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*90% of industry growth will be captured by companies that successfully engage directly with consumers*

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## The Future of the Supply Chain: Disrupt or Be Disrupted

*Radical business changes require radical technology, process and organizational changes in the supply chain*

The consumer goods and retail industries are undergoing massive change, much of it either driven or enabled by supply chain transformation. This means previously unreachable efficiencies, but it also means preparing for disruption — either from existing competition or from unexpected sources and new "lateral" competitors. In today's hyper-competitive world, no business is too big to fail and business success is increasingly contingent upon swiftly transforming business models. Key points to consider include:

- Over the next five years, IDC projects that 90% of industry growth will be captured by those companies that successfully engage directly with consumers. The consumer rules the world and those companies that figure out how best to engage with these consumers will be get more than their fair share of growth.
- Convergence among consumer goods and retail (direct-to-consumer models, enhanced collaboration) will become commonplace, with retailers expanding private brand portfolios, and consumer goods companies more broadly influencing and selling to the consumer directly.
- Consumer expectations for a transparent and user-friendly fulfillment experience are an increasingly significant contributor to their retailer/brand loyalty.
- Critical supply chain business process changes are required — both vertically (e.g., logistics, warehouse, distribution, supplier management, factory, order fulfillment, consumer delivery) and horizontally, from planning to manufacturing through supply chain execution (integrated supply chain management).

The consumer is both the largest opportunity area and the biggest gap for supply chain transformations in consumer goods and retail. In other words, customer experience differentiation drives supply chain objectives in consumer industries, but the lack of deep consumer insights is a key gap.

*Looking Forward — How to Take Action Right Now**Business Context***Trends that Will Shape the Industry****Engage with Consumers****Nimble Outcompetes Scale****Consumer-Friendly Fulfillment****Elevate Your Innovation "Game"**

The consumer goods and retail industry is experiencing massive change driven both by external consumer requirements and evolving internal capabilities. The consumer now exerts influence in ways not previously possible and causes both direct and indirect challenges for the supply chain.

The most frequent question that IDC gets from consumer goods companies is *"we have optimized our supply chain for the last 50 years to ship full pallets on full trucks from one big building to another; now we are entertaining the possibility that we will have to pick individual items and ship them to consumer's homes; how do we do that?"* There is no simple answer. Retailers are not spared and are wrestling with how best to configure their supply chains for traditional store sales versus online and home delivery (and even reconfiguring stores as fulfillment-centers).

Omnichannel fulfillment and last-mile delivery are necessary business requirements but also catalysts for growth. A demonstration comes from Alibaba and its logistics arm Cainiao Network, which has invested \$1.38 billion in ZTO Express, an express delivery company in China. The partnership will further support the expansion of first and last-mile pickup and delivery capabilities, warehouse management, cross-border logistics, and technology-driven supply chain solutions. In parallel to improving logistics efficiency, enhancing the customer experience is a key goal for the partnership, with a focus on service expansion to customers in China and internationally.

Fulfillment is not the only challenge, as consumers are also increasingly looking for personalization — not just product personalization either, but how and where they shop and buy. How and where the supply chain enables "personalization" is an important consideration for the future.

Over the next few years, IDC sees four major trends that we expect will shape the future of consumer goods and retail industry supply chains:

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*Smaller "lateral" competitors will wrest 10-15 share points from traditional and established large enterprise players over the next five years*

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*By 2020, the contribution of new products (less than three years on the market) to overall revenue will increase by 20 percentage points*

