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Reimagining the CPG value chain with generative AI

TCS Thought Leadership Institute

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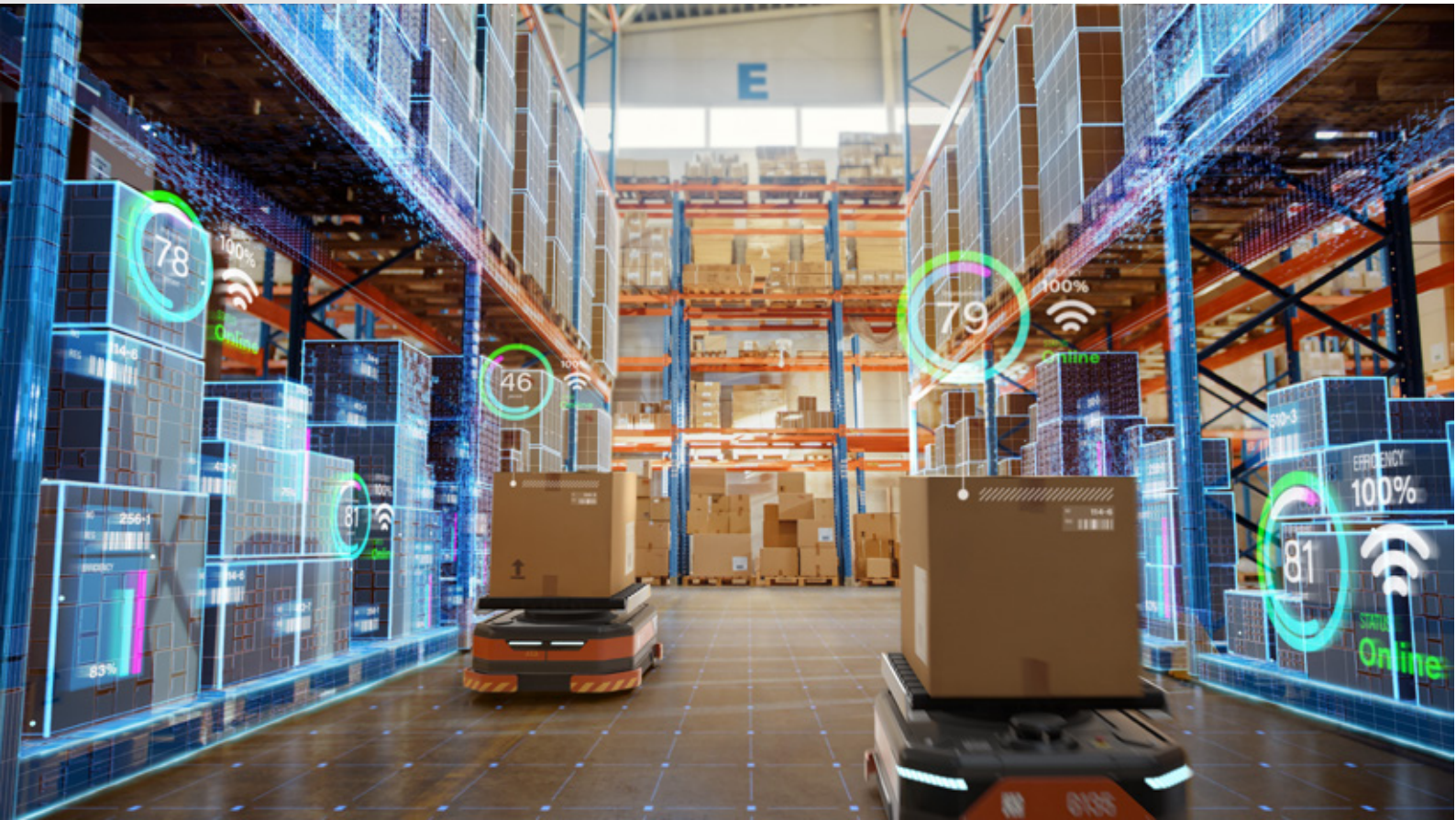


Key takeaways

- In the CPG value chain, the true potential of generative AI (GenAI) lies in the areas of operational and tacit knowledge concentration.
- CPG firms must have a well-designed value exchange framework to identify high knowledge concentration hotspots, target the right personas for enablement, and articulate business cases in quantifiable terms to get the most out of GenAI.
- Built on the principles of an industry-led, data-fueled, and ecosystem-enabled foundation, TCS offers an 'enterprise-wise' AI approach for CPG that leverages artificial intelligence (AI) for an enterprise-grade transformation while balancing the benefits and risks.

The AI adoption conundrum for CPG

With the rise of e-commerce and disruptive digital technologies, CPG companies are no longer operating in relatively stable market environments.

Due to evolving consumer preferences and expectations, they are facing pressures to innovate, differentiate their offerings, and stay relevant in an increasingly digital marketplace.

