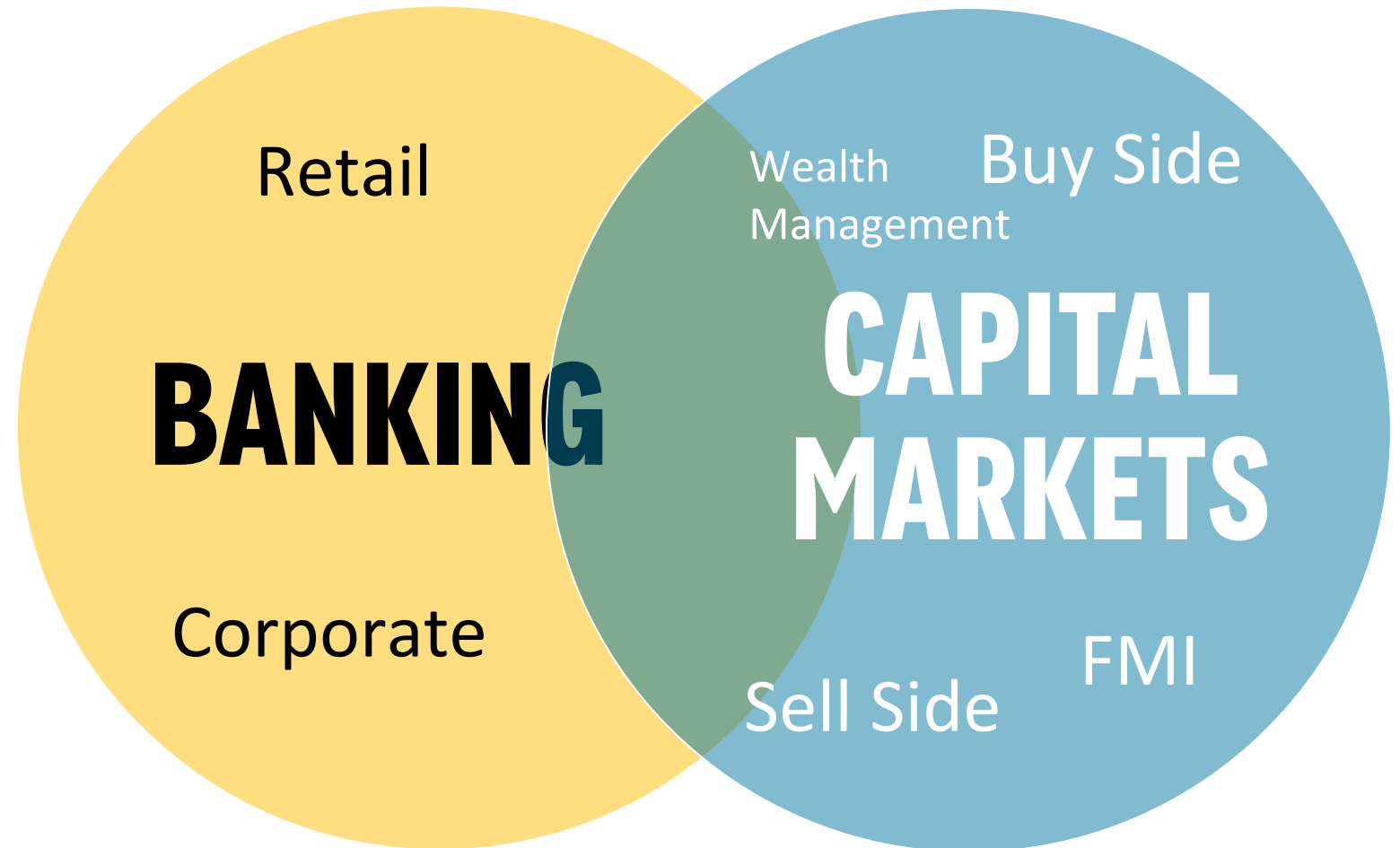
05



USE CASES IN **BANKING**

INDUSTRY-SPECIFIC USE CASES

Given product/service and profit lever differences between banking and capital markets, Celent spotlights use cases that are unique to each. We further distinguish use cases by specific lines of business. For banking, we categorize them into retail and corporate banking. For capital markets, we categorize use cases into buy side, sell side, and wealth management lines of business and financial markets infrastructure players (FMIs). In addition, we examine two parts of the value chain unique to capital markets: trading and investment management.



CELENT ANALYZES **BANKING**-SPECIFIC USE CASES










Following the same framework as for common use cases, Celent spotlights use cases that are specific to retail and corporate banking. These use cases tend to apply to products/services that are unique to these businesses (e.g., credit cards and trade finance).



USE CASES UNIQUE TO RETAIL BANKING: EMPLOYEE-FACING (1/2)

While many inroads have been made to digitize retail banking, there remains room for improvement. GenAI could close the gaps. Employee-facing use cases unique to retail banking tend to be in credit and financial wellness. In particular, for more complex products (e.g., mortgage loans), employees could better serve customers via an AI assistant that can suggest responses and next steps as well as pull relevant information. In addition, synthetic data generation could improve a bank's ability to understand customer needs across segments and enable it to work with anonymized data sets, thereby protecting personally identifiable information (PII).

