



Demand-driven supply chain 2.0

A direct link to profitability

KPMG International



kpmg.com/demanddriven



A level of customer responsiveness you could only dream of

Picture the following scene: you're outdoors and you hear thunder, and, looking up to the sky, you see a large, gray rain cloud. You take out your smartphone and find a website selling umbrellas. Having selected your style and color, you press 'order', and a mere 5 minutes later, a drone is hovering above you, gently delivering the purchase into your arms — just as the first raindrops begin to fall.

Such a scenario may seem futuristic, but it's actually closer than you think. Over the last 2 years, Google has been quietly building a fleet of drones to deliver merchandise bought online. Drones will soon be delivering everything from consumer goods in cities to vital medical supplies in remote areas, bringing unprecedented levels of efficiency and reliability, especially if deployed at scale. At the January 2016 Consumer Electronics Show in Las Vegas, Chinese drone-maker Ehang went one step further, unveiling a prototype for the first autonomous drone to carry humans.

3-D printing (featured on page 25) is another recent technology that is turning supply chains inside out. By enabling mass customization, and shortening the distance between manufacturer and consumer, 3-D printing can further reduce already low manufacturing costs.

Data is a massive disrupter. KPMG's partnership with motor racing specialist McLaren (discussed on page 22) takes the same technology that helps drivers make split-second decisions in races and applies it to the supply chain. These principles are already helping world-class companies anticipate and instantly adapt to changes in customer behavior, stock availability and transportation.

Technology may be the enabler, but it's customers, and their rising expectations, that are the real stimulus behind a demand-driven supply chain 2.0. Having for some time focused on efficiency and cost, companies are starting to acknowledge that the supply chain has one over-riding priority: keeping customers happy and creating a better customer experience.

As this paper shows, there is increasing evidence of the link between customer experience and profitability. However, with growth back on the agenda, many supply chains lack the flexibility and agility to compete across a networked supply chain.

Information lies at the heart of an effective supply chain: to capture and analyze data that feeds decisions such as what to produce, in what quantity, how much to store and when to deliver. Clear, strong leadership allocates responsibility

to appropriate individuals, to maintain awareness of the value that supply chain decisions bring to companies.

There is growing evidence that companies adopting demand-driven supply chains enjoy increased sales, reduced operating expenses and improved working capital — by focusing on customer experience.

Every company is at its own stage in the journey towards a demand-driven supply chain 2.0. The examples in this paper show how some of the better practitioners are gaining essential competitive advantage, by recognizing the holistic, and technologically advanced, nature of tomorrow's supply chains.



Erich L. Gampenrieder
Global Head of Operations Advisory
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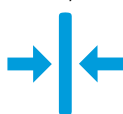
Drones will soon be delivering everything from **consumer goods** in cities to **vital medical supplies** in remote areas.



How can your supply chain consistently delight your customers? Our experience suggests that there are five essential building blocks.

1

Align the supply chain with the wider corporate strategy and integrate it with customer-facing functions, with common performance metrics and rewards that focus on fulfilling customer needs. Open collaboration with suppliers, and in some cases, competitors, can also boost efficiency and responsiveness.



2

Enhance visibility and share information, to help ensure that every player in the supply chain understands what customers want and can trace the status of materials, parts and finished product. Forecasting and demand planning must incorporate real-time data to become more accurate and reliable.



3

Instill greater flexibility and agility to adapt to expected and unexpected market events, and seize opportunities to source new materials, arrange logistics, scale up or down, or enter new markets.



4

Structure the supply chain to address local and global competition and evolving regulations, such as royalties, tax, customs, transfer pricing and anti-profit-shifting initiatives.



5

Address different customer needs and values by segmenting end-to-end supply chains and building the foundation to efficiently provide offerings valued by customers.



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The future belongs to the new customer

Managing growth and rising expectations

Those brands with a superior customer experience **enjoyed double the revenue** growth of the **UK FTSE 100 index** between 2010 and 2015.





Customer experience is the new battleground

Many companies lack agile, responsive supply chains to match their growth ambitions

Customer experience programs are often seen as a cost, rather than a way to build value

Whether they're teenagers at the mall, parents shopping online or multinational corporations buying raw materials for manufacturing processes, today's customers have raised their expectations.

These 'new consumers' are connected, informed and empowered, and continually demand more choice of product, greater flexibility in delivery options and faster service. This is especially true in sectors with a swift pace of innovation and for companies that are closer to the end customer.