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- In retail, around 90% of industry growth in the coming five years will be captured by companies that successfully engage directly with consumers — the consumer rules the world. Those companies that figure out how best to engage with these consumers will get more than their fair share of growth. And, by the way, as older consumers give way en-masse to Millennials and GenZ, the "problem" just gets worse. Brands/retailers need to clearly identify and serve a target audience — it may be the emerging majority establishing households, the aging segments with high disposable income, or all of the above. To be successful in "commerce everywhere" business models, retailers and brands should achieve individual relationships beyond traditional customer segmentation.
- As traditional barriers to entry fall, smaller "lateral" competitors will wrest 10-15 share points from traditional and established large enterprise players over the next five years. In a recent study, Clarkston Consulting estimated that there was an \$18 billion market share shift from large to small and mid-sized business between 2016 and 2017. Part of the reason for this is that the historical barriers to entry (technology, manufacturing facilities, etc.) have fallen, particularly in the supply chain. They're now either "commodities" or available via the cloud — while private label products are increasingly perceived to be on a par with CP manufacturer brands.
- Consumer expectations for a transparent and user-friendly fulfillment experience are an increasingly significant contributor to both their brand and retailer loyalty. Consumer expectations on delivery windows have continuously narrowed over the past few years, with more retailers adding same-day and next-day fulfillment as options. This dependency and reliance on expedited options has created an expectation of customer service levels that aren't always sustainable or profitable.
- By 2020, the contribution of new products (less than three years on the market) to overall revenue will increase by 20 percentage points. Many product categories in the consumer products and retail industry already experience high SKU churn, with new product contributions ranging widely between 10% and 70%. It is our view that this is only going to accelerate as consumers become more demanding of personalization and product differentiation. One of the implications here is the need for companies to up their game in the new product development and implementation process, and in their portfolio management capabilities.

The common theme in these four trends is the consumer and the necessity for consumer goods and retail supply chains to become consumer-aligned in ways that most are not today. This means that supply chain leaders must clearly establish new requirements for their supply chains, whether smart-postponement, modular manufacturing, or micro-logistics.

*What Are the Key Implications and How to Enable the Opportunities*

## The Opportunity in the Supply Chain is to Drive Efficiency and Own Disruption



In a world in which consumer satisfaction with brand products and services directly impacts on organizational success, it is imperative that companies think, plan and execute differently than they have in the past. The list of business process changes, initiatives, and investment opportunities is long, and the stakes high in creating best in class supply chain visibility, efficiency and consumer fulfillment experience.

The bar for fulfilling both business performance expectations and consumer expectations is higher, and companies need to act now to both reduce costs and add more consumer value in order to stay competitive, if not stay in business. The best supply chains will be built on strong foundations with data at the core, and as new inputs, outputs or technologies are added to the mix, processes will be adapted, maintaining or improving operating efficiencies, while improving service.

New partnerships will be formed, ecosystems cemented, and services through which to access them will be revolutionized. Industry 4.0 solutions, including digital core technologies — IoT, AI / cognitive computing, blockchain, mobile, and voice — radically change the level of precision at which movements, activities, and processes can be managed. Running IT supporting supply chains becomes less critical for some companies, and they handoff control to managed services providers. Others find that running as a SaaS or cloud-based capability offloads enough of the mechanics of IT while improving the ability to innovate and drive successful outcomes for their companies.

An interesting example is the collaboration between Kroger and Ocado. Kroger announced it had signed an exclusive agreement with Ocado that will bring the British e-grocer's automated fulfillment capabilities to America and help Kroger compete in the rapidly evolving home delivery market. Kroger currently offers click-and-collect fulfillment from more than 1,000 stores, and has partnered with Instacart, Uber, and other services on home delivery in select markets. Ocado serves 40% of U.K. households with over £2 billion in annual revenue, or 7% of the market share.