Artificial intelligence (AI) offers tremendous potential to help companies reimagine entire value chains and transform the way they do business. However, the latest TCS AI for Business Study reveals that a vast majority of CPG companies have a long way to go to realize these outcomes. Only 5% of CPG leaders affirm that AI has been a differentiating factor for business transformation. In 30% cases, the needle has not moved beyond initial AI exploration, while another 32% are still cleaning up their data and migrating to the cloud.

The slower and less democratized AI adoption in the CPG industry can be traced to several barriers – data fragmentation, regulatory compliance, legacy systems, and scalability challenges.

A fragmented data landscape:

A fragmented data landscape with multiple sources (sales data, customer feedback, supply chain information) has differing structures, formats, schema, and storage mechanisms, making integration costly and challenging. Data silos within business groups further hinder enterprise-wide information flow.

Untapped intelligence from unstructured data:

Untapped intelligence from unstructured data is challenging to access due to fewer consumer touchpoints compared to retail; limited update cadence, granularity, and customization in syndicated data; and the high cost of processing large volumes of unstructured data.

Too many proofs of concept (PoC), too little to show:

CPG organizations struggle to transition numerous proofs of concept (PoC) to production due to insufficient tooling and architecture, increased operational complexities during scaling, unaccounted market diversities, and difficulty obtaining timely buy in from business stakeholders as well as the CIOs and CTOs of organizations for AI success.

Our vision: Changing the narrative through GenAI

GenAI expands the arc of AI systems from one of reasoning intelligence to one of operative intelligence – democratizing access to AI capabilities for all, enhancing agility, augmenting other AI systems as well as human capabilities, thereby unlocking new performance and value frontiers.

As GenAI is still in its infancy, CPG companies face the challenge of balancing investment risk with impact. They are trying to decide whether an incremental use case-driven approach is best or whether the opportunity to gain a competitive advantage will be lost by not placing a bigger bet on the technology.

Focus on areas with significant knowledge concentration

To formulate the right GenAI adoption strategy, firms must first acknowledge that within the CPG value chain, the true potential of GenAI lies in the areas of significant tacit and operational knowledge concentration.

Operational knowledge concentration involves repetitive, narrow, tasks performed variably by many employees, such as data entry and context-switching, which can be automated or augmented with GenAI applications to enhance efficiency and optimize costs. Tacit knowledge concentration, on the other hand, occurs when a few key experts possess business-critical knowledge from experience. This expertise, often found in areas like marketing, product development, and strategic management, can be democratized by digitizing tacit knowledge through GenAI applications, reducing dependence on experts. This allows all knowledge workers, regardless of experience, to leverage formalized knowledge for superior outcomes and innovative breakthroughs.

For example, many product managers rely on heuristics and past successes for positioning, pricing, and channel decisions. GenAI can enhance their strategic decision-making by providing recommendations based on enterprise-specific or broader contextual information, enabling

more effective product positioning in various market conditions. Similarly, help desk agents use tacit knowledge to address individual customer needs despite automated support. GenAI can enhance this by providing a continually updated knowledge base, enabling contextualized responses and improved problem resolution.

Transforming GenAI's potential into sustained value delivery requires a multidimensional strategy and a customized enterprise architecture optimized for cost, quality, and security. Built on the principles of an industry-led, data-fueled, and ecosystem-enabled foundation, we outline a best practice-based 'enterprise-wise' AI approach designed to make AI consumable for an enterprise-grade, risk-mitigated, and sustainably successful transformation (see Figure 1).