Gartner research shows that 89 percent of CEOs believe their businesses will compete "mostly on customer experience" by 2016.¹ Forrester has defined the next 20 years as "the age of the customer"; a business cycle in which tomorrow's winning brands re-invent themselves around customer needs.²







According to KPMG's *Global CEO Outlook 2015*, which polled the views of more than 1,250 chief executives from around the world, the second biggest priority over the next 3 years is gaining a stronger client focus.³

Interestingly, the same research also indicates that the single biggest barrier to innovation is rapidly changing customer dynamics. In a separate 2015 global KPMG study of 539 senior retail and consumer executives, 60 percent say they're concerned that changes in consumer behavior will threaten their organization's growth prospects.⁴

These fears are not unfounded. A recent assessment of 10,000 UK consumers found that, in the year from 2014 to 2015, overall customer experience across 250 brands had, on average, failed to improve, despite huge investments in marketing, customer service and logistics.

However, those brands that had managed to achieve a superior customer experience enjoyed double the revenue growth in the 5 years from 2010 to 2015, compared to the FTSE 100 index.⁵

Companies must adapt to serve the new customer

Consumers are...	Which means they...	So companies must...	Driving investment in...
 Connected	Can shop anytime and anywhere	Offer a digital shopping experience that is simple, seamless and intuitive	Digital, supply chain, omnichannel, distribution and logistics, procurement, data and analytics
 Informed	Have unlimited information at their fingertips	Embrace the shift in buying behavior	Customer experience, data transparency, pricing, customer loyalty, digital
 Conscious	Are socially, ethically and environmentally aware	Meet the demand for transparency and authenticity	Data transparency, regulatory compliance, corporate social responsibility (CSR), health and wellness, research and development, product collaboration
 Empowered	Have an outlet to express their opinion	Use consumer-generated content to innovate and improve	Social media, crowdsourcing, digital, data and analytics, research and development, customer behavior
 Individual	Expect a personal experience	Provide a bespoke experience how, where, when and when they want it	Digital customization, data and analytics, customer loyalty, supply chain, strategy, merchandising
 Vulnerable	Are more exposed to risk	Put measures in place to protect the customer	Cyber security, regulatory compliance, digital

¹ *CEO Survey 2015: Committing to Digital*, Gartner, 2015.

² *Winning in the Age of the Customer*, Forrester, 2015.

³ *Global CEO Outlook 2015. The Growth Imperative in a More Competitive Environment*, KPMG International, 2015.

⁴ *To Stand Still Is To Fall Behind; 2015 Global Consumer Executive Top of Mind Survey*, KPMG International, 2015.

⁵ *A New Era of Experience Branding; Customer Experience Excellence Centre 2015 UK Analysis*, KPMG/Nunwood, 2015.

In a recent **KPMG survey**, more than a third of senior retail and consumer executives say their **supply chains lack the speed and agility** to effectively compete with **new entrants**.

New customers are testing supply chain agility

Customer experience is becoming undeniably more important, yet many companies lack responsive supply chains that can continually adjust to fluctuating customer requirements. All too often, manufacturing is based upon forecasted demand, while purchasing and inventory replenishment is driven by current, rather than future consumption patterns. Not surprisingly, more than a third of CEOs say their supply chains lack the speed and agility to effectively compete with new entrants.⁶

Another 2016 KPMG global survey of 360 senior manufacturing executives reveals that one of the biggest threats to growth is a supply chain that fails to deliver.⁷

The growing need for omnichannel strategies will make supply chains considerably more complex, as companies seek to satisfy customers online, by phone, and via retail and other physical locations. This can add to unpredictability, as online shoppers, in particular, expect fast service. US athletic retailer **Finish Line, Inc.** was a victim of this new complexity, as a surge of online orders over the busy 2015 Christmas period overwhelmed its new warehouse management system, which was unable to process orders fast enough. The company lost an estimated 32 million US dollars' (US\$) worth of sales, which has subsequently led to an announcement that 600 stores are to close — approximately a quarter of its total.⁸

⁶ *To Stand Still Is To Fall Behind; 2015 Global Consumer Executive Top of Mind Survey*, KPMG International, 2015.

⁷ *2016 Global Manufacturing Outlook*, KPMG International.

⁸ *Retailers Bet Big on Retooling Their Supply Chains for E-commerce*, Wall Street Journal, 28 January 2016.