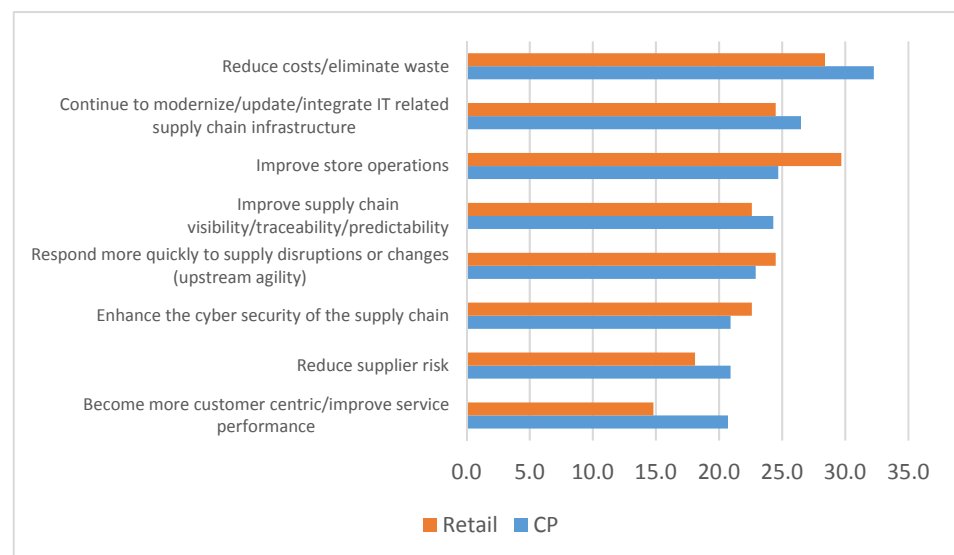
Over half of its sales are in the fresh category. Ocado has a large technology and engineering team of 1,300 people with 200 patents filed. It is selling its technology platform to other grocers in Europe including Morrisons, Auchan, and Casino Group. Its ability to drive profitable growth without compromising service is staggering. It operates from 5:30 am to 11:30 pm on one-hour delivery slots daily, with a product catalog of more than 50,000 SKUs. 95% of its orders are on time, and item accuracy is close to 100%.

Kroger's objective is to beat Amazon and Walmart by gaining a price and supply-chain competitive advantage. Ocado could enable Kroger to reduce its cost and increase its efficiency in meeting customer demand through highly automated fulfillment — as low as 15 minutes labor on average per order, almost a fifth of store/manual pick according to Ocado. Ocado showed it can also break the conventional tradeoffs of online grocery, as it maintains high item accuracy (99%) while increasing range and labor efficiency over time, all while reducing waste to 0.7% currently.

Supply chain executives in CG and retail confirm largely that among their key business priorities are cost reductions and elimination of waste, supply chain visibility, and responsiveness, store operations improvements. Therefore, another key priority identified by executives is to continue to modernize the supply chain technology infrastructure in order to achieve their business objectives (see Figure 1).

FIGURE 1

### Supply Chain Priorities



Source: IDC Retail and Consumer Goods Supply Chain Survey, 2018 - N=221

The fully digital supply chain enabled by Industry 4.0 is built on a common shared data core and essentially one version of truth. It is also a secure and transparent platform for seamless data exchange and collaboration. The following are critical implications with thoughts regarding how to take action. The consumer supply chain needs to deliver:

- Convergence among consumer goods and retail (direct-to-consumer models, enhanced collaboration). Retailers are expanding private brand portfolios, and consumer goods companies are figuring out how to influence and sell to the consumer directly, while disruptive brands often start with a small set of products or a service finely tuned to fill a gap or take a fresh approach to solve for a consumer need. Companies need to be hyper-aware of shifting consumer trends and buying patterns, to focus more on product and service innovation, and respond adroitly in areas forecast to be hot opportunities, or implement the necessary defensive moves.
- Omnichannel solutions. As the identities of consumer goods and retail companies converge, driving towards a common data core becomes more important. Retail and manufacturing solutions will, of course, operate independently, and have independent master files, but access to common customer, vendor, product, and sales history records becomes imperative. Marketing and fulfillment objectives align with customer satisfaction, and best in class supply chain execution makes satisfaction possible. Companies should evaluate the data that could be transformed to enable better consumer satisfaction.
- Product transparency and traceability. As marketplace product portfolios expand, and global goods are available everywhere, issues of authenticity become more prevalent, and the consumer desires more transparency and validation that the product they are buying is certified authentic and is what it claims to be. Similarly, as the planet becomes more populated, the food supply chain needs to evolve processes that improve quality and safety and reduce waste. Technologies such as IoT and blockchain can pinpoint a lot, a farm, or an animal that may, for example, be the source of a tainted product that needs to be recalled, or perhaps just traced for compliance reasons. Writing essential information to the blockchain at each crucial stage in the supply chain can help provide inter-enterprise visibility, as well as an immutable digital record.
- Real-time visibility. People can be more productive when visibility, enabled by IoT, improves the orchestration and execution of supply chain processes. Coupled with AI and machine learning, processes can be continually improved, and continuously automated more, reducing human interaction requirements, improving inventory accuracy and enhancing performance results.
- Conveyance is reinvented. Best practices in inventory visibility combined with best practice last-mile delivery execution results in the highest possible fulfillment customer satisfaction ratings. Inventory visibility enabled by IoT solutions that include sensors, data capture, and supply chain analytics solutions, is the first step towards no compromise-no disappointment fulfillment. But combine near-perfect inventory accuracy as a result of these IoT capabilities with best in class distributed order management-driven last-mile fulfillment solutions, and products can be staged with more precision, and pick, pack, and ship