While credit process automation has advanced notably, there is still room for improvement in accessing and reviewing information. The ultimate use case would be an AI assistant that could support the end-to-end credit process and allow humans to focus on adding value (e.g., customer advice) and handling exceptions.

Use Case Type	Wave	Customer Engagement 	Risk & Compliance 	Infrastructure (Ops & Tech) 
AI assistant automation	2	To assist branch banker and call center agent in credit application 	For underwriters to expedite workflows 	For middle and back office processes, including booking a loan 
		To support credit card customer service in cardholder/merchant disputes 		
	3	AI assistants that support both customer and bank employees across each phase of the credit application process as needed 		
Data analysis — including visualization	2		Image analysis of credit risk exposure by micro segments 	

Relative Impact:



High



Medium



Low



USE CASES UNIQUE TO RETAIL BANKING: EMPLOYEE-FACING (2/2)

Use Case Type	Wave	Customer Engagement	Risk & Compliance	Infrastructure (Ops & Tech)
Detection models	2		Payment fraud detection	
Synthetic data generation	2	Simulating customer conversations regarding credit products	Providing data for risk scoring models to ensure legal and fair outcomes	
		Using synthetic data in lieu of actual customer data to preserve privacy (e.g., customer preference models)	Simulating new potential fraud patterns for payments fraud detection models	
			Recreating existing data sets of sensitive PII with the personal elements removed	

Relative Impact:



High














Medium



Low

USE CASES UNIQUE TO RETAIL BANKING: CUSTOMER-FACING













Similar to employee-facing use cases, customer-facing uses of GenAI are concentrated in credit and financial wellness. The credit application process remains relatively arduous for consumers (especially for mortgage loans), meaning that an AI assistant that can guide the customer and expedite the process would be highly beneficial. Additionally, GenAI could greatly expand the role a bank plays in consumers' financial wellness. Based on a customer's banking data and third party permissioned data, an AI assistant could help advise a customer on how to do things like set a budget and handle an unexpected expense. A bank could also help customers make smarter product choices by tapping into additional data sets.

Use Case Type	Wave	Do It for Me — Basic 		Advise Me and Do It for Me — Advanced 	
AI assistant automation	2	Automating specific credit application workflows (e.g., auto loans)		Financial wellness coach (e.g., budgeting guidance)	
	3			AI agent that is programmed/permissioned to manage a customer's financial wellness	
					AI agent that can undertake credit card product selection and application for a customer
				AI agent that can handle broader queries, e.g., "how can I lower my carbon footprint through my purchases?"	
Content generation	2	Personalized spending reports (coupled with transaction classification)		Personalized insights regarding product usage (e.g., maximize credit card rewards)	
Data analysis — incl. visualization	2	Personalized financial insights conveyed via AI assistant based on bank data		Personalized financial insights conveyed via AI assistant based on bank data and permissioned third party data	
				Interactive credit score tool that enables customers to determine what actions could improve their score	


















USE CASES UNIQUE TO CORPORATE BANKING: EMPLOYEE-FACING (1/2)




Corporate banking involves many complex processes, myriad systems, and extensive integrations, both internally and with customers' systems. Banks' infrastructure handles trillions of dollars in transactions annually. Exacerbating the complexity are paper-based processes and digital bottlenecks that GenAI can remedy. AI assistants that further automate processes (e.g., product development and customization, client onboarding, and credit processes) will drive competitive advantage. More transformative uses cases include using AI assistants to help banks develop customized products for core clients.

In the data realm, banks have yet to tap the full value of payments and related data (e.g., invoices). GenAI could help to unlock that value, allow banks to extend their client support across the entire financial supply chain (accounts payable and receivable), and insert product offerings at the point of need (e.g., a credit offering when a cash shortfall is forecasted).

Use Case Type	Wave	Product Development 	Customer Engagement 	Risk & Compliance 	Infrastructure (Ops & Tech) 
AI assistants — automation	2		RFI/RFP generation for cash management  Assisting small business bankers and commercial loan officers in credit application 	Credit underwriting and credit memo generation  Fraud checks for trade finance 	Middle and back-office processes, including booking a loan 
	3	Customized product development based on a corporation's needs and internal systems 	AI assistants that support customers, bank employees, and relevant third parties (e.g., for trade finance) across each phase of the credit application process, from data/document gathering to contract generation 		
Code development	2		Faster/better client onboarding, e.g., bank to corporate connectivity 		

USE CASES UNIQUE TO CORPORATE BANKING: EMPLOYEE-FACING (2/2)
















Use Case Type	Wave	Product Development 	Customer Engagement 	Risk & Compliance 	Infrastructure (op's & tech) 
Content generation	2	Customized product specifications based on clients' needs and internal systems 	RFI/RFP drafts for cash management services  Loan contract generation 		Credit and trade finance document generation 
	3		RFIs/RFPs (final versions) 		
Content management	2				Payment transaction data classification and labeling for improved service (e.g., working capital optimization and credit application processing) 
Data analysis — including visualization	2		Bespoke reports on the performance of specific commercial clients  Improved client attrition signals thanks to unstructured data 		
Detection models	2			B2B payments and trade finance fraud detection models 	Error detection in a credit contract 
Synthetic data generation	2	For pricing models, e.g., to test price elasticity 	Simulating client negotiation for cash management contract 	Simulating new potential fraud patterns for B2B payments fraud detection models 	

