GenAI strategy: From ideation to adoption

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Introduction

Driven by technology disruptions, cost pressures, climate change and other global megatrends, leaders of organisations have recognised the need to be more transformative in their approach. As result, they are focusing not only on reinventing their business model, but also on the operating and technology models that enable it.

PwC's 27th Annual Global CEO Survey underlined how leaders can thrive in an age of continuous reinvention.[1] Some of the key findings of the survey, which saw responses from 4,702 CEOs across 105 countries and territories are listed below:

- The impetus to reinvent is certainly intensifying. CEOs are expecting heightened pressure over the next three years due to evolving technologies, climate change and nearly every other megatrend affecting global business.
- 45% of the participating leaders are less confident that their companies would survive more than a decade on their current path.
- CEOs perceive huge inefficiencies across a range of their companies' routine activities, viewing roughly 40% of the time spent on these tasks as inefficient.

Another interesting outcome of the survey was that about 60% of CEOs expect generative AI (GenAI) to create efficiency benefits which could help them optimise some routine tasks. This indicates that this new technology is now approaching a transformative juncture, seemingly poised to alter business models, redefine work processes and reinvent enterprises as we know them today. Respondents of the survey also anticipate many positive near-term business impacts from GenAI, including increased revenues (e.g. through improved product quality and customer trust) and higher efficiency. These findings are consistent with PwC's Global Risk Survey 2023, where 60% of respondents tend to see GenAI as an opportunity rather than a risk.[2]

In our earlier thought paper 'Breaking creative boundaries – GenAI and its applications',[3] we discussed GenAI, its underlying technology and possible applications across industries and functions. Continuing the theme, in this thought paper, we will take a high-level look at the adoption models, challenges faced and the key considerations for the effective and responsible adoption of GenAI.

1. https://www.pwc.com/gx/en/issues/c-suite-insights/ceo-survey.html
2. https://www.pwc.com/gx/en/issues/risk-regulation/global-risk-survey.html
3. https://www.pwc.in/assets/pdfs/consulting/technology/emerging-technologies/intelligent-automation/breaking-creative-boundaries-generative-ai-and-its-applications-v1.pdf

Pillars of a GenAI adoption strategy[4]

Before businesses invest in adopting GenAI, they need to design a holistic strategy that covers the following:

Business landscape and opportunity

01

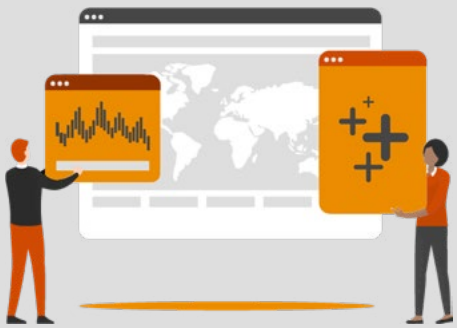
Technology, infrastructure and data

02

Risk, regulatory and sustainability

03

Leadership and workforce



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4. https://www.pwc.com/gx/en/issues/technology/striking-the-right-balance-with-genai-in-financial-services.html

01
Business landscape and opportunity

According to PwC's 2023 Emerging Technology Survey, 55% of the companies surveyed have implemented GenAI in some areas of their business, making it a priority for organisational leaders.[5] However, in the race to unlock the true potential of GenAI, organisations must:

- understand its strategic implications and identify the areas of opportunity to create value
- build trust in the technology, work towards the positive outcomes it can deliver, identity the important data sets and have the right data in the right place
- ensure they have the relevant protections and guardrails in place
- engage people and upskill them on GenAI technologies and leverage the human qualities of ethics and judgement along with domain expertise.

A robust approach for evaluating GenAI platforms should include not only the technology stack, but also the business challenges such as data security, compliance with government regulations, ethics and other risks.

Whether organisations pursue initiatives for bottom-up idea generation, top-down leadership decisions or both, leaders should align their GenAI strategy with enterprise strategies. They should have a clear understanding about the business objectives they intend to achieve using GenAI as well as the value it will provide.

With so many possible areas in which GenAI can be leveraged, it is important to have a method to understand and arrive at those where an organisation can focus its efforts. There are four primary vectors to consider – suitability, value, complexity and reusability.

Assessing these vectors can help with the prioritisation of potential GenAI use case implementations:

Suitability – aims at qualifying the opportunity and assessing GenAI applicability:[6]

- assessment of potential constraints
- size of the targeted task
- applicability of GenAI.

