

The CIO as Driver of Innovation and Competitive Advantage



The growing role of the modern CIO: Building competitive advantage, generating revenue, and compelling leadership to act in the digital era

In a recent, exclusive roundtable of global CTOs & CIOs moderated by **Andy Walter**, Advisor & Ex P&G Executive, Fractal CEO **Pranay Agrawal** world-renowned business consultant, author, and speaker **Ram Charan** led a discussion on what's needed for competitive advantage, how to build it, and how to persuade executive leadership to embrace change. While much of the discussion remains confidential, some of the key insights offered here provide an illuminating introduction to a path forward.

Successful companies are always transforming, launching new and improved products, acquiring, and retaining customers through compelling experiences, and continually improving operations to increase return on investments and drive higher margins. It's how they build competitive advantage. In our digital age, much (maybe most) of this transformation is powered through the harnessing of data, the exploitation of new technology, and focusing relentlessly on the customer experience.

But too often, companies change too slowly, are too rigid in their ability to act, and constantly cling to past investments and old strategies. These traditional approaches to transformation often necessitated three- or five-year implementation plans with large-scale technology investments that could take multiple quarters or years to get up and running before they contribute to new business value and tangible customer outcomes. Once these investments are made, the path is set and the organization is positioned to hold on to these expensive capabilities tightly, even if the environment changes.

Key takeaways:

- **The CIO's role is transforming:** The CIO is a driver of new creative energy, innovation and business value
- **Digital transformation is accelerating** faster than ever, and is the most important aspect of competing today and tomorrow
- **AI, engineering and design** are the critical capabilities needed for digital transformation
- **The CIO must embrace their role as evangelist** and persuader to compel the C-suite to act

“CIOs should be at the center of formulating revenue-generating business models. CIOs need to show their fellow C-level leaders how AI, engineering, and design can impact revenue growth, gross margin, and market cap, which they are judged on every day by shareholders.”

Ram Charan - renowned business consultant, speaker, and author

Look around and you'll see that these three- to five-year plans often fall short. The recent pandemic, for example, has shown just how quickly things can change. In short order, organizations' digitization efforts had to suddenly accelerate beyond anyone's expectations. As stores shuttered and safety became a major concern, businesses rapidly changed how they were engaging with customers, relying on digital channels like never before. Workers were sent home to work—many of them likely to remain there as many aspects actually improved with work-at-home workforces. The transformative capabilities businesses planned pre-pandemic have already become table stakes.

The digital world didn't stall with the pandemic. Instead, it heated up and sent us into a new era of change, one that's relentlessly fast and heavily computerized.

The rate of today's change also brought new approaches. We're able to use the cloud to build flexibility and new business models, SaaS approaches let us adopt new capabilities quickly, and agile development processes speed digitization efforts. We're able to deliver value and change quickly, but only if we let go of our “sunk costs” investments and choose new approaches and tools.

We've also realized that just making things digital isn't enough. Things must be made intelligent through the harnessing of our vast stores of enterprise and customer data. Our capabilities must think and react. They must have **Artificial Intelligence (AI)** in the core.

This is how we build competitive advantage in the digital age: we move quickly, we achieve value and change early, we don't hold on to the past, we embrace AI, and compel the organization to act.

Three long-term trends have become important factors in competing in the digital age:

- 1) Ecommerce and digital interactions have increased everywhere.
- 2) Digital experiences must be continually improved through AI.
- 3) Digital remote work is here to stay.

Pranay Agrawal
CEO, Fractal

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What it takes to compete in the digital age

Through working with and observing many companies transform across industries, we've identified key characteristics that occur in the best competitors. The digital age is characterized by being digital, meaning data, analytics, technology, and digital channels will be at the core of transformation. While not exhaustive, some of the top competitive, digital-age outcomes include:



- **Saying no to the status quo:** Disruptors are creating new and improved business models, stealing customers, and transforming expectations in the process. Smart competitors get in front of disruptors, reinvent their own experiences, business models, and direct customer relationships, and use technology and data in new ways to maintain their market position.
- **Building better and faster:** The faster a company can innovate, the more responsive they can be to customer demand and competition. Today, product and experience development is created with data-driven insights into what customers' desire. The manufacture, supply chain, and distribution of products is being reinvented using new technology, data, and AI.
- **Engaging with customers one-to-one:** With customer data, AI, and technology, companies should embrace direct, one-to-one customer relationships that meet the needs of the individual. Digital-age consumer engagement is heavily personalized, data-centric, and automated, where analytics are built into consumer marketing, communication, and experiences.
- **Powering decisions with data:** The traditional approaches of using expertise, intuition, and best guesses to make business decisions are ending. In an environment that is digital and data-intensive in nature, executives no longer fly blind, but use their powerful data stores to make fact-based decisions formulated on accurate and timely views of the world.
- **Eliminating inefficiencies:** In the digital age, data, analytics, and AI can be used to identify areas of improvement, automate routine operational tasks, and make the entire supply chain more informed and intelligent. Data, analytics, and AI can be used across nearly every aspect of the organization to improve efficiency and productivity.

How IT powers competitive advantage

Organizations are increasingly realizing the power of AI to transform and stay competitive in the digital age. AI embeds data-driven information that can exceed the ability of a human in its intelligence, detail, and speed. AI alone is rarely enough to solve problems at scale. Companies need data engineering to build the data pipelines to enable AI and scale algorithms, and a design discipline to build solutions with users in mind and to encourage the right behavior. The key competencies successful digital transformation requires are:

Artificial intelligence (AI): Build algorithms that match and exceed human level intelligence in a broad range of cognitive tasks. AI efforts can be used in developing solutions in text analytics, natural language processing, topic discovery, image processing, and in using techniques such as Deep Learning, Bayesian Networks, Reinforcement Learning, Markov process, and others. AI outcomes may include machine vision to enable software to collect sensory information, use algorithmic decision-making to create smarter decisioning engines that continually learn on their own, conversational AI to improve how the AI interacts/communicates with people, and deliver AI at scale to tackle huge data sets across the enterprise.

Engineering: Build data pipelines to enable AI and scale algorithms to power every decision in the enterprise. For example, Big Data Engineering should be used to design, implement, and deploy complex and real-time big data pipelines using structured/semi-structured and unstructured data.

Engineering on the cloud should be used to implement big data and AI pipelines on various cloud environments. Engineering is needed to design and build large data stores (e.g., data lakes, data warehouses) to manage enterprise infrastructure, and to perform AI and analytics at scale to access large data sets across complex environments.

Design: Design every customer and employee solution or experience with the user in mind, incorporating deep knowledge of human behavior. Design activities should be aimed toward building analytical solutions that are simple to consume, intuitive, and effective. A key aspect of the design is to consider 'human behavior' to make the solution design effective and user-friendly at the same time, enabling higher adoption—both at an enterprise level for effective consumption and at an end user/consumer level driving sustainable behavior change in them. Good design should focus on incorporating an understanding of the human mind to a given problem statement at the start.

Knowing the desired characteristics provides a rough destination for digital transformation and competitive advantage in the digital age. The competencies/capabilities of AI, engineering, and design provide the core methods for making the transformation. None of this, though, can be acted upon unless executive leadership understands the imperatives, agrees to the vision for the future, and provides the approvals, resources, and capital to get it done.

"AI, engineering, and design are the tools of digital transformation that can be used to make better executive decisions, improve customer experiences, increase productivity, and drive disruption."

Pranay Agrawal
CEO, Fractal

AI, Engineering and Design in Action: A Major CPG Firm Reimagines the Distributor Sales Experience

A major CPG manufacturer of confectionaries and other packaged food items believed there was new sales opportunities and efficiencies to be gained by more smartly enabling their sales reps that met with store managers and replenished inventory. Reps were spending too much of their time trying to figure out what products to promote, were not properly building customer relationships, and were using incomplete information to sell. In addition, their sales/delivery routes and time management needed to be improved.

The CIO believed that a new tool set powered by analytics could correct these shortfalls while both increasing sales and improving customer relationships. The heart of the program would be an AI engine based on deep analytics, fueled by data marts with data on consumer traffic, POS data, sales data, category growth, assortment data and other valuable information. The engine would proactively answer key questions for each rep based on his specific distributor base, route and history, including: Where to sell? What to sell? How much to sell? And, how to serve?

The solution would require deep AI expertise to build the analytics engines and intense engineering of data and data stores. A design team was needed to build an interface that could be used intuitively in a remote, mobile environment on the road.