Relative Impact:  High  Medium  Low

USE CASES UNIQUE TO CORPORATE BANKING: CUSTOMER-FACING (1/2)

Within their core payments businesses, banks could deliver more “intelligent” services by leveraging AI assistants for not only queries, but also higher-value error prevention/detection/correction. Banks could greatly improve their support of corporations’ financial supply chains by providing clients with AI assistants to further digitize and automate their financial supply chains (e.g., providing three-way matching of a purchase order, invoice, and payment). In the long run, GenAI could be the key to delivering “self-driving” treasury.¹











In addition, unlike most other “suppliers,” banks typically embed their services within a corporation’s internal systems. Therefore, any improvements in product customization and connectivity/integration that GenAI facilitates by defining product specifications and writing code would be bank differentiators.

Use Case Type	Wave	Tell Me 	Do It for Me — Basic 	Advise Me & Do It for Me — Advanced 
AI assistants — knowledge	1	Improved payments-related support services (e.g., expedited answers to status queries) 		
	2	“Financial analyst” for the client (e.g., treasurer), retrieving data and generating figures  “Credit analyst” for the client (e.g., credit file queries) 	Payment process set-up  Payment process troubleshooting (e.g., “my ACH batch file is not processing”) 	Product decision-making (e.g., “based on my banking transaction, what’s the best...?”)  AI agent of the relationship manager relays advice regarding liquidity structures, credit mix 
AI assistants — automation	2		Improved autocorrection of customer data entry errors (e.g., in a payment initiation)  Support for a client’s accounts payable and receivable processes (e.g., three-way matching)  Improved cash concentration 	
	3		Support customer in specifying their product requirements, including integration with their internal systems 	AI agent that delivers “self-driving” treasury, i.e., automated analysis, decisions, and actions 

1. Self-driving treasury refers to the automation of treasury tasks/processes to reduce the need for human-involvement. Key technologies include AI/ML, GenAI, and robotic process automation (RPA). The overall objective is to enable treasury teams to focus on higher value-add activities and exceptions/crisis handling.

Sources: Celent interviews, research, surveys, and analysis

USE CASES UNIQUE TO CORPORATE BANKING: CUSTOMER-FACING (2/2)

Use Case Type	Wave	Tell Me 		Do It for Me — Basic 		Advise Me & Do It for Me — Advanced 	
Code development	2					Bank leverages its internal GenAI code development expertise and models to support corporate clients (e.g., data and system migrations)	
Content generation	2	Customized payments/cash management services guides and training material		Bespoke financial reports			
Data analysis	2	Analysis of payments mix for potential cost improvements				Benchmarking with peers (e.g., working capital performance metrics)	
Detection models	2	Payment fraud risk alerts					
Synthetic data generation	3					Macroeconomic or company-level data that powers scenario testing to inform decision-making	

Relative Impact:



High

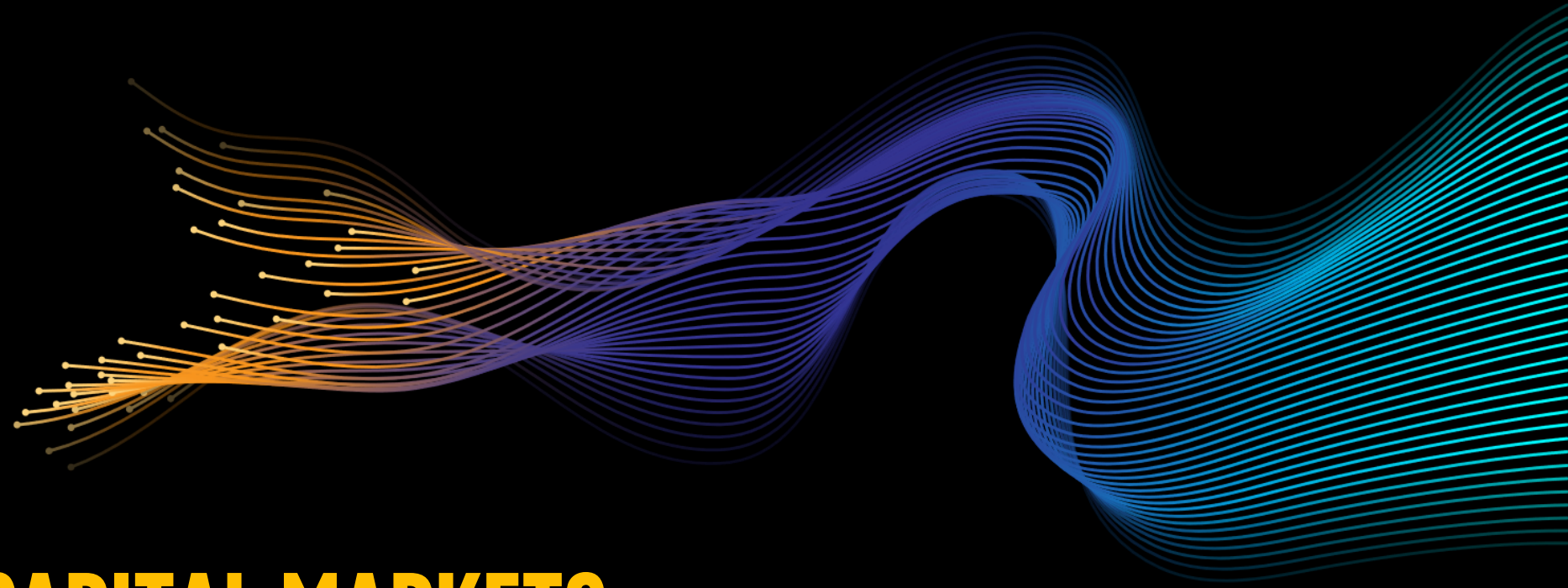


Medium



Low

06



USE CASES IN **CAPITAL MARKETS**

CELENT ANALYZES CAPITAL MARKETS-SPECIFIC USE CASES ALONG TWO DIMENSIONS

Trading and Investment

Capital markets hold a distinct part of the value chain: trading and investment management. Celent analyzes use cases in this area using the same WaveGram framework used with common use cases. Due to GenAI’s ability to synthesize, draw insights, and find patterns across large amounts of multi-modal data, Celent expects GenAI to have a significant impact on trading and investment management after initial hurdles are overcome.

Position in value chain:



Participants

Within capital markets, there are highly differentiated participants with unique use cases. Celent also finds differences in the level of impact. For example, AI assistants for customer service agents may have more value in wealth management than in the rest of capital markets. Celent analyzed the range of impacts by differentiating between wealth management, buy side, sell side, and financial markets intermediaries (FMIs).

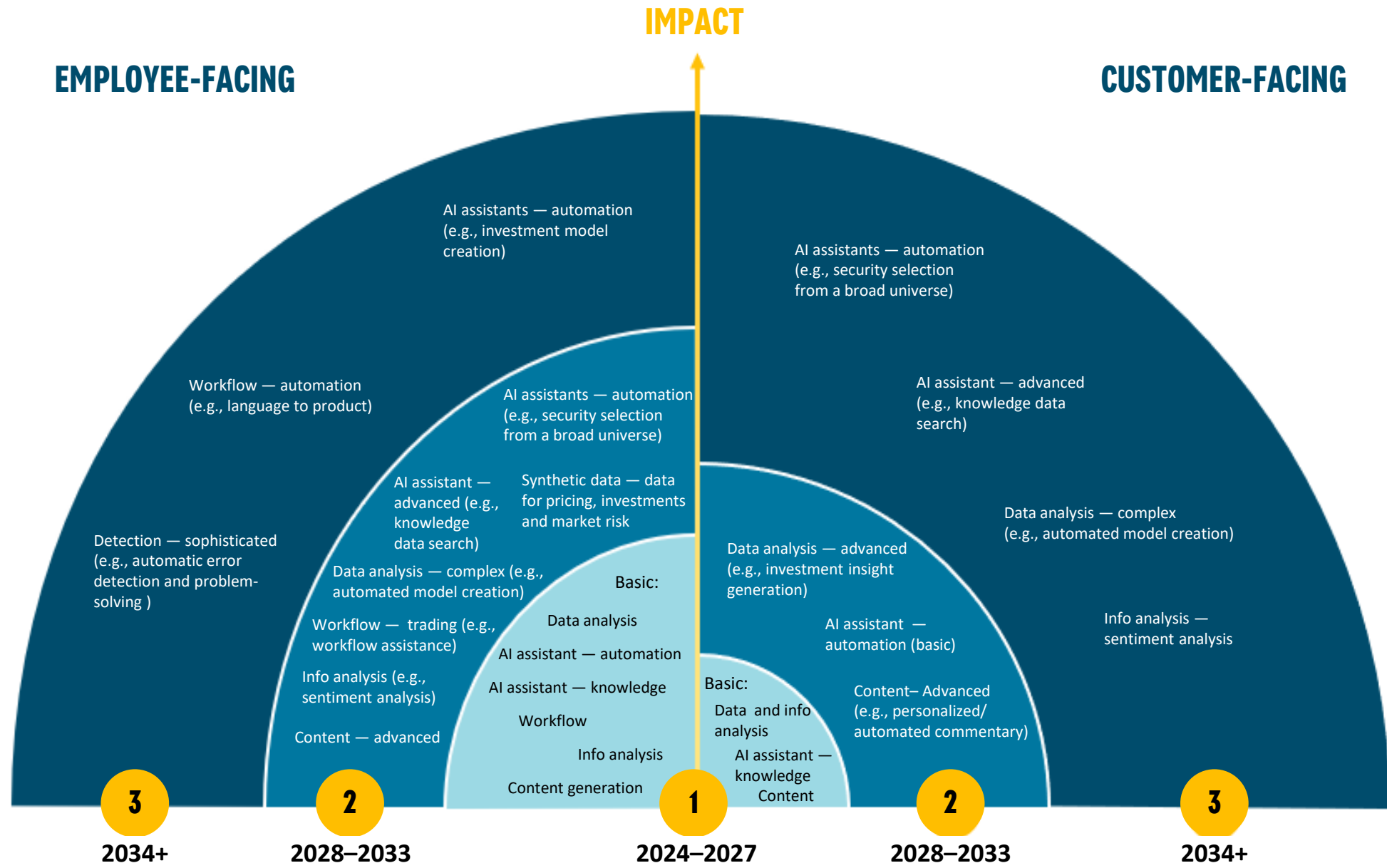
For this analysis, we focus on waves one and two of GenAI adoption. While the third wave will undoubtedly create more value, we believe the uncertainty of outcomes does not allow for such a granular analysis.

