whitepaper

The Generative AI Revolution: Transforming Industries and Redefining Innovation

In recent years, we have witnessed an unprecedented surge in the interest in Generative AI. This revolutionary technology is moving rapidly from research labs and conference papers to the front lines of business. It is seeping into everything, from transforming industries to redefining the very essence of innovation. In this paper, we will delve into the profound impact of generative AI, exploring its applications across various sectors and contemplating the future it promises.

In July and August 2023, a survey was conducted by LTIMindtree, which included 450 decision-makers from organizations with annual revenues exceeding $250 million. These organizations were focusing on Gen AI adoption. Our report, The State of Generative AI Adoption: The Current Landscape and Lessons from Early Adopters, delves into what sets the leaders in generative AI apart and how others can emulate their success.

Its findings reveal widespread experimentation with Gen AI tools despite their relative novelty. Respondents embrace experimental use and anticipate a profound transformation within their industries. Early adopters share a common vision: harnessing Gen AI to elevate customer experience, drive revolutionary product design, and unlock the transformative capabilities of data analytics. Gen AI is proving to be a sound investment for these pioneers, delivering benefits such as improved operational efficiency, greater revenue, and streamlined costs. Consumer-facing industries, like retail and manufacturing, are at the forefront of Gen AI adoption, utilizing personalization and predictive analytics.

It is clear that this technology is becoming the go-to tool for multiple industries driving product design/innovation. It is optimizing processes, driving more productivity, and, most importantly, elevating personalized customer experiences.

So, it is not surprising to see a Gartner forecast suggesting that by 2026, generative AI will automate 60 percent of design efforts for websites and mobile apps, and by 2027, nearly 15 percent of new applications will be generated by AI without a human in the loop . This has led to enterprises inferring that it is time to start pushing generative AI into their organizational workflows. However, many are discovering the strategic challenges this task entails. A majority of generative AI discussions center on identifying the right use cases. Our research report, called The State of Generative AI Adoption, reflects this—80 percent of organizations in the US we polled said that selecting an appropriate use case is a key success factor and a barrier to adoption. The other key challenges they faced were picking a platform to leverage the technology and integrating it with existing infrastructure, followed by data availability and high confidence in data quality. Organizations know that if they get these three challenges right, they will fly; otherwise, they will falter.

Generative AI has garnered extraordinary business attention because of its power to create new content with uncanny human precision. It uses Large Language Models (LLMs) to recognize objects and ideas, summarize information, write essays, articles, and emails, prepare Q&As, extract insights, personalize or localize content, create contracts, monitor compliance, improve customer interaction, enhance search, etc., based on simple natural language prompts.

These capabilities have begun to trigger disruptions at work on a global scale. However, it is critical that all employees, including those without AI expertise, must have access to generative AI. Organizations that have embraced the generative AI journey are facing various technical challenges. Discussions with these organizations reveal the most critical challenge: "How can I protect my data and AI models from unintended use while boosting productivity and extracting data insights?"

Gartner analysts hint that organizations may not be adequately prepared to embrace generative AI but could go ahead nevertheless. "There is a pressing need for a new class of AI TRiSM tools (AI trust, risk, and security management) to manage data and process flows between users and companies who host generative AI foundation models," says Gartner analyst Avivah Litan.

Snowflake, one of the leading data platform companies and a strategic partner of LTIMindtree, has recently launched Cortex, designed in response to this urgent need.

Snowflake's platform has enabled many customers to break down data silos and to incorporate a wider range of development directly into their data. Their new, intelligent, and fully managed service is designed to help organizations analyze data quickly and build AI applications within Snowflake. Snowflake Cortex allows users of any skill set to access industry-leading AI models, LLMs, and vector search functionality, and experiences completely powered by LLMs. With these innovations, all Snowflake users can leverage the power of generative AI and access dynamic insights with their enterprise data, whether they are technical experts or not. The platform provides a foundation to take advantage of generative AI securely and effortlessly without compromising security, safety, or performance

(see Figure 1: Snowflake platform overview).