*Commenting on the launch, Yu Yongli, head of JD.com's JD Y business unit, which is focused on smart supply chain innovation, said, "JD.com has built up an incredible wealth of expertise and experience in supply chain management, including cutting-edge technologies like AI, big data, blockchain and internet of things. By sharing our resources with leading experts from academia and business, and supporting R&D of emerging technologies, we will empower the GSIC to develop the next generation of smart supply chain infrastructure. These technologies both enhance our own business and enable companies around the world."*

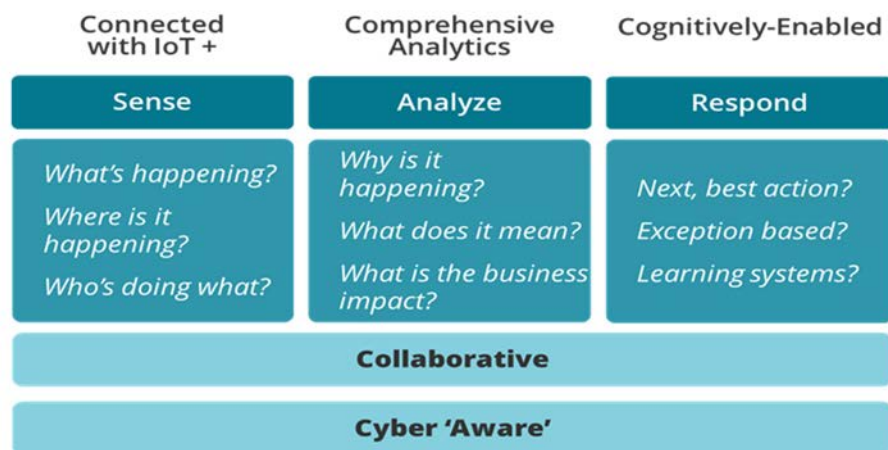
operations can respond most efficiently. The action required is clear — IoT for inventory visibility and distributed order management solutions is necessary.

Traditional incumbents (with legacy, etc.) must embrace digital transformation lest they find themselves disrupted, and must take actions to think, plan, and execute differently than they have in the past. Whether being a disrupter is an objective or not, behaving like a digital native should be. Digital natives are inherently laser-focused on the customer, and architect the supply chain to be best in class in the eyes of the consumer. For example, JD.com launched a multimillion dollar Global Supply Chain Innovation Centre (GSIC). A key goal of the GSIC is to promote the development of next-generation smart supply chain technologies. The center has been designed to act as an international hub for smart supply chain research and innovation, leveraging JD.com's expertise on IoT, AI, and blockchain for supply chain use cases.

Indeed, leveraging a combination of digital technologies such as the internet of things, advanced analytics, blockchain and artificial intelligence has the potential to dramatically change the way in which supply chains operate and the business capabilities (and business models) that they can support. For many forward-looking companies, the supply chain has gone from being managed as a cost center to being leveraged as an opportunity center.

*Critical Supply Chain Capabilities to Both Drive and Support the Future of Business*

**The Digitally-Enabled Thinking Supply Chain**



The idea here is not necessarily to frame out a next-generation or future supply chain, but rather to identify those traits that IDC believes will characterize the best-in-class consumer goods and retail supply chains and allow companies to have a supply chain that enables rather than restricts the necessary capabilities and experiences that the business will need. At the core of this is the notion of sense–analyze–respond. Hardly a new notion, certainly, but something that has proven to be both less than completely realized in the past, and realizable in the present and future in ways not previously possible with the application of modern, emerging technologies. Enabled with cloud-based applications and tools, supply chain leaders in retail and consumer

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*Though 1:1 relationships may persist in specific areas (direct materials procurement, for example) the world is moving to networks*

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goods can take advantage of networked solutions which provide flexibility across organizations for data management and shared process execution to enable the thinking supply chain.