The engine would power a mobile interface that provided the rep with key information and next-best-action type recommendations with product lists for each store that is driven by store history, store similarity and SKU demand, with the goal of:

- Optimized SKU volume recommendations that help achieve the revenue targets
- Automated data driven recommendation to sales reps optimized per growth targets
- Insights into NPDs, promo offers, etc.

With better information and recommendations on hand, the rep could present the most desired and productive product lines for the buyer's business while spending more valuable relationship-building time with the buyers. The engine would also enable the rep to better plan their time spent, scheduling and route optimization.

The initiative contributed three percent of total sales and represented a two percent lift in sales over the baseline within the region.

They also realized:

- **32% growth** in unique store coverage over LYSM
- **14% growth** in visits over LYSM
- **23% increase** in unique store coverage growth over baseline
- **14% growth** in visits over baseline.

How CIOs can compel leadership to act

Competing in the digital age is fundamentally enabled by data and technology. While all leadership should understand the benefits and possibilities with digital technology, it's the CTO or CIO who often must be technology's biggest evangelist and ambassador. Traditionally, the technology function was viewed as an operational necessity, a cost center, and a place to optimize and drive cost reduction. This view needs to evolve as technology takes a leadership role in building new products and experiences, embedding data and AI into critical operations, and leading digitization across departments and functions. IT is the new R&D and should be at the center of all efforts to transform and innovate to create new business value.

This has several implications for how IT positions itself. As a value-producing R&D center, the fundamental metrics may shift from cost reduction to value creation. IT should be measured on how much new revenue or customers are captured, how margins and profitability increase, and how competitive advantage is increased. IT is bringing cash to the business and should be measured and incented commensurately. Similarly, the CIO should embrace his or her role as an innovator and leader, educating other executives on the 'art of the possible' and the opportunities they may have in using data, AI, and other emerging technologies.

The CIO will need to persuade other executive decision-makers to understand and act on

opportunities. They need to present their plans in the language and metrics of the CEO and CFO and other executives. This means framing issues and opportunities in business language and using financial metrics that they use. All CEOs have key pain points and objectives that they must share with the board. The CIO needs to engage with the CEO to learn these and become adept at using them to explain opportunities.

A savvy CIO will list the CEO's top pain points or objectives and be able to describe how AI, engineering, and design can be applied to each one. They need to be able to work backward from business priorities. This is effective when appealing to the CFO, the CMO, the COO, etc.

"When it comes to influencing C-level leaders, find the key people in power, identify their most important pain points, and show them how digital tools can help solve their challenge."

Ram Charan - renowned business consultant, speaker, and author

The metrics the CIO will use will also be in the CEO's/CFO's/Board's understanding. Again, these will focus on how technology function's initiative contributes to improve revenue, improve profit margin, and improve capex and opex. Cash (i.e., real revenue produced or saved) is the primary identifier and driver of business decisions. Some companies attribute cash to core goals such as cash per share or cash gross margin. Smart CIOs identify cash traps and barriers in the business model and mitigate them.

If you want to persuade people in power, don't present them with a two-year plan. Instead, create projects that last 10 weeks or less, demonstrate real outcomes quickly, and investment will flow from there.

Ram Charan - renowned business consultant, speaker, and author

Moving fast and away from the past (sunk cost fallacies)

The CIO and their leadership teams need to avoid sunk cost fallacies when looking to transform. Too often, large investments in older technology will urge executives to not want to abandon a system or approach that is no longer providing substantive power to compete in the new environment. The new approaches such as the cloud, software-as-a-service, and agile development techniques can create opportunities to transform incredibly quickly and bring new functional online and in-market without the timeframes and investments required in the past. IT needs to embrace these new approaches and not get trapped into long, slow, and expensive overhauls to their legacy systems.

It's common for executives to frame transformation on long-time scales. As we're learning, a five-year plan may be wholly unworkable given how quickly things can change. A five-year, or even two- or three-year plan will always seem risky and untenable.

How much investment and time can an enterprise wait until customer value is realized? Any plan stated in years will face these challenges of risk and incredulousness.

Instead, all projects should be short, succinctly defined, and usually in-market and providing value within 8-12 weeks. This timeframe makes change easy to justify, reduces risk, and the value they produce in the short-term can either fund or solidify a business case for future transformation. Here, IT should consider a Minimal Viable Product (MVP) approach that delivers new products or experiences with the least amount of development to be valuable in order to prove their worth and speed their development. Developing quickly and iteratively is how products and experiences are quickly created.