TRADING AND INVESTMENT MANAGEMENT: HIGH-LEVEL USE CASES

Celent has arrayed use cases specific to trading and investment management within its WaveGram.

Many applications in the trading and investment management space will first be rolled out internally before being made available to clients to ensure accuracy and regulatory compliance.

As model accuracy and confidence in GenAI outputs grow, Celent expects that capital market participants will act aggressively to realize competitive advantage, fearing a winner-takes-all outcome.





Use Case Type	Avg. Impact	WAVE		
		1	2	3
Content generation		Creation of market commentaries based on selected interests	Creation of personalized market commentaries	
		Creation of summaries of publications with investment implications		
Synthetic data generation		Data generation for scenario analysis	Data generation for pricing and market risk models	
			Creation of multiple versions of documents with investment implications for analysis prior to publication (central bank or earnings statements, etc.)	
Data analysis — including augmentation and visualization		Natural language data visualizations	Portfolio optimization suggestions/ alternative investment options/ideas	
		Image analysis for ESG (emissions)	Demand trend analysis for investment direct to clients	
		Image analysis for economic activity		
		Demand trend analysis for investment		
Information analysis — including synthesis/ summarization		Natural language data queries	Sentiment and headline analysis	Sentiment change outcome suggestions (direct to client)
			Market impact studies of textual data with investment implications	
			Sentiment change outcome suggestions	



Use Case Type	Avg. Impact	WAVE		
		1	2	3
AI assistants — automation/ decision-making		Natural language model parameter adjustment	Real-time ESG fact/claim checking tool	Analyst investment model component determination
		Natural language data analysis (e.g., transaction data)	Security selection suggestions	Complex model/analytics creation/ adjustment (direct to consumer)
			Analyst model input suggestions	Auto hedge for limited products
		Natural language creation of complex models/analytics creation/adjustments		
		Hedge solutions generation		
AI assistants — knowledge source		Natural language data search using proprietary and public data (RAG assisted)	Natural language data search using proprietary and public data	
Workflow improvements/ redesign/automation		Creation of natural language trading workflows	ESG materiality maps	Automatic trading workflow creation
		Natural language trade booking with autofill from multiple sources (chat, voice etc.)	Trading workflow suggestions	Writing smart contracts for deployment on the blockchain using natural language
Detection/problem solving		Improved early warnings of clearing issues and complex workflows	Suggested problem-solving for complex workflows	Automatic error detection and problem-solving for complex workflows

CELENT DISTINGUISHES USE CASES ACROSS CAPITAL MARKET PARTICIPANTS (1/2)

Capital markets are not one type of entity, but a number of different entity types that together create an ecosystem. In order to do justice to the diversity of use cases we are likely to encounter, Celent distinguishes between four main types of entities in capital markets. Here we concentrate on the demand side of capital markets, including wealth management (WM) and the buy side.



Wealth Management

Wealth Management, Private Banking

Roles:

- Investment advisory
- Portfolio selection
- Financial/estate planning
- Risk and portfolio management

Differentiated focus and impact for WM:

Wealth managers have the greatest need for personalized content generation. They are trying to serve as many clients as possible, all of whom seek personalized financial planning. GenAI use cases that digest and summarize market insights and new product information will also be of high value, as will AI assistants that open up knowledge libraries, initially to advisors and later to clients. Celent believes one first-wave automation possibility is creating personalized talking points for advisors to engage clients and prospects — an example of automation with a human in the loop.



Buy Side

Asset Managers, Asset Owners

Roles:

- Asset owners/allocation
- Investment research
- Portfolio management

Differentiated focus and impact for the buy side:

With a heavy interest in analysis and a large depository of research data, buy side participants will continue to find value in using GenAI for data analysis, as well as analyst AI assistants that make interacting with and finding data easier. Some areas of the buy side (such as Hedge Funds) will have a lower regulatory burden and a direct path of investment to revenue via tradable insights, making them the most likely front runners of adoption during the Wave 1.

Given compressed clearing timeframes and increasing electronification of markets, workflow automation will also be a target.