Figure 1: An overview of GenAI and LLM capabilities in Snowflake

The Snowflake platform:
A foundation for generative AI

Snowflake Cortex provides Snowflake users with access to leading ML and LLM models, offering intuitive experiences and serverless functions. It allows users to get more value from their enterprise data quickly and securely. There is no need for specialized AI expertise or a complex infrastructure. Further, Snowflake Cortex provides the building blocks to create custom AI apps in the Data Cloud in minutes.

The platform lets users run leading LLMs in Snowflake using Snowpark Container Services and even fine-tune them. Built-in LLMs help gain smarter insights and boost productivity. The platform includes components that automate workload optimization, enhance the developer experience for machine learning workflows, and deliver unified role-based access controls for data, AI models, and applications. These are invaluable foundational capabilities that organizations need to prioritize before they launch their generative AI journey.

Organizations are aware that data is their most valuable asset. The Snowflake platform safeguards their data from unintended use, leveraging industry-leading features such as row-level controls and PII masking. Components like Snowflake Cortex allow users access to LLMs and vector search natively, i.e., without moving their data outside their organization's governed boundaries. They can also integrate with a Streamlit open-source Python library for front-end development to build and deploy LLM applications on SPCS, contextualized to enterprise data in minutes.

Additionally, organizations have always aimed to ensure their developers are not constrained. This prime objective is now achievable. Developers can build and deploy using scalable Snowpark Container Services that help register and deploy container images that fine-tune LLMs all inside Snowflake. With Snowpark Container Services, developers find deployment, operations, and management effortless. This is possible because stitching together a container registry, container management service, and compute service manually is not needed anymore. The need for separate observation tools, data connectivity, and security has also been eliminated.

In the age of generative AI, SQL users and business analysts want to derive value from their data without investing in custom development. Snowflake's pre-built UIs analyze documents with Document AI and transform natural language questions to SQL code using Snowflake Copilot. They also use Universal Search to find the most relevant apps and data that fit perfectly with the business goal of avoiding custom integrations and front-end development.

With no operational complexity and features that support developers and non-coders, organizations using generative AI can quickly monetize their IT investments. They can improve user experience and keep models, operations, and outcomes within the governance guardrails while using and managing data from multiple sources.

What use cases can be solved with generative AI?

All advancements in platform and democratization of Gen AI translate to multiple opportunities for Enterprises. GenAI-powered solutions can help businesses solve complex problems in engineering, functional areas, and industries. It is empowering businesses to drive growth, improve efficiency, and stay ahead of the competition.

Industry Solves

Conversational Commerce, Pricing Recommendation, Creative Assistance	Personalized Recommendations, Financial Advisory &Capital Market Research	Machine Events Monitoring, Supply Chain Assistants	Media Content Discovery Creative Assistance Media Search	Digital Patient Concierge Clinical Trial Report Generation

Functional Solves

Marketing Co-Pilots	Sales Hub Copilots	Customer Service Copilots	Supply Chain Copilots	Enterprise Search Copilots	Ticket Classification	and many more

Engineering Solves

NLP/NLG based insights	GenAI Led Co-pilot reporting	Synthetic Data Generation	GenAI enabled Data Governance	Document Summarization	GenAI led automation	Intelligent Bots
Code Generation	Code Validation / Optimization	Test Case Automation	Platform Co-Pilots	GenAI enabled MDM	Content Creation	and many more

Engineering Solves

Generative AI engineering co-pilots are tools and applications designed to assist engineers, designers, and developers in various tasks. These co-pilots can streamline workflows, improve efficiency, and enhance the SDLC process. Here are some examples of engineering co-pilots powered by generative AI:

Code assistance: AI-powered co-pilots assist software engineers in writing code by providing intelligent suggestions for variable names and functions and even offering entire code snippets. It can be integrated into various code editors, making programming more efficient. This can significantly speed up the coding process and reduce errors.

AI-powered test case generation: Co-pilots can aid in the creation of test cases by analyzing the code and identifying potential areas that require testing. This helps ensure comprehensive test coverage and improves software quality.

AI-generated content creators: Generative AI models, such as OpenAI's GPT-3, are used to create blog posts, articles, and creative writing content. These co-pilots aid writers by suggesting ideas, completing sentences, or even generating entire pieces of text.

