The Digital Dragon
and the Art of Possible

The age of Industry 4.0 marks a shift from 'technology enabling businesses' to 'technology driving and shaping businesses'. The growth in computing technology and Big Data, and development of sophisticated artificial intelligence (AI) technologies are enabling significant synergies for hyper-digitized businesses. The result is an intelligent enterprise that can solve complex challenges, unlock new possibilities, and create real time customer value.

All of this aligns perfectly with today's business demands—to do 'more with less' at speed and scale, and sustain growth within the constraints of business, technology, and human capabilities. Businesses across industries, including retail, are increasingly looking to leverage cognitive technologies to innovate and position themselves for accelerated and sustainable success in the digital world.

> " Despite significant investments towards digital transformation, several unanswered challenges across retail operations have spurred the need for innovative use cases driven by cognitive abilities. "

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## Moving Towards Future-Ready Retail

Despite significant investments and efforts by retailers to drive digital transformation and exceptional customer experience over the last decade, challenges continue to abound across omnichannel strategy and operations functions of the business (see Figure 1). The good news is cognitive technologies offer retailers the tools necessary to tackle these challenges by helping them:

• Shift from traditional business planning and goal setting to autonomous trading and goal seeking

• Solve-for-the-moment and deliver a brilliant customer experience consistently to stand out in a competitive marketplace

• Productize business and IT operations to achieve aspirational excellence

Addressing these omnichannel retail strategy and operations challenges calls for innovative use cases driven by cognitive abilities such as understanding the context and foreseeing and solving problems, responding to changes in real time, thinking and making decisions, simplifying and managing complexities, predicting the future, and learning from past experiences.

	Retailers' key priorities	Retailers' efforts on key priorities	Challenges still faced: Unknown and uncertainties
Strategy & Trading	• Drive revenue and margin growth • Grow and retain the (loyal) customer base • Provide frictionless and personalized customer experience	• Execute multimillion dollar digital transformation programs • Be data and insights driven for business planning and performance optimization • Investments in rich content, design thinking innovation with digital solutions	• Why merchandising and promotions strategies do not resonate with customers? • What can make personalization and loyalty programs deliver expected results? • How to respond in real time to price changes? • How to detect and correct customer journey and cart abandonment issues in real time?
Insights	• Be Big Data driven and build org. level transparency • Carry out business scenarios simulations and analysis faster, more comprehensively and easily • Decide and act in (near) real time	• Use advanced Big Data analytics technologies to model business forecasts, plan merchandise and campaigns, optimize customer experience • Hire analytical and technology talent; build digital teams to generate insights and drive improvements	• What factors influence conversion rate, CSAT, demand forecasts, and customer experience? • How to build and leverage the aspirational omnichannel customer profile and experience? • How to move from insights to actions to results at speed, through all complexities? • How to prevent costly wrong decisions?
Operations	• Balance stability vs. risks vs. speed of changes • Be preventive and proactive vs. reactive • Do more with less; optimize cost of operations vs. building differentiating capabilities	• Invest in real time operations monitoring tools, dashboards, KPI library, micro services and API architecture, cloud computing and mobility platforms • Drive process improvements initiatives • Establish and execute new operations models, command centers and agile develoment	• How to detect and fix issues early on and predict and prevent major incidents? • How to balance 'run the business' optimization vs. 'change the business' investment? • How to ensure a seamless holiday season? • How to recover 'at risk' customer orders in real time?