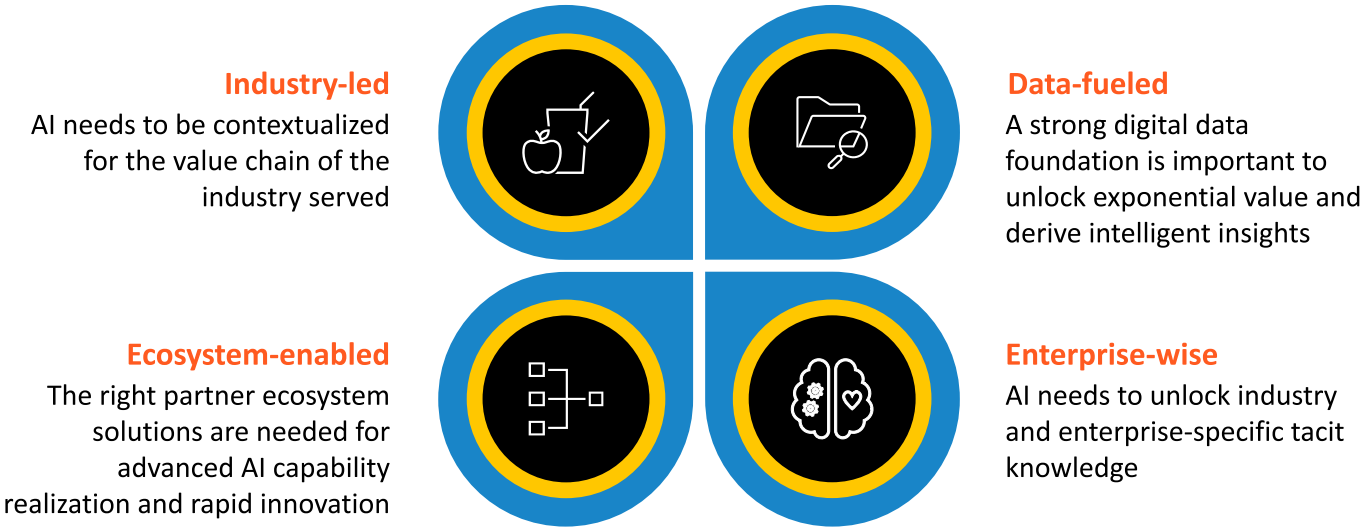
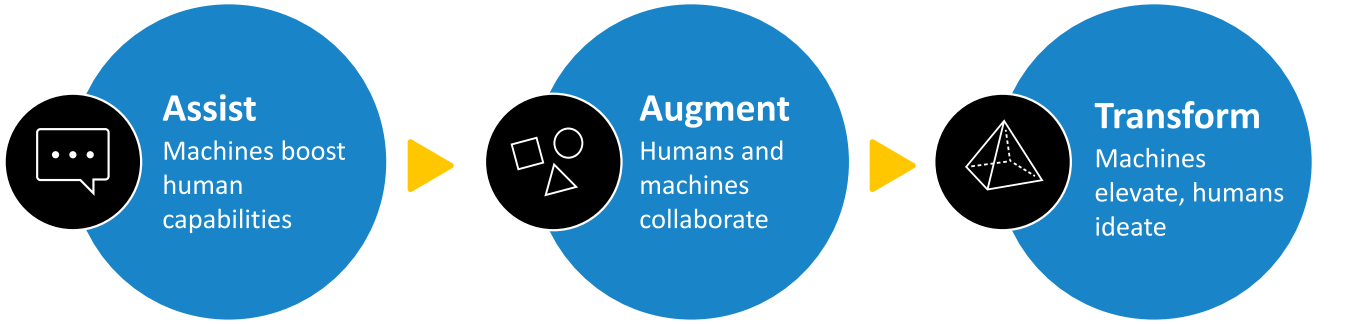


Figure 1: 'Enterprise-wise' GenAI adoption approach

These four principles underpin the TCS path of AI potential to performance, a continuum that builds upon and reinforces the previous stage: assist, augment, transform (see Figure 2).



Knowledge discovery and summarization

Supplement tacit knowledge with contextual knowledge to boost work effectiveness

Activity optimization

Accelerate elite performance through collaborative intelligence, where humans and machines complement and magnify each others' talents

Value chain redefinition

Leap from systems of record to a knowledge-driven superstructure with fast, consistent, high-quality decision output to deliver new ways of working and the full realization of 'enterprise-wise AI'

New industry-centric business models, products, and services reshape the entire customer experience value proposition

Figure 2: The TCS GenAI continuum for CPG

This is better illustrated in Table 1 through examples of potential GenAI-driven outcomes in select domains across the CPG value chain.