Other useful use cases are related to PII in unstructured data, AI-assisted simulation and modeling, document summarization, generation, etc.

Functional solves

Functional co-pilots powered by generative AI refer to intelligent tools and applications that work alongside individuals. They enhance their capabilities and streamline various repeatable tasks across specific domains. These co-pilots leverage algorithms to generate content, provide suggestions, and perform tasks collaboratively. Here are several examples of functional co-pilots in different contexts:

Marketing Copilot:

A marketing copilot powered by generative AI can assist marketers in various aspects such as campaign creation, content generation, SEO optimization, automated social media post generation, personalized email generator, creative ad generation, chatbots, virtual assistance, etc. Incorporating a marketing copilot into the workflow can increase efficiency, create more effective campaigns, and provide a deeper understanding of customer behaviors.

Supply Chain Copilot:

A Supply Chain Copilot powered by generative AI leverages intelligence algorithms to enhance decision-making, optimize processes, and improve overall efficiency within the supply chain. Here are several ways in which a Supply Chain Copilot can revolutionize the management of supply chains.

Sales Copilot:

AI-powered sales can assist professionals throughout the sales process, leading to enhanced productivity, improved decision-making, and, ultimately, more successful sales outcomes. A few GenAI use cases around the sales process are Automated Lead Scoring, Sales collateral generation, automated follow-ups, competitive analysis, customer profile matching, personalized messaging and outreach strategies, real-time suggestions during sales calls, offering insights into customer preferences, objection handling, and even recommending the next best steps in the conversation.

Customer Service Copilot:

A Customer Service Copilot assists customer service representatives to enhance the overall customer support experience. It leverages artificial intelligence to streamline processes, provide real-time assistance, and improve customer satisfaction. Here are several avenues within customer service operations that a Customer Service Copilot can transform: Automated Ticketing and Triage, AI-Powered Virtual Assistants, AI-Enhanced Troubleshooting and resolution for service desk ticket, AI-Powered Knowledge Base Updates, and real-time language translations.

Industry solves

Businesses know that generative AI is versatile and accessible (anyone can try it with freely available generative AI platforms). The technology can, if done right, have a low cost of entry—making it tempting to take a quick, deep dive into embracing it. The challenge lies in leveraging generative AI to transform fundamental business processes by aligning the technology to a specific domain/business.

GenAI can help address unique challenges businesses face with high-impact use cases in various sectors such as retail, CPG, healthcare, finance, and manufacturing. These solutions are tailored to meet the industry's needs and help businesses improve operations, reduce costs, and increase efficiency. Some high impact use cases are:

🛒 Retail & consumer packaged goods:

A National Retail Federation (NRF) report says that generative AI is already helping retail marketing professionals save 20 hours a week and greatly impacts revenue growth. The Retail and CPG industries can save time and improve accuracy through automated product descriptions for inventory management, POS applications, order management, and e-commerce websites. It can offer consumers a simplified product discovery with visual search and image recognition. Generative AI can be used for story building, analyzing consumer sentiment that drives data-based sales and marketing programs, and product development. It can aid with creating personalized MarTech campaign messages with customized recommendations and promotions, SKUs, and pricing decisions. The technology can help the industry answer complex questions such as:

What was the consumer sentiment on Product X in the last week?

What products should be promoted to a customer given their recent purchases?

How does a customer's location influence their future purchases?

🏦 Banking and finance:

A McKinsey report published earlier this year suggests that the Banking industry will see a significant productivity impact at the hands of generative AI and could drive 2.8 to 4.7 percent of revenues. There are several ways of achieving these gains—improving customer service while lowering costs through generative AI-driven virtual customer assistants, compliance management, cognitive fraud detection, portfolio optimization for wealth management, and intelligent claims management for insurers. The technology can help the industry answer complex questions such as:

What are the top ten news events relevant to my portfolio?

Did I have any withdrawals greater than 1% of my net assets?

How will ignoring vehicle maintenance for the next month impact my insurance?