Value – funds the transformation. This is indicated not just by the role, but also by the importance of the activity for the end customer and the scale at which the GenAI solution can be applied:

- impact and value creation
- alignment to KPIs.

Complexity – assesses and deduce transformation cost and time. Aimed at arriving at the level of difficulty to develop the solution as well as managing the deployed solution safely in production:

- time, effort and resourcing
- data availability and access
- output risks and reliability.

Reusability – accelerates the transformation and helps gauge the applicability of the data sets, resources and infrastructure for subsequent use cases:

- gauging of reusability and replicability (R&R)
- ease of modifying
- ease of mitigating risks from reuse.

5. https://www.pwc.com/us/en/tech-effect/emerging-tech/emtech-survey.html
6. https://www.pwc.com/gx/en/issues/technology/striking-the-right-balance-with-genai-in-financial-services.html

Common concerns around integrating GenAI within a business ecosystem

02

Technology, infrastructure and data

A very important question that businesses need to ask themselves before embarking on their GenAI adoption journey is 'Do we have the technology, infrastructure and data readiness to embed GenAI within our enterprise ecosystem? If yes, where and how do we start?'

One of the key aspects of leveraging GenAI is identifying the most important data. Where is it? Is it clean and free of any biases? What's the infrastructure of the cloud environment that it resides in? This sounds very easy, but it's hard to do.

Many organisations start their GenAI journey using pre-trained models which require access to the organisation's internal data for successful implementation. Thus, timely availability of verified, clean and unbiased data through model tuning or augmentation is important.

There are a few prominent implementation models which vary in terms of ease of implementation, associated costs, data security concerns and accuracy of results. Large language models (LLMs) are foundational to text-, data- and voice-based use cases, and some of the approaches that organisations are likely to adopt while using these models to embark on their GenAI journey are explained below:

1. **Using existing available capabilities as is:** Conversational systems can leverage these models for better understanding of user context, engaging in multi-turn conversations across different sets of domains. The deep knowledge created through such a large volume of training data consisting of numerous sources assists the models in interpreting and responding to human interactions out of the box in common language tasks such as categorising data, summarising documents and translation.

2. **Enhancing results by improving prompts as part of workflows:** Prompts are integral to the functioning of an LLM. The more specific the question being asked is, the more specific the response from it will be. These prompts can help set the context of the task at hand. If, for instance, the model must interpret a query, some context to the problem and a few examples of the expected output will help in generating a more accurate result.

3. **Building custom models trained with custom data:** These highly generalised models can be trained on in-house datasets such as policy documents and frequently asked questions to be able to understand the specifics of a particular use case and give nuanced answers. It combines the skill to interpret and understand tasks with the ability to determine the exact data source which must be referred to.

However, these approaches come with their own advantages and limitations:

Use LLMs in your conversational AI as is	Coupling with workflow through prompts	Build custom models
Advantages		
• Quick results • Limited investments required • Ease of access	• Better targeted results • Group-specific prompt understanding • Low initial costs	• Better control over process and results • Accuracy of results • Data security
Limitations		
• Availability of real-time data • Verification of responses generated • Security and data leakage risks	• Manual training and output validation • Need to integrate and introduce proprietary data	• Heavy data curation and model training required • Significant investments

03

Risk, regulation and sustainability

In these early days of GenAI adoption, most companies are still trying to arrive at what they're trying to accomplish, where and why, given that it is a powerful and relatively new technology. As CEOs proceed, they must maintain a delicate balance between the new opportunities GenAI can unlock and the potential risks. It is critical that business leaders assess their organisation's structure in the areas of skills, infrastructure, ESG, regulatory compliance, data protection and governance.

A risk-based approach to GenAI helps organisations assess, identify, and mitigate risks and challenges concerning regulators, customers and other stakeholders.

Risk managers will have to manage new and amplified risks as well as a slew of business, legal and regulatory challenges.[7] Meanwhile, several nations have started investigations in response to complaints or concerns about GenAI's collection, use and disclosure of personal information without consent, in violation of data protection laws.