Use cases Domain	Intervention type Assist	Intervention type Augment	Intervention type Transform
SALES Retail execution and field sales	Harmonize insights from sales data, analyst reports, and partner interactions to enhance recommendations and automate communication tasks	Provide optimal route planning, real-time sales guidance and tailored sales pitches at localized level to drive stronger retail field sales outcomes	Enable proactive partner engagement, anticipate retailer needs, personalize interactions, optimize sales strategies, and automate negotiations
MARKETING Marketing content generation	Generate multimedia content variations by audience or channel segment based on latest intelligence on the market, consumers, and competition	Craft more resonant content strategies and brand storytelling by leveraging natural language processing (NLP) and image recognition to analyze a wider array of data sources	Deliver hyper-personalized, immersive content experiences, interactive campaigns and individualized storytelling formats across a multimedia ecosystem
DIGITAL COMMERCE Consumer experience orchestration	Automate the collection and analysis of consumer data from numerous touchpoints, generate consumer personas with actionable insights	Personalize consumer experiences by tailoring recommendations, promotions, and messaging based on individual preferences, behavior, and intent	Elevate hyper-personalization to individualization by crafting anticipatory commerce experiences within an intelligent and adaptive digital ecosystem
PRODUCT DEVELOPMENT New product ideation	Accelerate ideation process by expanding the range of possibilities in concept and design variations based on market trends and historical data	Explore a wider design space and identify optimal solutions quickly by simulating virtual prototypes and conducting rapid iterations for faster iteration cycles	Automate repetitive tasks, generate and test autonomous design solutions, and optimize products for performance, cost, sustainability, and compliance
MANUFACTURING Equipment maintenance	Guide technicians in troubleshooting equipment failures, perform root cause analyses (RCA), and automate ticket creation and resolution workflows to reduce downtimes	Predict equipment health through digital twins, schedule proactive interventions, optimize maintenance schedules and manage spare parts inventory	Enable prescriptive maintenance, autonomous decision making, and self-healing equipment systems by integrating with IoT, edge computing, and robotic processing automation (RPA) systems
SUPPLY CHAIN AND PROCUREMENT Supplier relationship management	Analyze supplier metrics, delivery schedules, quality control (QC) data, and market trends to identify performance gaps and potential risks and opportunities	Augment negotiations by providing market insights, benchmarking services, supplier proposal analysis, and scenario simulations to identify optimal terms	Optimize contract terms by anticipating demand and supplier behavior, automate service level agreement (SLA) compliance monitoring, and contract generation workflows
CUSTOMER SERVICE Consumer assistance	Understand natural language queries more accurately than traditional bots and handle wider range of scenarios with minimal human involvement	Handle complex queries by engaging in context-aware dialogue, analyzing consumer intent and providing personalized assistance	Shift from transactional exchanges to empathetic, adaptive, and proactive engagements through virtual agents that simulate human-like interactions
TALENT and HR Employee upskilling and cross-skilling	Personalize up-skilling and cross-skilling roadmap, generate learning content and automate feedback by analyzing skill profiles, preferences, and performances	Identify learning gaps, foster peer collaborations, and provide performance coaching by analyzing learning outcomes, interactions, and feedback data	Automate skill assessment, predict future talent needs, and optimize workforce planning through continuous learning, talent mobility, and agile workforce management
ITSM, DATA, and OPS Software development	Generate, document, and debug codes, review code repositories to generate code snippets, recommend improvements and enable best practices	Extract domain knowledge from project repositories and communiques to enable context-aware, optimal, and collaborative workflows and issue resolutions	Automate code generation, continuous integration, and self-healing software systems by integrating with DevOps pipelines, CI/CD platforms, and version control systems

Table 1: GenAI assist-augment-transform continuum, examples across the CPG value chain

In the early stages, most enterprises find themselves in the assist or augment stages. Due to constant AI evolution and foreseeable headwinds around responsible AI and AI-at-scale, many companies are considering phasing out the realization of aspirational AI-first enterprise capabilities to longer time horizons.

Strategic contextualizing of GenAI for the CPG value chain

Many CPG companies have started experimenting with GenAI in the form of a bottom-up, use-case driven approach through proofs of concept (PoC). However, without the foundation of a well-designed framework, this approach is unlikely to be sustainably impactful, resulting in implementation fatigue, risk proliferation, and difficulty in measuring holistic impact.

To maximize business value and return on investment (RoI), GenAI should be considered in the broader context of the overall CPG value chain. Our **value exchange mapping** framework (see Figure 3) helps CPG companies in their GenAI adoption journey. It allows enterprises to identify areas of high knowledge concentration, target the right personas to act as human agents, and pick the right focus areas, translating to a greater multiplier effect.