Figure 1: Top challenges in omnichannel retail strategy and operations
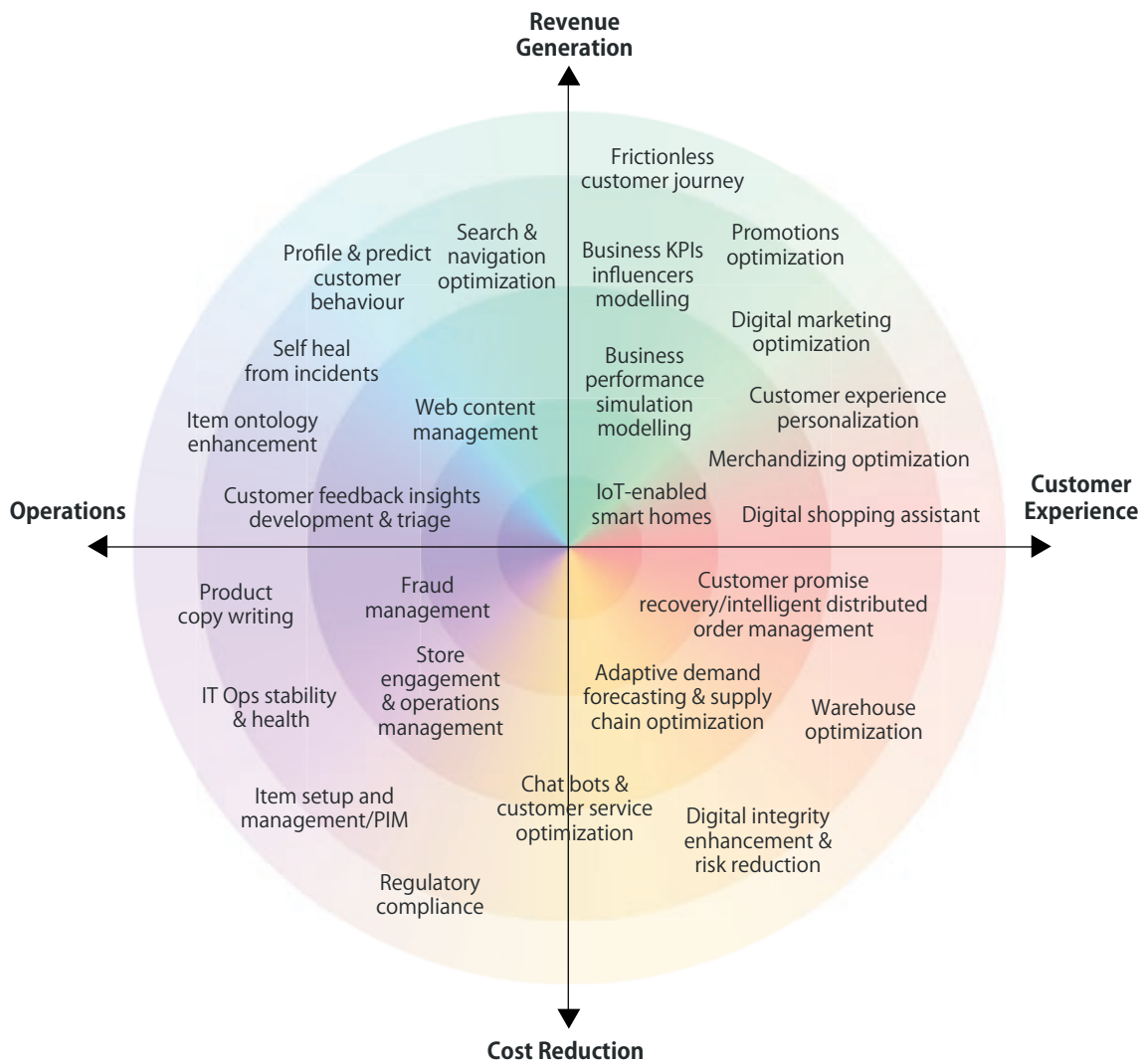
Figure 2: Possible use cases driven by cognitive technologies

Such use cases span both business and IT, and may have varying degrees of impact on customer experience, operational excellence, revenue growth, and cost reduction as illustrated in Figure 2.

The use cases that have a direct impact on customers are likely to see rapid and early adoption. These include delivering a personalized and frictionless experience, break-free operations, managing the influencers of conversion rate, and optimizing supply chain and fulfillment.