Organizations should inject new thinking into decision-making processes. This can be done by hiring and recruiting from different sources. Old justification from entrenched, traditional employees can ruin fast transformation and may distort the benefits of digital transformation with past learnings. Bring in people who live in digital transformation and have taken bold action before. Expose leadership to new ideas and business practices, exposing them to minds beyond their own organization. For example, plan a trip around the world to see how other best-of-breed companies operate.



Most companies are poorly poised to embrace change quickly: their leadership is slow to decide, IT is viewed through the wrong lens, and new technologies are passed on to hold on to older ones.

CIO Innovation in Action: A Major Beverage Distributor Vastly Improves Business Intelligence for 300 Critical Decision-Makers

A large CPG beverage company was facing severe reporting and information issues that was hampering their ability to make accurate, timely business decisions, hurting their performance in the market. On average, executives would take 10-12 days to gain visibility into their organization's performance. The existing reporting system was designed largely without the users' input, so executives from all departments would spend intensive manual, individual efforts to find the data they needed, creating lags, resource waste and inaccuracies between departments.

The CIO recognized that a new approach to reporting and insights was needed. The goal would be to create a single source of truth which would provide the right data at the right time to become more strategy focused. They envisioned:

- A streamlined set of reports and KPIs to manage performance
- Improved FTE efficiency as over 50% of FTEs were behind on reporting
- Faster, higher quality, user-friendly, self-service reporting
- Automated reporting to the maximum extent possible
- Reporting across functional lines for a 360-degree view of the business
- Reporting enhanced with algorithms and advanced analytics

The CIO employed a design thinking approach to get at the heart of what users needed. Because a of the wide number of users and

departments, the CIO would act as a champion and evangelist for the solution, expressing a compelling vision for new business value and competitive advantage.

The solution would help and coordinate 300 executives across finance, commercial, supply chain, HR, and cross-functional teams. The planning process involved intense user emersion sessions and persona-based modeling, complete with comprehensive interviews, day in the life simulations, show and tell sessions, user journey analysis, pattern finding, and more. The process would be a user-focused endeavor that would work backwards from the user experience and their needs to design the ideal information system.

They solution would pull would source data from multiple internal and external systems and data stores, ingested and stored in an Azure data lake. The data would be harmonized and processed to be delivered in various consumption layers based on user need. The data presented an "integrated storyboard" where executives across functions could collaborate and communicate with the same facts and see how data and decisions interconnected across the enterprise.

Upon go-live, the new solution exceeded the needs of the users and supporting executives. Decision-makers now have coordinated, accurate data that suits their needs without the expensive work-arounds and without the lag, giving them the facts they need to make sound decisions near-instantaneously.

We've been cruising into the digital age for a while now and have had plans to transform and capitalize on the new environment in due time. The pandemic showed us that things can change more quickly than we've ever imagined. Most companies are poorly poised to embrace change quickly: their leadership is slow to decide, IT is viewed through the wrong lens, and new technologies are passed on to hold on to older ones. The digital age requires going digital, and this means looking at all products, experiences, and operations through a technology and data lens. How can we embed data and AI into our capabilities? How can we engineer our data pipeline to get the most out of our information? How do we design experiences that are shaped by human behavior and insight? These are the questions for the modern CIO or CTO, and it's up to you to get the answers to build competitive advantage in the digital age.



About Ram Charan

Ram is a renowned business advisor and author. For 40 years, Ram has worked with CEOs at some of the world's leading companies across the US, Europe, Australia and India. A New York Times best-selling author, Ram has written more than 30 books and is a frequent contributor to a variety of business publications.



About Pranay Agrawal

Pranay is the Co-founder and Chief Executive Officer of Fractal Analytics. He has led Fractal to become one of the most respected analytics companies in the world, helping over 50 Fortune 500 companies drive competitive advantage and better business outcomes through AI & Analytics.



About Andy Walter

Andy Walter is an Independent Board Director, Strategic Advisor, and Venture Investor across a portfolio of Digital and Analytic Disruptive Innovators. Former SVP Procter & Gamble Global IT and Shared Services (retired), he has helped Fortune 500 companies with their Digital and Analytics transformation now for over three decades. He has served as Strategic Advisor to Fractal Analytics since 2016.

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