Manufacturing:

A World Economic Forum report says that manufacturing executives are excited about the technology, with 64 percent agreeing it can drive improvements in production efficiency . The manufacturing industry can quickly unlock and access these gains through image-based component search and guide field engineers for better performance and reduced cycle time. Cobots can be programmed to work alongside human workers on the shop floor, assisting in repetitive or physically demanding tasks. This will improve productivity, identify defects and anomalies in manufactured products, and conduct root cause analysis on the anomalous behavior of assets. It will also predict when the equipment is likely to fail, improve order to cash, and generate financial reports that typically require coordination between multiple resources across the organization. The technology can help the industry answer complex questions such as:

- **What is the root cause of an error from a sensor on my shop floor?**

- **How can order quoting and delivery of parts be optimized for cost and made 100 percent on time?**

- **Which suppliers fit conditions (such, bill of materials specifications, availability, and sustainability criteria)?**

Healthcare and life sciences:

A McKinsey report says that the pharma and medical products sector will see a 2.6 to 4.5 percent gain in revenue, thanks to generative AI adoption leading to productivity improvements. Likewise, the healthcare industry will see a 1.8 to 3.2 percent gain. Pharma and healthcare have a wide range of interesting use cases with the potential to provide doctors with conversational support for better diagnosis; NLP algorithms can extract valuable information from unstructured EHRs and improve care through adverse event detection. They can also lower the cost of care by accelerating research and drug discovery. AI models can analyze behavioral and biometric data to predict and monitor mental health conditions and accelerate research and development efforts. The technology can help the industry answer complex questions such as:
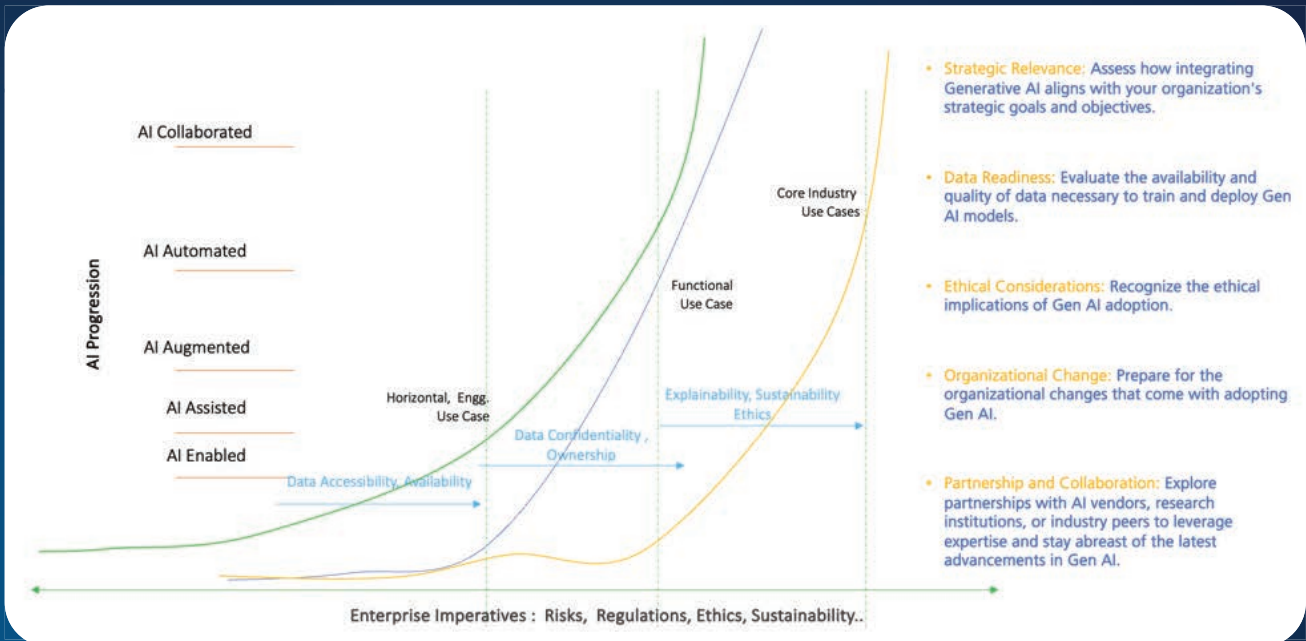
- **Are there any citations of a particular gene variation causing a specific medical condition?**

- **Can patient interactions be turned into clinical notes to save time and make better treatment recommendations?**

- **How can we help patients draft accurate and timely preauthorization and appeal letters?**

Where does the journey begin?