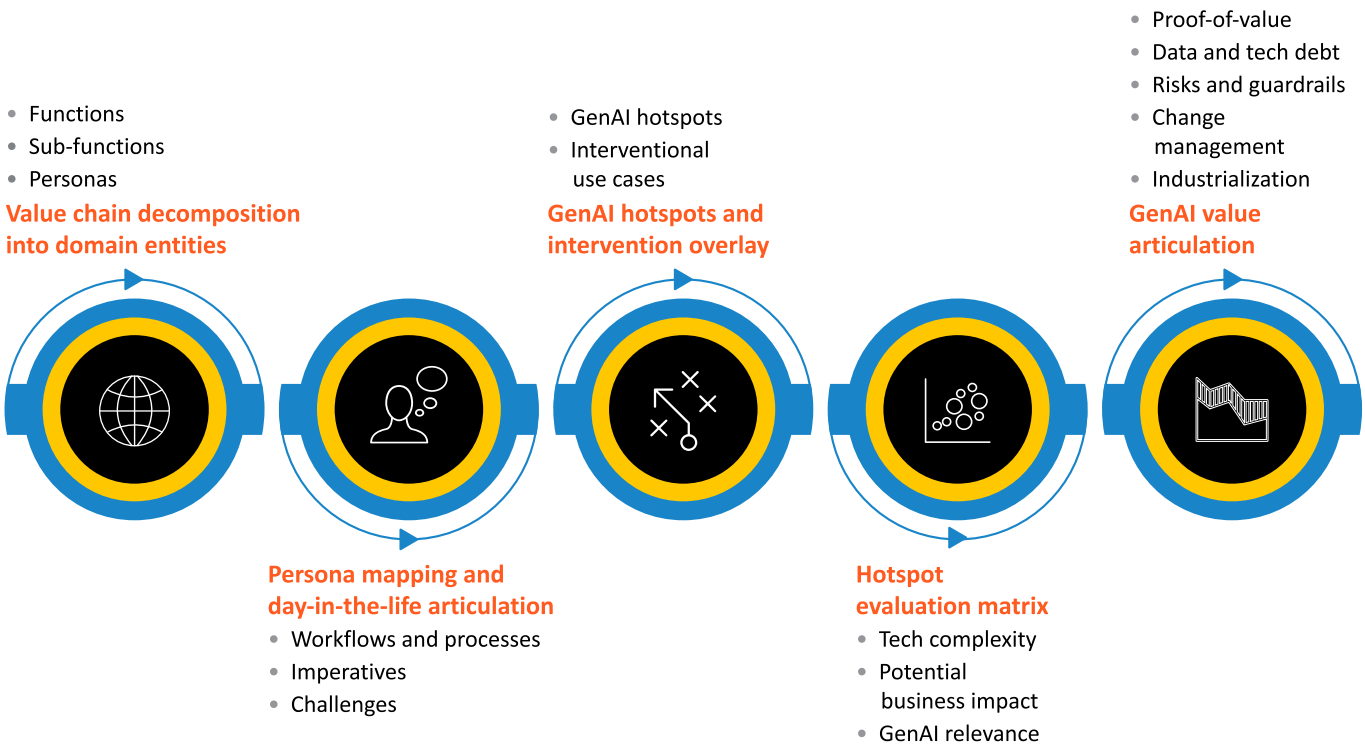


Figure 3: A value exchange mapping framework for CPG

1. **Value chain decomposition into domain entities:** The process begins with the segregation of the CPG value chain into functional towers (sales, marketing, supply chain, etc.) and their sub-functions.
2. **Persona mapping and day-in-a-life articulation:** Next, key personas within these functions are identified, and a day-in-life view is created for each, detailing their responsibilities, tasks, challenges, and dependencies.
3. **GenAI hotspots and intervention overlay:** The framework identifies GenAI hotspots for significant intervention opportunities, then outlines relevant interventions for each, targeting efficiency, productivity, and effectiveness improvements.

4. **Hotspot evaluation matrix:** The matrix charts technical complexity and potential business impact for each intervention, enabling CPG stakeholders to identify investment areas and develop a tailored use case activation roadmap.
5. **GenAI value articulation:** Finally, the framework establishes the value proposition for each GenAI intervention using proof-of-value metrics from an extensive bank of key performance indicators (KPI), covering outcome, functionality, and differentiation, while considering the definition of minimum viable product (MVP), technical debt, industrialization, risk, governance, and change management.

The following case study (see Figure 4) showcases the value exchange mapping framework in action.