Growth is back in focus for CEOs, but the capability of the supply chain enables them to cash the check

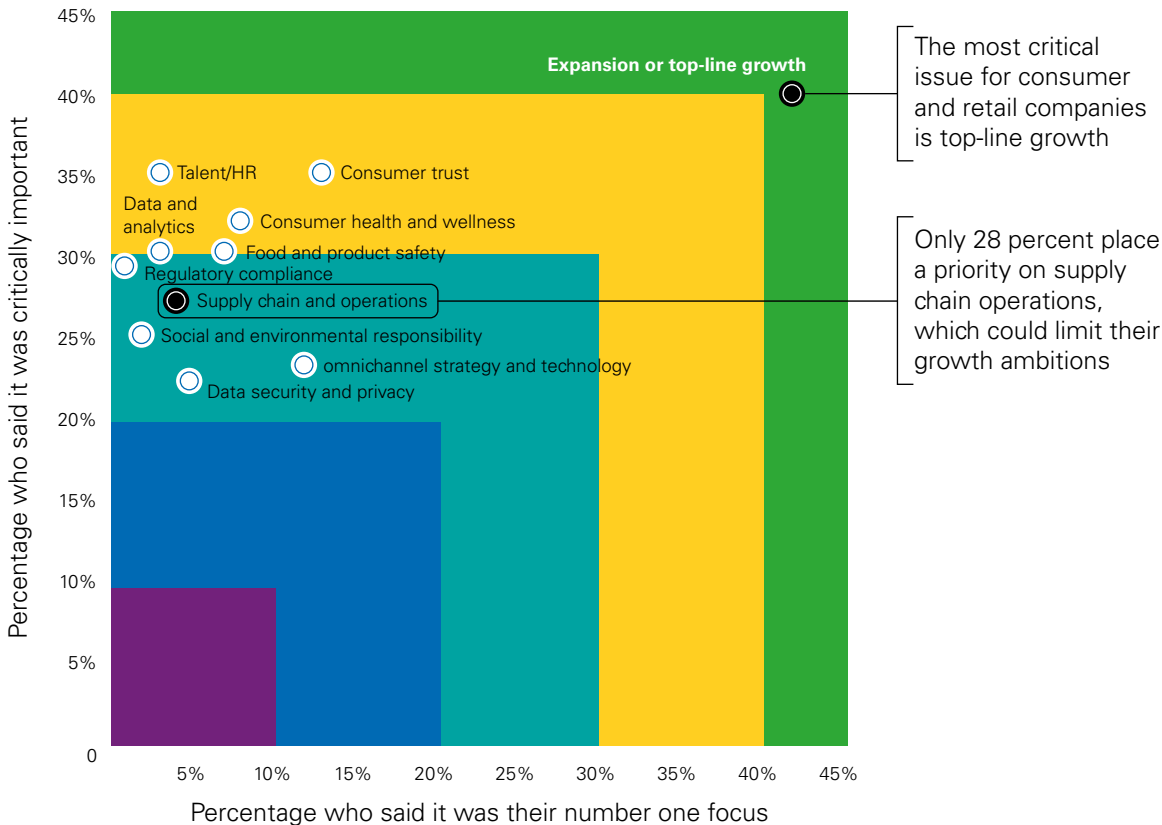
Growth has re-emerged as a major strategic imperative. KPMG's *Global CEO Outlook* found that companies' single biggest strategic objective is to develop new growth strategies.⁹ As the

graph below shows, top-line growth is also, by some distance, the number one priority for consumer executives, yet supply chain and operations are ranked lower down the list,¹⁰ suggesting

that organizations may not have the supply chains to keep pace with their ambitions — and, therefore, risk missing out on opportunities to 'cash the check.'

Consumer perspective

Top priorities for chief executives



Source: 2016 Top of Mind Survey, KPMG International and the CGF, n=539

Future shock: Are you up to the omnichannel challenge?

With more and more consumer (and industrial) customers expecting omnichannel purchasing, manufacturers, retailers and distributors must be ready to offer instant, comprehensive product and delivery information, and satisfy orders seamlessly, via fully integrated digital supply chains. Digital can no longer be viewed as a stand-alone channel. Retailers, in particular, have to be alert to changing buying behavior, notably:

Savvy consumers defining the delivery model by opting for free delivery, which is impacting already low margins.

Consumers shopping late and 'bringing the fitting room home' to test multiple items, putting pressure on stocks.