Hence, it's safe to say that although GenAI, as a technology, has immense processing power and can contribute significantly to improved performance and efficiency of tasks, it poses its own set of challenges when it comes to implementation. Continuing from the earlier section, we have tried to address some of these risks below from the perspective of LLM adoption:

1. Application design and architecture[8]

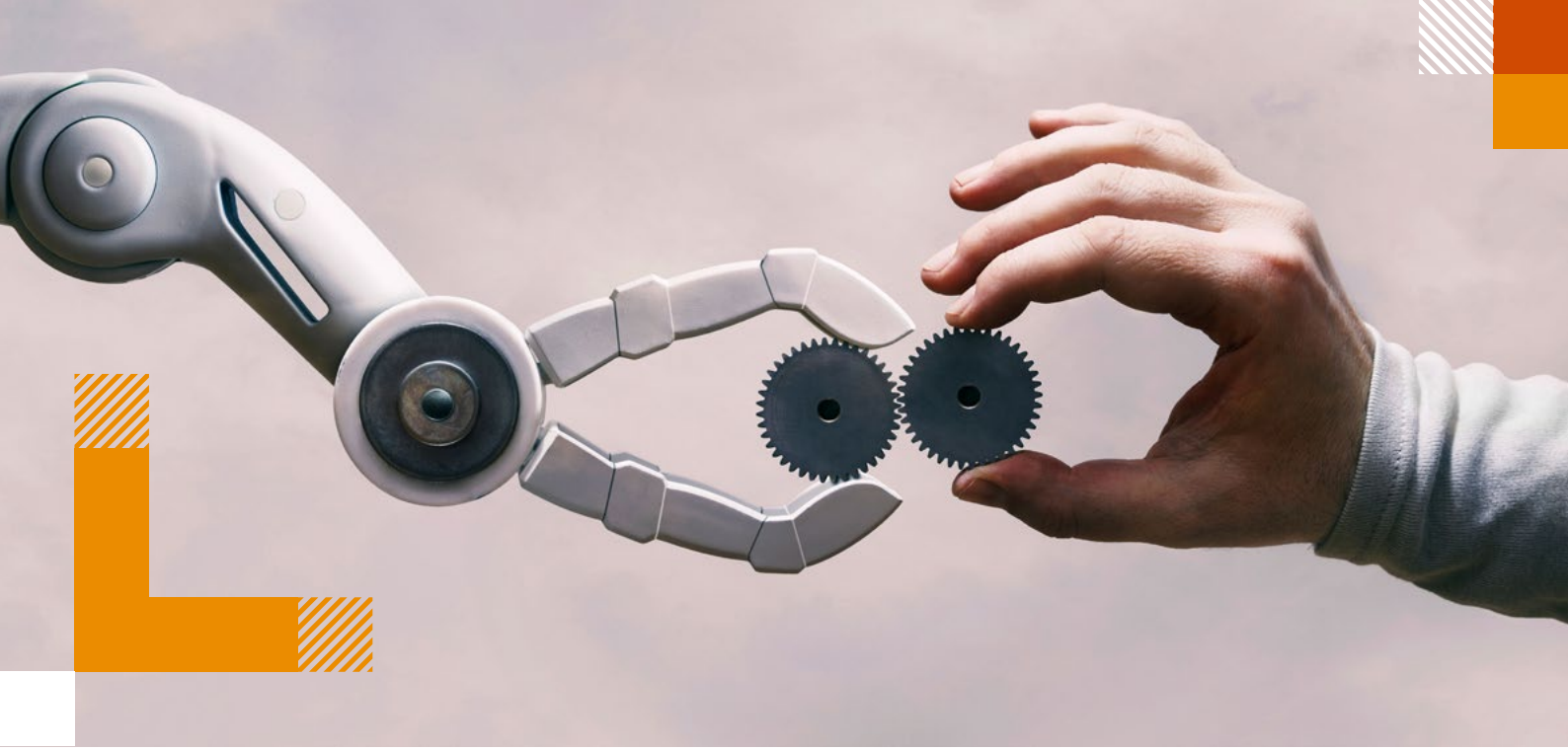
Several changes need to be implemented to add an AI-based functionality to existing systems and upgrade them to intelligent systems. One example is that as LLMs are stateless each interaction is independent, leading to limited context. Thus, when designing the application, it is important to develop a methodology for how the context of the use case is passed to the model. Once the language models are a part of the technology ecosystem, there is a need for observability which will require continuous monitoring to help in fine-tuning the workflow or prompts by grading the output. There will be a need to regularly plug in enhancements to make the application smarter through insights that are then derived from monitoring.

2. Data security

Organisations find it difficult to access GenAI solutions as government regulations dictate the use of locally trained models. For example, the use of AI in the EU is regulated by the AI Act, the world's first comprehensive AI law.[9] Large organisations have defined data security guidelines which mandate that data centres hosting some of the known LLMs be in strategic geographic locations, and unavailability of such guidelines leads to slow adoption.