	Wealth Management		Buy Side	
Waves	1	2	1	2
Data analysis				
Information analysis				
Content generation				
Synthetic data generation				
Co-pilots — knowledge source				
Workflow improvements/automation				
Code management/development				
Error detection/problem-solving				
Co-pilots — automation/decision-making				

CELENT DISTINGUISHES USE CASES ACROSS CAPITAL MARKET PARTICIPANTS (2/2)

The sell side and FMIs create the capital markets ecosystem and facilitate its transactions. The transactions they enable and the interactions they have across products generate a large amount of data that is often unstructured and well suited for GenAI. Additionally, GenAI can assist with much of the technological development that is necessary to both create and upgrade the ecosystem.

	Sell Side		FMI	
Waves	1	2	1	2
Data analysis				
Information analysis				
Content generation				
Synthetic data generation				
Co-pilots — knowledge source				
Workflow improvements /automation				
Code management/ development				
Error detection/ problem-solving				
Co-pilots — automation/ decision-making				



Broker-dealers and banks

Roles:

- Intermediaries between asset owners and issuers/primary markets
- Secondary market liquidity provision/transaction facilitation

Differentiated focus and impact for the sell side:

With a client base of large, high-value clients with whom companies often have deep relationships including many language-based interactions (chats/phone calls), the sell side will be looking for insights from GenAI into how to serve customers better to increase market share. These players bear a heavy regulatory burden and will be slower to act than others, so Celent expects much of GenAI's value to this group to arise in Wave 2.

As they are under pressure from technology-forward alternative providers as well as regulations, sell side participants will also find value in workflow reconfiguration, code management, regulatory and legal drafting, and investment analysis.



Exchanges, clearing houses, marketplaces, and data providers

Roles:

- Central counterparties
- Clearing and settlement
- Payment systems
- Securities and trade repositories
- Data providers

Differentiated focus and impact for FMIs:

With a different level of regulatory scrutiny and large amounts of data, FMIs are likely to find value in utilizing GenAI for data analysis and AI assistants. This will allow customers to extract more value out of the data and to use the data more easily. Some of these models are already in production via RAG, and it is likely that data analysis will more directly involve GenAI in the future.

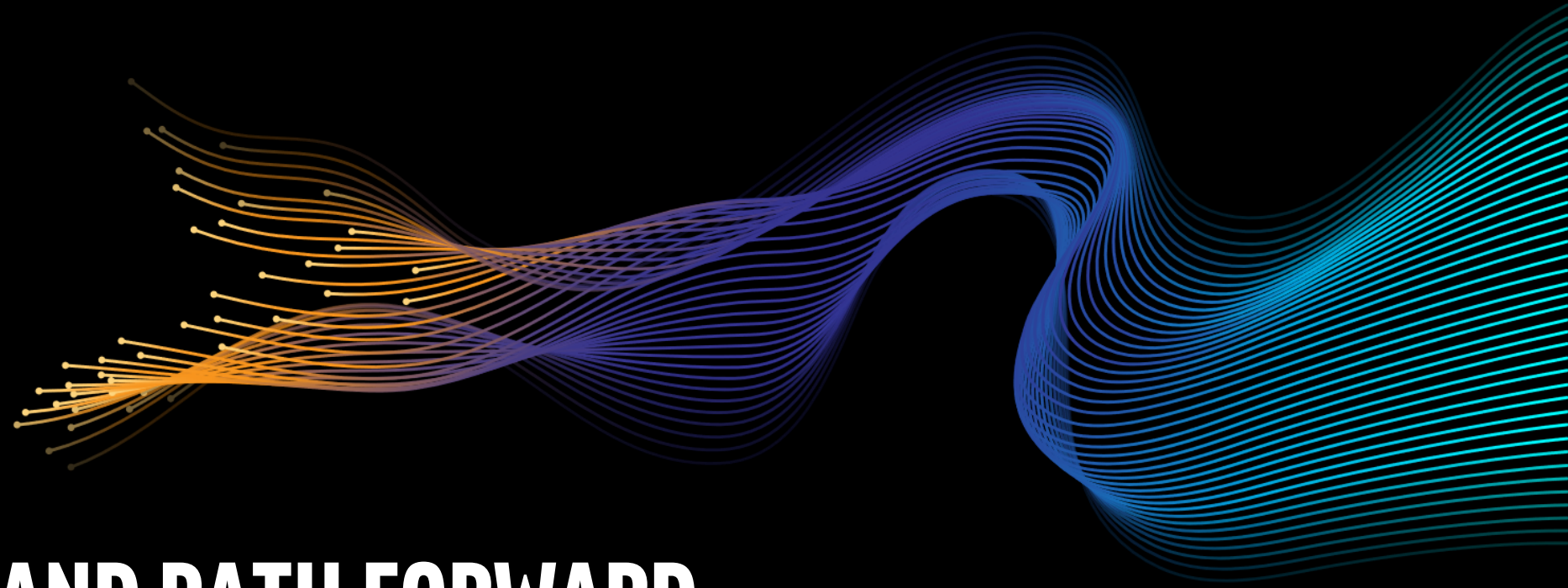
Other focus areas are workflow enhancements and error handling.