Executing these use cases and realizing their benefits is no longer the stuff of fiction. Consumers are already using cognitive technology enabled products and services in their day to day lives. Take for instance Google Search, Netflix's movie suggestions, Facebook's news feeds, Amazon's Alexa shopping assistant, and Uber and Tesla's self-driving cars. These proven applications built on AI technologies such as machine learning, deep learning, and natural language processing (NLP) are changing people's perception about the ability of smart machines to perform activities considered uniquely human.

Now, let us consider how a cognitive technologies-driven use case can empower order fulfillment. Order delivery can be impacted by internal factors in warehouse operations as well as external factors such as third party logistics (3PLs), carrier networks, or adverse weather. Factors such as delayed delivery, order cancellation, or delayed notification of order status impact customer experience— more so during the holiday season. Cognitive technology enabled intelligent enterprises can predict fulfillment issues in the supply chain, notify customers about delivery delays in near real time, orchestrate fulfillment of 'at risk' orders via alternate channels to realize customer promise, manage return logistics and delivery associated refund and goodwill scenarios.

All this is executed in seamless 'no touch, no surprise' operations, both within the enterprise as well as in collaboration with suppliers and logistics partners.

Building an Intelligent Omnichannel Business

Cognitive enablement, however, is not just about embedding intelligent applications within the enterprise. It is about organizational readiness to adopt smart machines as co-workers, and the ability to execute and manage change, and measure success. Here's how you can begin to build a truly cognitive business:

1 Identify use cases

Over a short term (three to six months), decide on the use cases to explore as pilots or proof of concepts. Prioritize use cases that add momentum to initiatives that are already underway across the enterprise. These could include increasing conversion rate, improving customer service, delivering break-free customer experience, becoming data driven and real time, or optimizing the supply chain. Understand and communicate to key stakeholders that the Discovery phase is not meant to create disruption but help begin the journey to building a cognitive business that aligns with business goals and current investments.

2 Evaluate technology readiness

As you engage stakeholders in a dialogue to build AI-based cognitive capabilities, CIOs and CTOs might realize that their IT organizations are not ready to embrace and execute cognitive technologies for reasons such as:

- Risk and complexities in integrating the AI platform with the current digital and legacy landscape

- Lack of availability of required data, fragmented data landscape, and issues with data quality

- Need for resources skilled in AI technologies

- Indecisiveness in evaluating the following:

  - Which AI platform to choose — in-house open source AI platform development or third party enterprise AI platforms?

  - Which deployment option works best—within the corporate network, third party hosted infrastructure such as AT&T, or third party cloud?

  - Is a Configuration Management Database (CMDB) as an IT blueprint a prerequisite or an option?

These challenges are likely to cause friction between the business and IT leadership in the initial phase of your journey. Ensuring data availability and selecting the right deployment method is key to accelerating the launch of the Discovery phase.

3 Execute and manage change

Building a cognitive business and making AI an integral part of your DNA will drive varying degrees of change across the organization. A cognitive business will:

Challenge the human desire for control. Be prepared to redefine the organizational structure and the roles of executives. In the long run, a part of your workforce is bound to be replaced or re-aligned by a cognitive business and people will be working with and empowered by smart machines. A cognitive business will also demand new roles and skills to design and manage the omnichannel retail domain model, engineer data science, and architect and manage the AI platform and algorithms.

Execute a key stakeholder engagement plan early on, clarify their roles, explain the expected changes and the value of a cognitive business, and dispel fears to secure support.

Demand changes to the operating model and culture. A cognitive business will force an uneasy yet positive change sooner or later to be more open, leaner, productive, innovative, and decisive, and enable a 'one enterprise, one vision' collaboration.

Drive many business and IT changes. The business changes include changes to the existing processes, development of new processes, and redefinition of KPIs and thresholds. The IT changes include integration of the AI platform with the current IT architecture, development work to capture, store, process and provision the required data to the AI platform, and IT infrastructure changes to support deployment and operations.