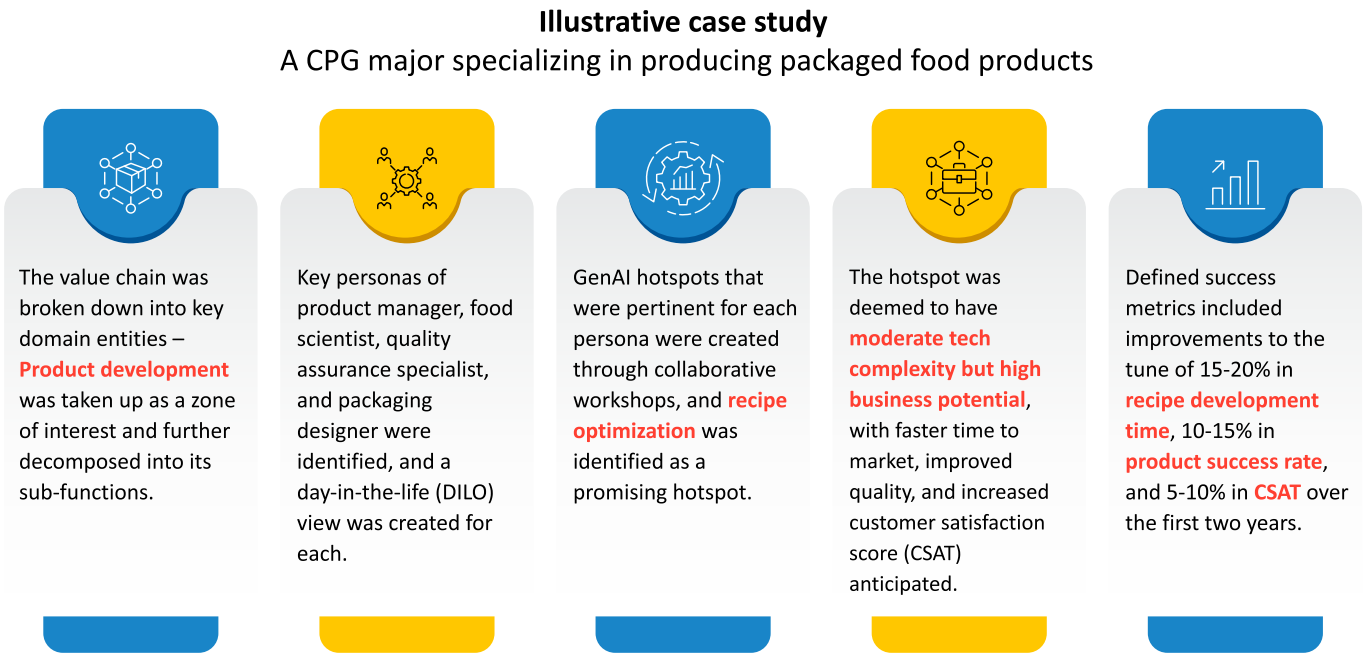


Figure 4: A case study illustrating the value exchange mapping framework

Powering the CPG value chain of the future with GenAI

GenAI presents opportunities for implementation across the CPG value chain. As potential GenAI uses continue to explode, we believe that truly transformative value will be achieved as organizations advance their use of GenAI from knowledge discovery to personalized augmentation.

We have created over 500 GenAI hotspots aiming to serve more than 150 personas across 12 CPG functional towers, with domain-contextual GenAI solutions driving critical performance and value gains. Figure 5 illustrates a case in point, focusing on the **field sales executive** persona from the sales function.

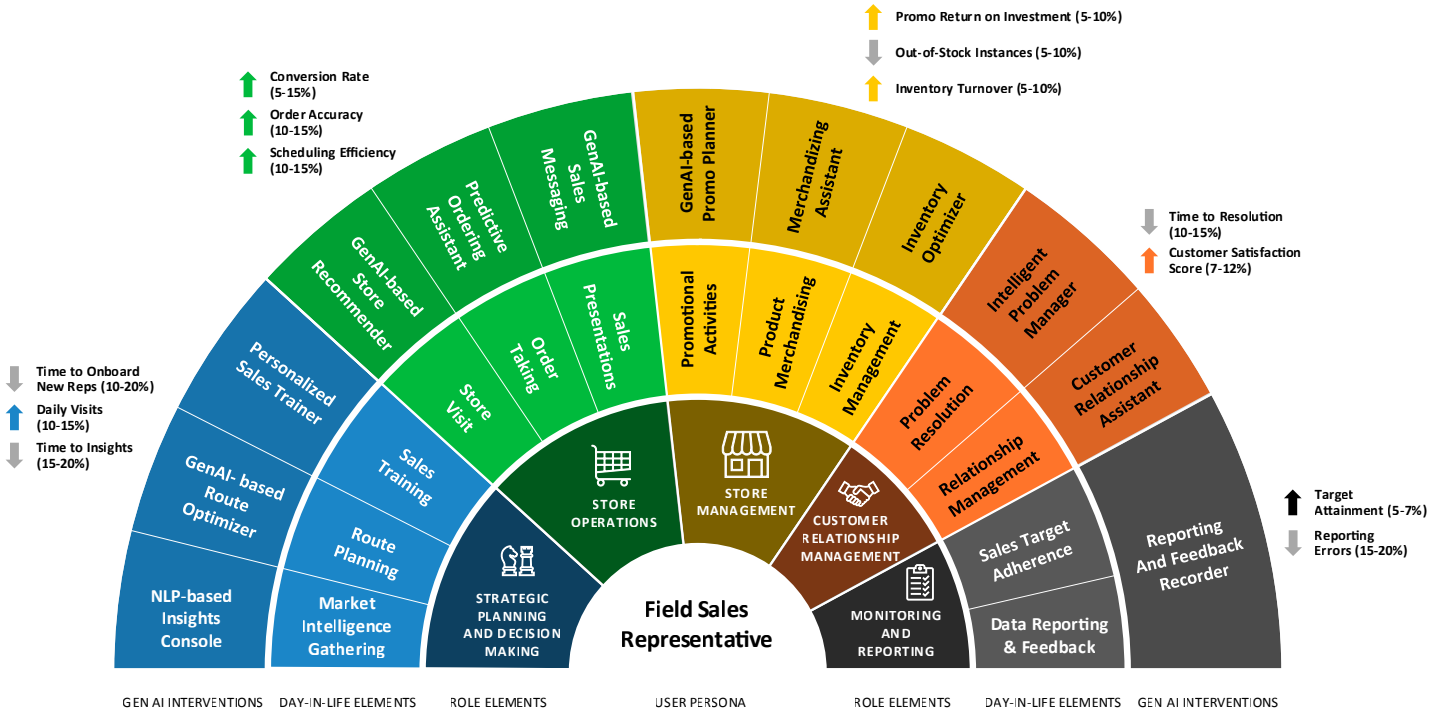


Figure 5: GenAI hotspots and interventions curated for a field sales executive

In this illustration, we see examples of operational intelligence being extracted, summarized, and democratized in an accessible and localized format, enhancing the efficiency and effectiveness levels of field sales workflows.