THE OVERALL IMPACT ACROSS CAPITAL MARKETS IS POTENTIALLY GROUNDBREAKING

	Capital Markets	Wealth Management	Buy Side	Sell Side	FMI's
Data analysis including augmentation/ visualization					
Information analysis including synthesis/ summarization					
Content generation					
Synthetic data generation					
AI assistants — knowledge source					
Workflow improvements/ redesign/automation					
Code management					
Detection/problem-solving					
AI assistants — automation/decision-making					

07






CONCLUSIONS AND PATH FORWARD

CLOSING THOUGHTS

	Details	Implications
<p>GenAI tech will evolve faster than other historical tech breakthroughs.</p>	<p>Prior to the emergence of GenAI, many FIs had been using AI for over a decade, meaning they already had experience in the ins and outs of harnessing AI. But GenAI is unlike any other AI breakthrough in terms of its pace of advancement and potential for transformation. It will spur an acceleration in data and tech infrastructure modernization. It will also unleash intense competition amongst FI tech providers. There will be a few brakes on development as regulatory frameworks are set and legal challenges are resolved.</p>	<ul style="list-style-type: none"> • FIs need to start game planning and learn about their tech providers’ GenAI initiatives. • They should approach GenAI adoption as a marathon with sprints in between, balancing the drive to adopt with the need to make wise tech and use case choices. • They should be patient and committed, since ecosystem development (datasets, models, and applications) takes time and resources. Their commitment to building an ecosystem is vital for a successful move to production.
<p>Opportunities for scaling and extending are relatively strong.</p>	<p>Despite differences in products/services, banking and capital markets share clients and components of the value chain, giving them common GenAI use cases. As a result, they can leverage successful implementation in one line of business in another.</p>	<ul style="list-style-type: none"> • FIs should take an enterprise-level view of GenAI adoption and the underlying tech infrastructure modernization it requires. • To maximize return, it is imperative to take advantage of resource-, experience-, and cost-sharing across businesses.
<p>A multiplier effect is expected.</p>	<p>Many use case types (e.g., AI assistants) show potential to move from low-impact to high-impact applications as models improve, costs decline, and risks are mitigated. Experience drawn from initial use cases will prove highly valuable in implementing and scaling higher-value use cases when they become feasible (e.g., the migration from customer AI assistants that “do it for me” to those that “advise me”).</p>	<ul style="list-style-type: none"> • FIs should not wait until the GenAI frontier is pushed out, but rather identify promising current use cases to explore. • Successful ecosystem development will pay dividends by enabling easier and faster adoption of higher-value use cases.

THE WAVES: PATH FORWARD

Celent's WaveGram allows us to look past the current situation of high potential but uncertain outcomes to determine the future state of GenAI.

ADOPTION WAVE	PATH FORWARD
 1 2024–2027	<p>Despite the uncertainty surrounding regulation and risks, FIs need to invest today to establish the organizational dynamic and infrastructure to support GenAI adoption. FIs that stand on the sidelines are at risk of competitive disadvantage. During Wave 1, the GenAI ecosystem will mature and many capital markets and banking participants will bring several use cases into production. These early movers and fast followers will benefit from momentum in their next use cases. Therefore, Celent encourages all FIs to examine low-risk use cases and identify at least four to explore and at least one to move into production. We counsel FIs to be prepared for nonlinear development and ebbs and flows as breakthroughs — either organizational or technological — are needed.</p>
 2 2028–2033	<p>The competitive GenAI game will not be over in Wave 1. During Wave 2, capital markets and banking players still have an opportunity to reach their full GenAI potential.</p> <p>Celent advises FIs to be ready for an acceleration of use case deployment. We anticipate that the ecosystem will reach maturity and technological advances will push out the use case frontier. Use cases will no longer be concentrated in standalone applications but instead will extend across value chains and workflows. To take advantage of new opportunities, FI will have to dedicate more resources at both the enterprise and business levels and galvanize greater organizational buy-in than in Wave 1. Steady investment in enhancing the AI platform and ensuring enterprise knowledge sharing will remain vital to building on top of previous models and implementations.</p>
 3 2034+	<p>Celent's recommendations to FIs for Waves 1 and 2 pay dividends in Wave 3. GenAI value creation will likely not be tapped out by 2034. While most use cases generating low to moderate value will likely have been implemented, additional high-value use cases (e.g., entire workflows are driven by AI agents) will remain. Releasing some of the more creative features of GenAI, there is a potential for GenAI to develop completely new features, products and income streams that we can not imagine today. The feasibility of implementing these use cases for an FI will depend on the GenAI capabilities it has built and the risk mitigation it has achieved over the past decade. The playing field will not be level and select FIs will clearly be in the lead.</p>

CAPITAL MARKETS AND BANKING LEADERS ARE THINKING IN THE LONG TERM WITH WAVE 2 AND EVEN WAVE 3 IN SIGHT

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Currently, it's all based on human decisions, but the next iteration of this could be where we move the risk paradigm and start performing actions on it.