Also, regulated industries like healthcare and finance have policies around sharing sensitive data with external services, which can prohibit the use of externally hosted LLMs. Models trained on proprietary data are more valuable than data itself as they are the blueprint of the process and have valuable insights. Both model security and data security are important and require a secure environment such as a private cloud or on-premise services.[10]

7. https://explore.pwc.com/generativeai
8. https://towardsdatascience.com/the-complexities-and-challenges-of-integrating-llm-into-applications-913d4461bbe0
9. https://www.europarl.europa.eu/topics/en/article/20230601STO93804/eu-ai-act-first-regulation-on-artificial-intelligence
10. https://www.forbes.com/sites/forbestechcouncil/2023/11/06/how-to-mitigate-the-enterprise-security-risks-of-llms/?sh=4b732be76e14



3. Product development

In the development stage, businesses need to decide the variety of models to be used for their products, whether they would need to fine-tune prompts or take them as is and the kind of infrastructure needed to train the model. In addition, they also need to closely monitor user access and track usage.

4. User/skills intervention – specialised talent

It is important to take into consideration the amount of manual effort that is required to develop, deploy and maintain AI systems. A significant factor is the constant monitoring of outputs for accuracy, usage, cognitive biases and prejudices.

Finding a skilled workforce at the organisational level is challenging due to the emerging nature of the field and niche nature of skill sets such as prompt engineering, data modelling, reinforcement learning, transfer learning, policy and governance experience. Limited formal education and training programmes contribute to the scarcity of experienced professionals. Interdisciplinary expertise, continuous learning and lack of standardisation further compound the difficulty in finding suitable candidates.

5. Concerns regarding outputs

a. **Hallucinations:** This is a term used to describe a scenario where a GenAI model provides false answers without a correct understanding of the context. For instance, AI-generated hallucinations – i.e. erroneous or nonsensical responses – can be passed off as fact.[11]

b. **IP infringements and exposure to confidential information:** Prompts and inputs containing confidential and personal information could be used and absorbed by the model for further training, leaking sensitive information in the process.[12]

c. **Training data biases:** Obsolete, biased or wrong training data could potentially generate insensitive, biased and inappropriate output.

d. **Generation of deep fakes and potential frauds:** Potential misuses of models could be generation and dissemination of fake news, misinformation, false attributes, false reviews, spam and phishing content.

6. Cybersecurity threats (social engineering and malicious content authoring)

With the advent of LLMs, there is an increase in cybersecurity threats. LLMs have the ability to generate highly realistic and convincing personalised messages as well as impersonate individuals. Hence, malicious actors can use them to perform sophisticated phishing attacks.

11. https://arxiv.org/pdf/2311.05232.pdf
12. Ibid.

Building a responsible and resilient governance model

AI models are trained with large sets of data and then derive and replicate patterns they identify into an output that can be text, image, audio or code. What's important to know is that at its core GenAI is limited to extrapolating information from only what it gets to see and comprehend. There have been cases where enterprises and individuals have faced the consequences of not closely examining the data that was fed into an AI model.

Responsible and trustworthy AI is therefore the need of the hour.[13] Embarking on a responsible AI journey would require organisations to consider and solve questions around strategy, controls (governance), responsible/ethical practices and core practice (implementation). Here is a brief look at each of these:

Strategy

- Data and AI ethics: Consider the moral implications of the use of data and AI and embed them into the organisation's values.
- Policy and regulations: Anticipate and understand key public policy and regulatory trends to align compliance processes.

Controls (governance)

- Enable governance and oversight of data and underlying systems across the three lines of defence.
- Ensure compliance with regulations, organisational policies and industry standards.
- Expand the traditional risk detection and mitigation practices to address risks and threats that are unique to GenAI.

Responsible/ethical practices

- Interpretability and explainability: Enable transparent model decision making.
- Sustainability: Minimise negative environmental impact and empower people.
- Robustness: Enable high-performing and reliable systems.
- Bias and fairness: Define and measure fairness and test the systems and outcomes against set standards.
- Security: Enhance cybersecurity of the systems.
- Privacy: Develop data lakes and systems that preserve data privacy.

Core practice (implementation)

- Problem formulation/evaluation: Identify the concrete problem you are trying to solve and whether it warrants a GenAI solution.
- Implementation standards: Assess the start point and current readiness for implementation. Leverage industry best practices and standards to create an internal guideline or playbook for implementing GenAI solutions.
- Continuous validation: Evaluate the model performance and continue to improve the design and controls for improved metrics.
- Monitoring: Conduct post-implementation reviews and continuous monitoring to identify risks.