Our GenAI journey

The advent of GenAI is an inflection point for CPG companies, reshaping the contours of what is possible.

This is an appropriate juncture to look back at the key takeaways from our journey GenAI so far.

LLMs are not fact tellers, but storytellers

Traditional AI-ML systems may be a more robust source of truth. But LLMs excel in conveying complex information through compelling narratives that demystify AI models, accelerating their wider adoption.

Use cases are easy, business cases are difficult

As GenAI use cases proliferate, CPG businesses are finding it ever more difficult to create compelling business cases. This is driven by strategic non-alignment between the supply and demand sides of the GenAI equation, such as CIO and CTO organizations, and business groups. Companies are also often lacking the requisite toolkit to establish GenAI program success, making it difficult to measure ROI and create a business case.

Proofs of concept are easy, scaled production is complex

Many CPG companies are finding out that success in the controlled environment of a proof of concept (PoC) is no guarantee for success in scaled productionization. They face challenges like data harmonization gaps and high latencies.

Don’t put all eggs in one basket

GenAI technologies, especially LLMs, will rapidly mature and diversify into a marketplace of numerous pre-trained models, offering diverse features. It is difficult to predict how the LLM landscape will evolve, necessitating present GenAI investments to be safeguarded through diversification across a well-curated portfolio of currently available LLMs.

GenAI and LLMs are just one piece of the AI puzzle

GenAI and LLMs are here to complement and build upon existing AI and related technologies, not replace them. Our research and engagements have underscored the need for a ‘composite AI’ framework – a comprehensive AI approach, where GenAI is embedded into existing solutions or combined with classical AI and related technologies wherever there is scope of complementary, cost-effective and holistic value generation.

Our recommendations

For successful enterprise-wide GenAI adoption, CPG companies must navigate the delicate balance of opportunity and risk and delivering successful business outcomes (see Table 2).

Recommendations	Details
Develop domain-specific strategy	Tailor a GenAI strategy for the CPG value chain, create a framework for business cases and success measurement, and enable an AI-first business architecture using industry expertise.
Focus on custom solutioning	Create bespoke AI solutions that combine classical AI and GenAI to address specific business problems. These solutions align with the unique needs of the organization, which off-the-shelf solutions may not address. Learnings from developing such solutions can future-proof subsequent AI implementations.
Prioritize LLMOps	Establish LLMOps to efficiently deploy, monitor, and maintain large language models (LLMs) at scale, ensuring high performance, reliability, and trust, even at enterprise-wide usage levels.
Make AI responsible	Establish guidelines, policies, and processes to ensure AI systems are ethical, fair, and compliant. Address bias, ensure data privacy, and foster stakeholder trust.
Make AI transparent and explainable	Develop mechanisms to enhance AI model transparency and decision explainability. This builds trust, allowing stakeholders to understand and validate AI-driven outcomes, reducing resistance to adoption.
Integrate with enterprise platforms	Seamlessly integrate GenAI solutions with existing enterprise systems to streamline data flow and enhance service team productivity.
Train and support AI users	Provide training and support to ensure employees are proficient in AI tools. This maximizes the effectiveness of AI solutions and promotes an AI-first business culture.

Table 2: Key recommendations on enterprise-wide GenAI adoption

In our view, getting these elements right is foundational for creating an AI-first business architecture. Built upon the principles of industry-led initiatives, ecosystem collaboration, and cloud-based infrastructure (see Figure 6), AI-first business architectures would scale outcomes, enabling CPG organizations to leverage overall AI (traditional and generative) potential for reshaping value chains and operational methodologies.