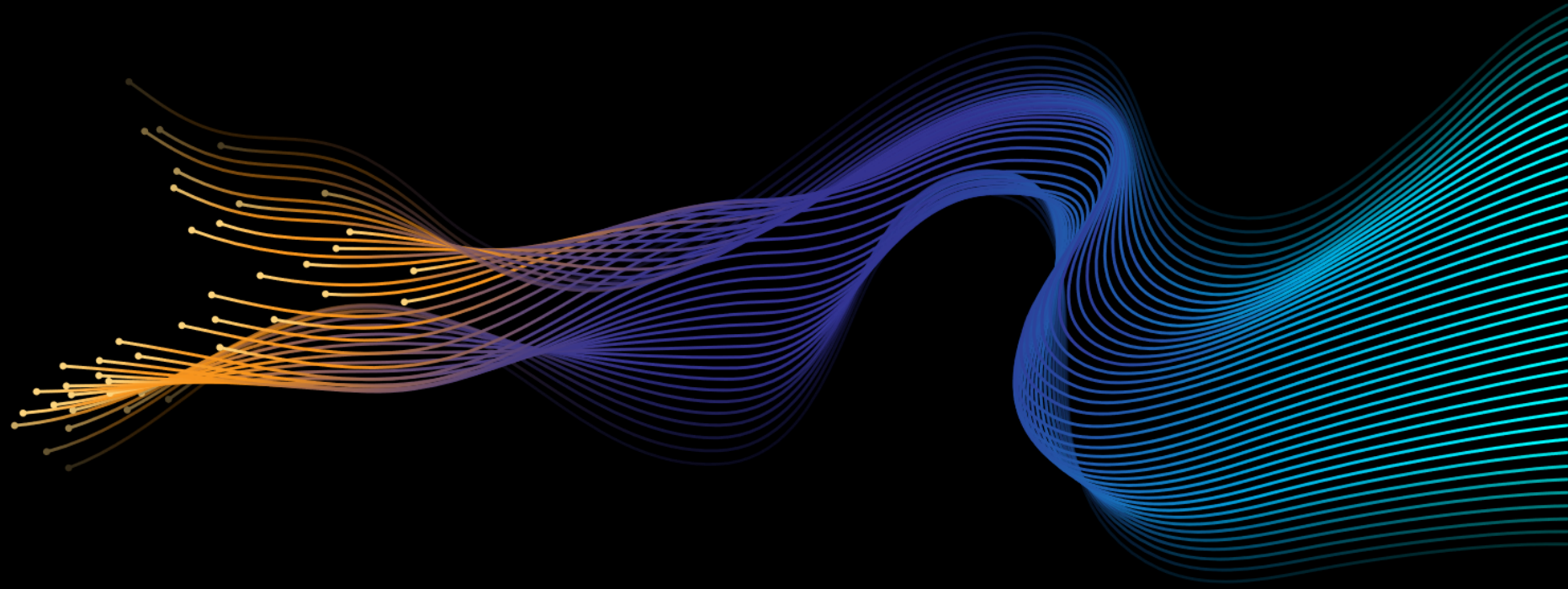
Erin Stanton, Global Head of Portfolio and Trading Analytic Client Support, Virtu Financial, [“Generative AI gaining traction in derivatives markets”](#), FIA, Oct 2023

“

Many of the things we're doing at NatWest [with GenAI]... help us take out costs, become more efficient, do our jobs better, but the differentiators feel like things where the stochastic parrot can come up with an idea we haven't ever seen before.

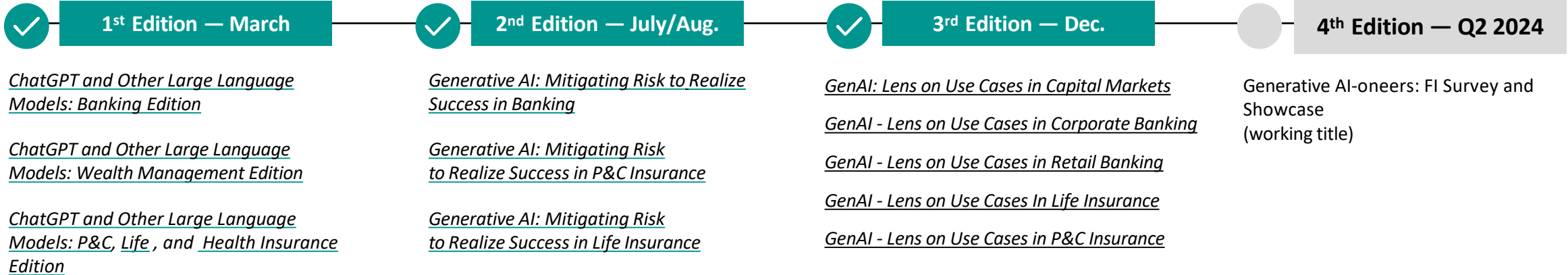
Zachery Anderson, Chief Data & Analytics Officer, Natwest Group, [AWS re:Invent 2023 - How to deliver business value in financial services with generative AI](#), Nov 2023

CELENT RESEARCH



CELENT'S GENERATIVE AI RESEARCH IS EXTENSIVE KEEPING PACE WITH ADVANCES AND OPPORTUNITIES

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[ChatGPT and Other Large Language Models: What Non-techies Need to Know](#)

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[Generative AI and Large Language Models: A Snap Poll for the Celent Executive Panel](#)

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Q1 2024

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