Every organization will, sooner rather than later, start a generative AI journey. It is a technology that will underlie the success of almost every business initiative. However, many will certainly stumble over decision-making and falter when creating strategic roadmaps. These failings will prove expensive in terms of time and cost—letting competition gain the advantage. This need not be the case. The Snowflake-LTIMindtree partnership is meant to ensure organizations can adopt generative AI with confidence and without the pain of having to assess the baffling number of options before them.

The graph below shows the progression of Gen AI with enterprise initiatives.

Graph axes:
- AI Progression (vertical axis) with levels: AI Collaborated, AI Automated, AI Augmented, AI Assisted, AI Enabled
- Enterprise Imperatives : Risks, Regulations, Ethics, Sustainability.. (horizontal axis)

Labels: Core Industry Use Cases, Functional Use Case, Horizontal, Engg. Use Case, Explainability, Sustainability, Ethics, Data Confidentiality, Ownership, Data Accessibility, Availability

- **Strategic Relevance:** Assess how integrating Generative AI aligns with your organization's strategic goals and objectives.
- **Data Readiness:** Evaluate the availability and quality of data necessary to train and deploy Gen AI models.
- **Ethical Considerations:** Recognize the ethical implications of Gen AI adoption.
- **Organizational Change:** Prepare for the organizational changes that come with adopting Gen AI.
- **Partnership and Collaboration:** Explore partnerships with AI vendors, research institutions, or industry peers to leverage expertise and stay abreast of the latest advancements in Gen AI.

How are we helping our customers adopt GenAI?

In a landscape where Gen AI often remains within the realm of Proof of Concepts and sample Use cases, LTIMindtree is breaking ground by delivering multiple scaled projects for our clients. Fundamentally, we are looking at influencing business outcomes across three dimensions:

1. Accelerating revenue growth

2. Accelerating operational efficiency

3. Accelerating tech modernization

Below are a few real-world use cases and examples we are working on with our clients.

Accelerating revenue growth for clients

- Optimizing product page content with trending keywords using Gen AI helped an American multinational consumer goods corporation grow website traffic and increase revenue.

- We helped a British multinational FMCG company enhance deal conversions and decision-making by deploying a Gen AI-enabled Sales Assistant. This AI-powered assistant helps sales staff with real-time natural language queries and competitive product pricing analysis across multiple global centers and languages.

Accelerating operational efficiency for clients

- Automating 70% of processes for fund research report generation for a leading financial services consulting firm reduced the turnaround time. It provided researchers with a final draft and allowed final adjustments, leading to faster time-to-market and lower operational costs.

- A prominent consumer goods company could transform marketing designs with automated and cost-efficient product images for marketing materials using Stable Diffusion models.

- Accelerating tech modernization journeys for clients

- We've facilitated app modernization for a leading insurance firm by leveraging GenAI to convert Cobol to 3GL, significantly enhancing app performance and efficiency.

- A Fortune 200 company, on a journey toward modernization, employed Gen AI-based copilots to convert large stored procedures into Java.

Conclusion

The generative AI revolution is not merely a technological advancement; it's a paradigm shift reshaping how we create, innovate, and interact with the world around us. As we navigate through this transformative era, it is imperative to approach the integration of generative AI with a careful balance of enthusiasm and responsibility. The true potential of this technology lies in its ability to augment human capabilities and redefine the possibilities of what we can achieve together. The generative AI revolution is not just about machines but the collective intelligence that emerges when human ingenuity converges with artificial creativity.

To summarize, enterprises are looking at speed to experiment, foundation capability to scale, and a Responsible AI platform with the right use cases. Our clients rely on the sharp differentiators that the LTIMindtree and Ecosystem partnership presents with its pre-built co-pilots, IP, platforms, and deep technology partnerships. All of these accelerate the realization of value and cost savings and provide safe and secure processes and opportunities for co-innovation.

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