- **Connected with IoT** — Whether sourced from traditional ERP systems, increasing use of social media sources, or from exponentially increasing numbers of sensors, the supply chain now has access to myriad data sources and will have access to even more as time progresses. As sensors proliferate, and opportunities for improvements materialize, it will be incumbent upon supply chain organizations to understand how to connect to these sensors and leverage data. IoT will be everywhere.
- **Comprehensive Analytics** — We have talked about an analytics "gap" in the supply chain; principally the inability of most company's analytics capabilities to keep up with the growth in data. This gap will only get worse and is at the core of the comprehensive analytics capability that will need to both scale with data and offer new ways of extracting insights and business value in real time.
- **Collaborative** — The best-in-class supply chain of the future must be highly collaborative. The reality is that supply chains rely on suppliers and enablers more today than at any time in the past; and as the definition of "core competency" continues to focus on fewer areas, they will rely on these partners even more in the future. Though 1:1 relationships may persist in specific areas (direct materials procurement, for example) the world is moving to networks as a way be better enabled collaborative processes.
- **Cyber Aware** — Awareness of cybersecurity, while neither the direct responsibility nor the expertise of the supply chain, is nonetheless a high priority concern. Although physical security has long been the principal concern of the chief supply chain officer, many we have spoken to are now even more concerned about cyber threats.
- **Cognitively Enabled** — Then finally there is the notion of the supply chain being cognitively enabled. Just as we noted the analytics gap earlier, there is also an "eyeballs" gap in the supply chain. As data grows in volume and variety, and analytics are engaged to keep up, the risk of having more insights than people can process we believe will emerge as a further "attention gap." Automation, machine learning and other AI technologies will be important here to reduce this gap and keep people and data in sync.



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*The journey to a digitally-enabled supply chain is different for all companies... but there are some common elements that are likely to contribute to success*

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As with any transformation, and make no mistake, moving to a digitally-enabled thinking supply chain is a transformation, the journey will be different for all consumer goods or retail companies. In part, it will depend upon the starting point, but it will also be about the strategic goals for the transformation. Is it to make the things that you already do faster, more efficient, and more effective? Or is it to enable new business models or approaches to the consumer that are not possible with a more traditional approach to the supply chain? Or it may be a continuum, with efficiency goals in the short term and new business models or approaches in the longer term.

The supply chain transformation journey may be different for all who pursue it, but there are some common elements that are likely to contribute to success. First and foremost is to understand the strategic imperative for transformation — what are we trying to accomplish in the supply chain? Secondly, there is a need to understand the role of technology, not as a goal unto itself, but an enabler for process and business transformation, particularly as it relates to cloud adoption for SCM. Third is to cast aside preconceived notions about what is and is not possible.

### *Challenges*



Addressing the growing needs of the consumer is both the most significant opportunity and the biggest gap of supply chain transformations. In other words, customer experience differentiation drives supply chain objectives in consumer industries, but the lack of profound consumer insights is a key gap. This is fundamentally a data, planning, process execution, and organizational problem. The good news is that there are technology solutions to address this gap.

IDC finds that supply chain executives are facing the following key challenges:

- **Getting the intelligent data core ready.** Connected supply chains require real-time accurate inventory visibility, product information, and master data management. Labor, quality, and process efficiency require an intelligent core. This is where the algorithms, code, and models live that enable you to glean the insights and actions from the data. The intelligent core will help improve supply chain resilience by having a supply chain that can quickly adapt to disruptions in the marketplace.