13. https://www.strategy-business.com/article/From-principles-to-practice-Responsible-AI-in-action

Key considerations for responsible use of GenAI

With the increase in accessibility and adoption of new-age automation technologies, it becomes important for organisations to constantly review and strengthen their GenAI adoption and governance models. Without a comprehensive governance model for GenAI models, organisations expose themselves, their employees, their customers and their partners to a host of risks that can have severe repercussions on their business and market reputation.

Hence, it is important to consider the below aspects for the responsible use of LLMs:

- **Problem evaluation:** It is necessary to identify and be certain about the core problem to be addressed and whether it warrants an AI or machine learning solution.
- **Transparency:** Organisations must promote transparency by providing information about the technology's capabilities, limitations and potential biases to users and stakeholders. The aim is to make the decision-making process explainable, enabling users to understand why certain outputs are generated.
- **Accountability and responsibility:** Assigning clear ownership and accountability for the use of the technology within organisations is important. This can be done by defining guidelines and policies for responsible use of AI and ensuring compliance with legal and ethical standards. Also, a framework is required to question the relevance of the use of GenAI at a use case level. Why is GenAI required at all? What value does it bring? How is the output validated and controlled?
- **User awareness and education:** Educating users about the capabilities and limitations of GenAI, promoting awareness of potential risks and encouraging responsible usage are other key considerations. This includes providing guidelines to identify and handle content generated that may be misleading, harmful or unethical and developing training at all levels to familiarise the community on the risks and rewards of GenAI.
- **Compliance:** Awareness of governing laws and repercussions of non-compliance should be deeply embedded in the learning culture. Compliance with the regulations, organisation policies, data protection policies and industry standards is non-negotiable. Staying aligned with regulatory trends is another recommended step to meet compliance-related requirements.
- **Continual monitoring and evaluation:** Organisations must regularly assess the performance, behaviour and impact of GenAI to identify and address any issues or unintended consequences. They must also monitor for potential risks, vulnerabilities, or unintended uses and adapt governance practices accordingly.
- **Risk management:** To ensure that traditional risk detection practices address the inherent risks unique to GenAI models, organisations need to involve the risk and compliance community from ground zero, assess and consider the entire gamut of risks to
  - privacy
  - cybersecurity
  - regulatory compliance
  - legal obligations
  - third party management
  - intellectual property.

The chief information security officer (CISO), chief data officer (CDO), chief privacy officer (CPO), chief compliance officer, chief legal officer/legal counsel, chief financial officer/controller and their teams should be part of the steering committee to help assess and confirm that the developed solutions are fair, unbiased, accountable and transparent, explainable, secure and resilient.

04 Leadership and workforce

As businesses race to get ahead in their GenAI adoption journey, they need to engage, empower and enable their people. CEOs and other C-suite leaders can do much more to address inefficiencies and break through barriers, but they can't do everything. Therefore, it's critical to build alignment between leaders and employees around priorities for change, and to build a culture of trust so employees feel safe to propose better ways of doing things. A good place to start would be to build trust. Companies must start by encouraging transparency and inviting employees to play an active role in the transformation process. One approach that might help is considering citizen-led innovation,[14] which allows employees to build skills and apply them right away. Also, companies will need to redesign career paths around skills and not jobs, so employees have more opportunities as jobs change.[15]

Being transparent, purpose-driven and trusted regarding GenAI-related plans and decisions can help reassure employees who may be unsure of the impact of technology on their jobs. Thus, CEOs would need to understand, explain and manage the inevitable tensions between short-term job losses and long-term job creation potential due to GenAI as a new facet of their role.

Conclusion

Undoubtedly, GenAI is set to have a significant impact on society and business in the near future. Its capabilities, ease of adoption and use are also anticipated to become more widespread and democratic. This would result in solutions that can be both business and citizen led, transforming businesses and giving rise to new ways of working.

However, to fully harness the power of GenAI, organisations need a strong strategy, built on the four pillars discussed above. This will enable them to embed this technology into their enterprise ecosystem.

As with any other technology transformation, the first step to successful adoption of GenAI is laying the foundation for strong governance. While organisations determine how to make the most of this technology responsibly and build trust in its application, relevant stakeholders need to come together to constantly assess and manage the wide array of risks that arise with it.

14. https://www.pwc.com/us/en/tech-effect/automation/workforce-upskilling-strategy.html
15. https://www.pwc.com/gx/en/about/contribution-to-debate/world-economic-forum/enabling-a-reinvention-ready-global-workforce.html

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