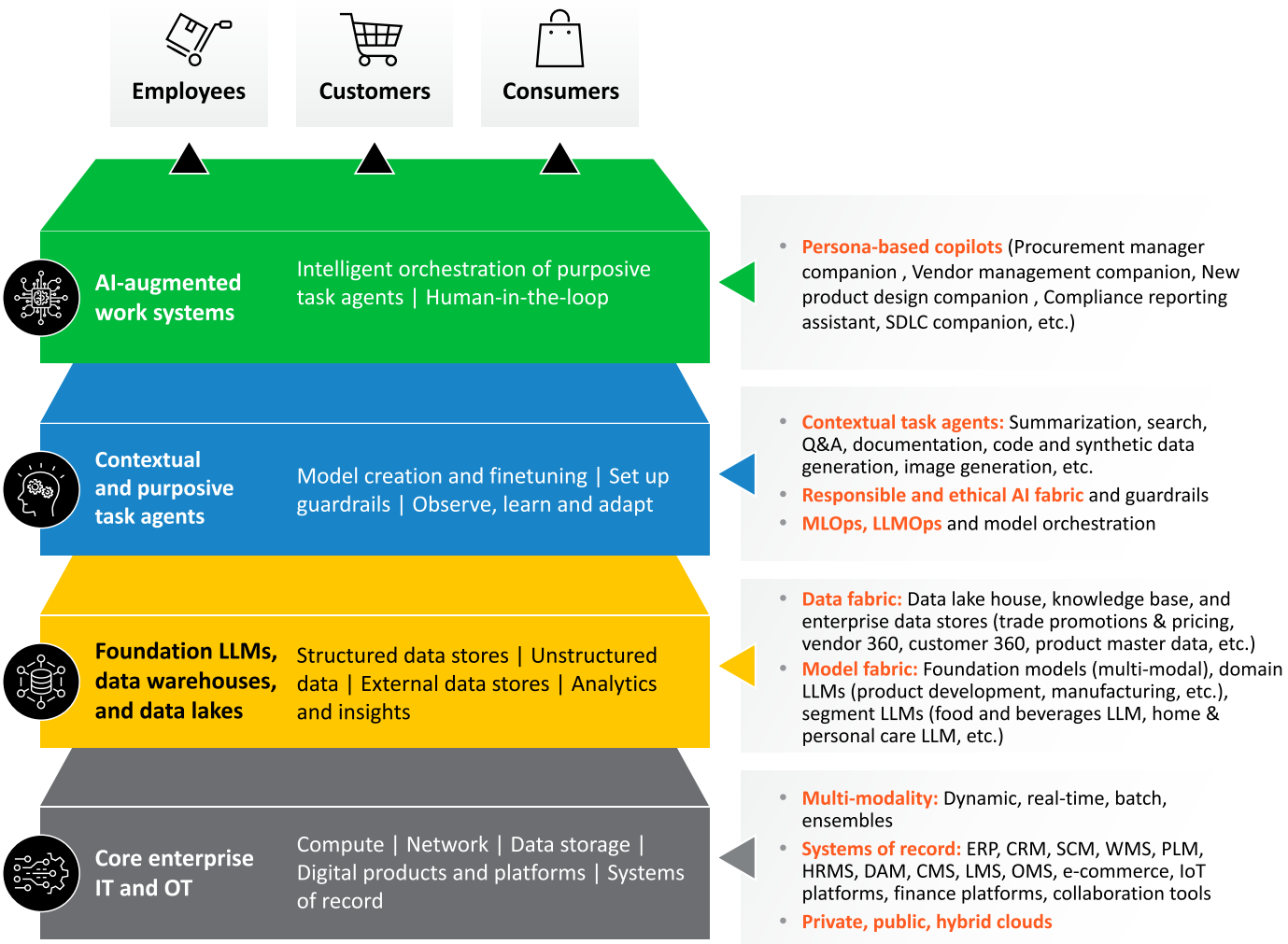


Figure 6: AI-first business architecture

The way forward

It is clear that GenAI offers CPG companies an unprecedented opportunity to realize the transformative value of becoming knowledge-driven enterprises.

This will require striking a fine balance between aiming for quick wins versus laying a long-term strategic foundation. A tailored approach to GenAI integration, considering the specific needs and capabilities of each enterprise, is essential for maximizing its benefits across the value chain. GenAI has the potential to transform CPG organizations by augmenting human capabilities, enhancing productivity, and delivering next-gen experiences.

The TCS advantage

Our strong partnerships help CPG organizations successfully navigate GenAI transformations to drive sustained performance.

- Deep domain and contextual expertise: TCS has a vast pool of experienced industry experts, with contextual knowledge across CPG functions, to help identify, build, and support the latest and fittest solutions and technologies for clients.
- Cross-industry experience: Today's businesses are more interconnected than ever before and need cross-industry expertise and leading practices. Working with customers across industries such as consumer packaged goods (CPG), travel and transportation, retail, and manufacturing brings an end-to-end holistic view of enterprise business functions and know-how.
- Enterprise AI at scale: TCS enables AI at scale through over 150,000 trained associates for more than 670 customers.
- Partner ecosystems: Scale and accelerate the path to value through a network of joint solutions and established hyper-scaler partnerships, an elaborate TCS COIN™ network, and co-innovation facilities such as TCS Pace Port™.
- Research and innovation focus: TCS collaborates with global academia across AI research areas such as advanced natural language processing (NLP), behavior modelling, and quantum computing.
- Evolving solutions: To help accelerate their journey, TCS leverages its contextual knowledge and expertise to enable multiple purpose-built solutions for CPG enterprises that incorporate GenAI technologies.

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