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*Marketplaces are becoming the ecosystem of inventory and the inventory of experiences from the consumer point of view*

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*Both consumer product companies and retailers identified visibility as a top driver of supply chain change in the IDC 2018 supply chain survey. Fully 87% of survey respondents stated that they are actively engaged in improving visibility in their supply chains.*

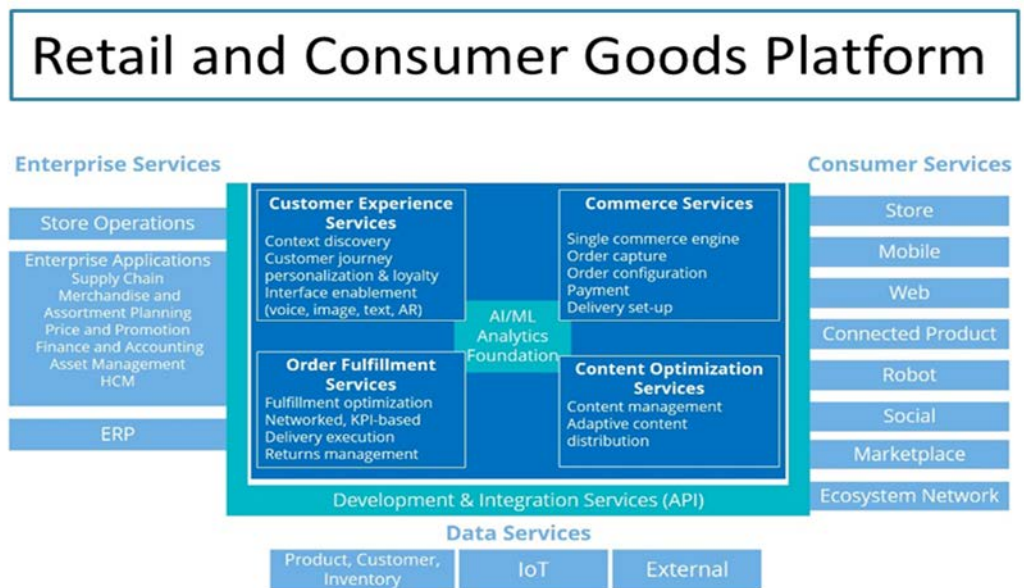
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- **Are platforms and a robust data core in place?** Where is relevant supply chain data stored (centrally and/or at the edge), how is supply chain data captured, and what are the attributes and information available to support optimized fulfillment decisions? A unified, datacentric platform integrating disparate supply chain data and applications with a growing variety of consumer services is required. Comprehensive analytics should look at the available data and then use AI to enable faster and better responses.
- **Complexity and speed.** Omnichannel supply chains and direct to consumer business models are less tolerant to supply chain failures. As new product introductions will further accelerate, and in-stock failures are much less tolerable in direct-to-consumer business models, requirements for "on-shelf availability" will complicate further. A well-accepted industry metric is that for every three percentage points of out of stocks (OOSs), there is a corresponding 1% loss of revenue. But this changes in a world where commerce is increasingly conducted online, with heightened consumer expectations for "perfect" fulfillment, and direct-to-consumer businesses evolve.
- **Can the supply chain network handle the incoming traffic?** Supply chains are evolving into flexible distribution networks and ecosystems. Marketplaces are becoming the ecosystem of inventory and the inventory of experiences from the consumer point of view. There is an increasing number of micro-logistics shared-economy providers and last mile delivery partners. Half of the items sold on Amazon worldwide are from small and midsize businesses that offer their products through Amazon Marketplace, and Amazon's global sellers worldwide grew 50% in 2017 (cross-border ecommerce leveraging Amazon inventory and delivery hubs). What is the right marketplace strategy and what are the required supply chain capabilities to execute on the strategy? Is this a supply chain office responsibility, a customer experience office responsibility or shouldn't it be both?
- **Sense, analyze, respond.** Key business process changes are required — both vertically (e.g., logistics, warehouse, distribution, supplier management, factory, order fulfillment, consumer delivery) and horizontally, from planning to manufacturing through supply chain execution (integrated supply chain management). For example, both consumer products companies and retailers identified visibility as a top driver of supply chain change in the IDC 2018 supply chain survey. Fully 87% of survey respondents stated that they are actively engaged in improving visibility in their supply chains, with supply chain planning and tier 1 supply as the key focus areas. So, the ability to sense a particular stocking issue, analyze it and respond to mitigate the problem will inform single or vertical processes, while enabling horizontal or integrated supply chain planning and execution capabilities.
- **Change management.** Change management is among the top 3 challenges for supply chain transformation, as reported by 40% of supply chain executives. Think of change management not only in the traditional way of organizational structures, learning, and communication plans that are part of a complex project. Change management now embraces leadership, vision, people empowerment, organizational alignment, and creating a culture for innovation and agility. As Frances Hesselbein, of the Leadership Institute, said: "Culture does not change