The degree of change required depends on the current enterprise architecture and capabilities, the complexities of the challenges to be solved, and the expected benefits. For example, a use case to enable a frictionless customer experience might drive more IT related changes than changes related to business. On the other hand, a use case to enable alternate order fulfillment to recover customer promise can demand more business changes as opposed to IT changes.

A critical element of cognitive business enablement is building and training a retail domain model specific to each business and developing an IT blueprint of the enterprise. The domain model is an ontological representation of the omnichannel retail business and the enterprise context, underpinned by data. These blueprints together with data and algorithms form the core foundation of the cognitive platform.

Make ownership come to the fore. Building a cognitive business is a mandate of business leaders, achieved with support and collaboration from the IT leadership.

With early adopters, we see core IT use cases related to IT infrastructure and operations owned by the CIO and IT Director, and business use cases owned by the eCommerce Vice President or Chief Digital or Customer Officer. Establish a Responsible, Accountable, Consulted and Informed (RACI) matrix to make ownership, roles, and responsibilities of business and IT stakeholders clear. Business as usual (BAU) operations of a cognitive enterprise fit better into an integrated digital command center based operations model for retailers that already have such a model. For those that don't have such an operations model, it can come under the purview of a Multichannel Executive Vice President or Chief Digital Officer with responsibilities across business and IT.

Cognitive Enablement:
Measuring Success

A Smart Score can be used to measure and appreciate the value generated by a cognitive business. The Smart Score can be a composite of the business and IT value realized. For example:

- Business KPIs such as conversion rate, revenue growth, speed-to-launch, response rate to customer behavior and queries, promised order fulfillment percentage, customer satisfaction (CSAT), Net Promoter Score (NPS), decision speed and quality, campaign performance, item availability, inventory turnover, cost of customer service.

- IT-related KPIs such as the volume of high severity incidents and customer frictions reduced and prevented, business service restoration time, operational agility and stability index, revenue impact from IT incidents and agile changes, digital availability percentage, risk score, productivity gain, capacity optimization ratio, and cost of operations.

The promise of a cognitive-enabled, intelligent retail enterprise (measured by a Smart Score) can be perceived through well defined and quantifiable business value as follows:

- Restoring a high severity impact to the online customer checkout journey in 15 minutes vs. 1.5 hours in a manually orchestrated support model

- Achieving 90% of the financial quarter's conversion rate and revenue target via optimized promotions and personalized customer experience

- Containing order delivery failure rate to 0.5% of the daily dispatch volume

- Ensuring 100% digital availability during the holiday season with zero incidents

- Driving CSAT up by 20% through frictionless customer experience

- Reducing cost of Contact Center operations by 10% while improving response time to under 15 minutes

Such business value can also form the basis of the partnership between a retailer and a cognitive technology solution provider.

Build Cognitive Businesses:
What It Really Takes

When deciding to build a cognitive business, it is important not to make judgments before testing out the possibilities. Given the disruptive force of cognitive technologies and their value to an omnichannel retail enterprise, it's obvious that building a cognitive technology enabled intelligent business is no longer a choice. Building and executing a cognitive business requires three things: passion for customer experience, trust in technology, and the desire to thrive. The key is to not give up based on early perceived failures or let organizational challenges and competitive laggards crush your enthusiasm.

These challenges will get resolved as cognitive technologies become mainstream over the next 5-10 years. A cognitive business will be the force that binds your enterprise together as 'one team with one vision', and enables you to be truly omnichannel and customer centric.

About the Author

Vaidy Rajamani

Vaidy Rajamani is a consultant helping global omnichannel retailers thrive by building and managing a best-in-class digital enterprise. Vaidy has rich knowledge and experience in designing customer-centric digital strategies and management of omnichannel digital operations. His current focus is on how artificial intelligence technology can help retailers build a cognitive retail enterprise of the future for excellence in operations and brilliance in customer experience.