because we desire to change it. Culture changes when the organization is transformed — the culture reflects the realities of people working together every day."

How consumer companies will address these challenges in supply chain transformations will determine their ability to differentiate. Today's best-in-class supply chain performance will not suffice for tomorrow, so driving supply chain change at scale and at speed becomes imperative.

### *A New Foundational Platform Connects Supply Networks to the Customer Experience*



Customer experience is the trigger for retail and consumer goods innovation. It is the focal point of a new way of doing business for retailers and consumer brands, with an individualized value proposition at the core merging physical and digital experiences. Individual personalization is fundamental to driving the paradigm shift, where recurring clients become high spenders, and passive shoppers become active customers, as companies unlock "commerce everywhere."

AI empowers customer experience, commerce, fulfillment, and merchandising, while consumer companies experiment with blockchain for inventory management, loyalty, and digital identities. Examples include Pizza Hut increasing conversion rates by 35% with its "dealbot," Sephora capturing data throughout the client journey to personalize future journeys, and Nike creating emotional customer connections based on repeatable services that create operational leverage for 100 million loyalty program members.

As the industry is evolving at an unprecedented speed, operating models and technology platforms also need to do so. Retailers and consumer brands cannot rely on legacy processes. IT infrastructure and applications architecture of the past cannot achieve exceptional customer experience and commerce

performance. So an industry imperative is to rethink core systems and move toward the unified, datacentric, platform approach.

In practical terms, the platform does the following:

- Converges back-end and front-end systems
- Provides the business logic for retail and consumer goods digital transformation across commerce, customer experience, and fulfilment optimization
- Works as test environment for innovation and operations environment for profitable omni-channel and direct-to-consumer business models
- Enables improved governance and optimized execution of edge processes
- Provides development and integration services around a rich feature set of applications
- Is not a monolithic system nor a customized environment, but provides increased agility, time to value, and cost efficiency
- Accelerates innovations and short-term value realization

### *Advice for Consumer Industry Leaders*



Radical business changes require radical technology, process, and organizational changes. Fulfilling both business performance expectations and consumer expectations is an essential milestone in making consumer businesses the digital businesses of today, and the future of commerce businesses of tomorrow.

IDC recommends the following actions to consumer goods and retail leaders, as they move away from legacy businesses:

- Inform integrated supply chain management with consumer insights and anchor innovation strategies on consumer insights across the ecosystem. If data is the new oil, ecosystems are the new retail currency. Creating, participating, and managing new and extended marketplaces and consumer ecosystems has become a critical differentiating success factor.

- A digitally-enabled thinking supply chain transformation is built on a progression of sense, analyze and respond. Converged usage of IoT, AI, and blockchain is a key technology requirement for a transparent and user-friendly fulfillment experience.
- Accelerate value realization and innovation by doing the following:
  - Investing in a new commerce platform providing customer experience, commerce, content and omnichannel fulfillment services.
  - Implementing an AI foundation roadmap embedding advanced analytics, machine learning, and AI capabilities right into the application components of the platform. It means re-architecting IT and replacing some legacy applications.
  - Adapting the user experience through process-centric, user-friendly, developer, configuration, and integration services.
  - Re-architecting service delivery among the four core components of the platform, enterprise services, consumer services, and data services.
  - Consider cloud or SaaS to deliver digital supply chain transformation faster and at a lower entry cost.
- Speed, resilience, and flexibility are the essential goals more than perfect order and perfect fulfillment objectives. As market disruption will happen, prepare to be more resilient, by improving supply chain visibility, automation, collaboration, and intelligence.

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