Free returns, which drive extra purchases online — and steer greater traffic into stores, once more testing ability to keep stocks up with demand.¹¹



Julio Hernandez
Global Head of Customer Center of Excellence
KPMG International

⁹ *Global CEO Outlook 2015. The Growth Imperative in a More Competitive Environment*, KPMG International, 2015.

¹⁰ *To Stand Still Is To Fall Behind; 2015 Global Consumer Executive Top of Mind Survey*, KPMG International, 2015.

¹¹ *Omnichannel Retail Survey 2016*, KPMG International.

Many executives struggle to link customer experience with hard financial results, and some even remain unconvinced of the value of the concept. A recent poll found that 90 percent of financial directors still view customer experience programs as a cost to the business rather than a driver of profit.¹² In a separate study, 9 out of 10 customer

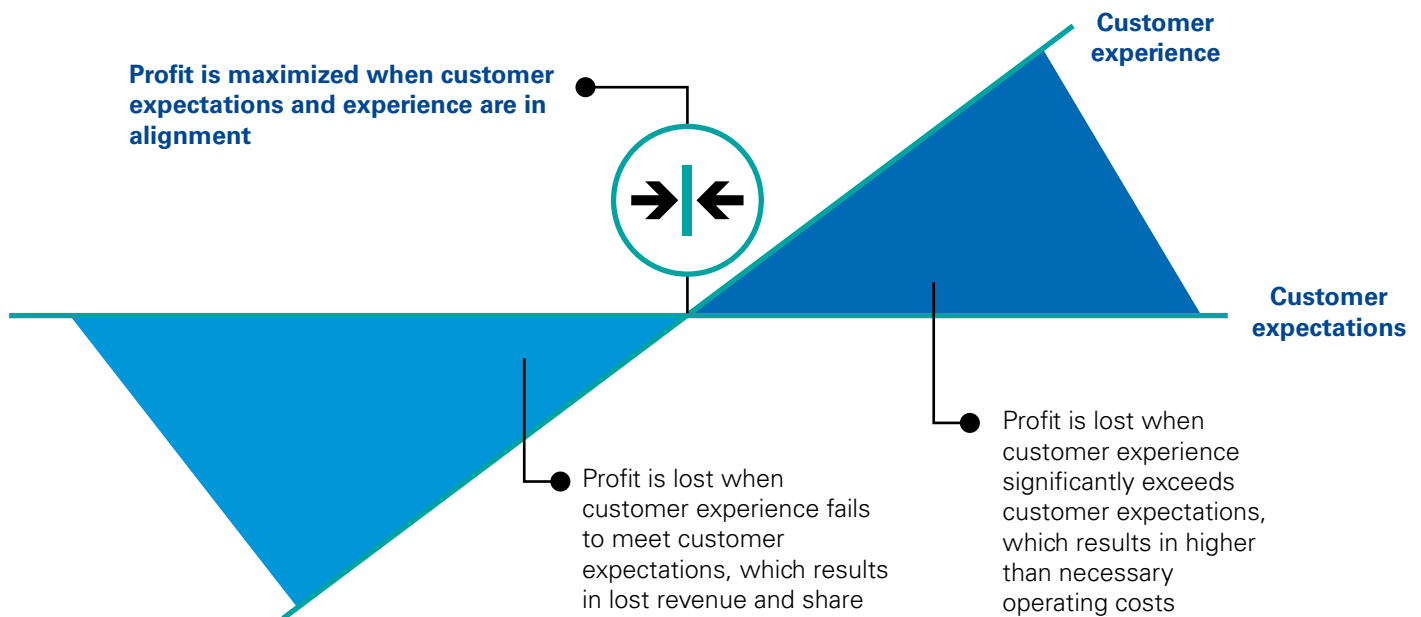
experience program managers acknowledged the limitations of their current set of metrics, stating that “Measuring customer experience with Net Promoter ScoreSM (NPS)¹³ and satisfaction is insufficient.”¹⁴

Such views are, however, contrary to the rising evidence of the link between customer experience and profitability and market share. Equally, customer

experience cannot be pursued at all costs, and companies must find the right balance between investment and return, as the following diagram illustrates.

But it gets even more challenging in the consumer industry where shoppers seek a hyper-relevant experience, in short, efficiency and savings are more important to them than personal engagement.¹⁵

Matching customer expectations with cost-effective delivery



Source: KPMG International

¹² Forrester research, 2015.

¹³ Net Promoter, NPS and the NPS-related emoticons are registered service marks, and Net Promoter Score and Net Promoter System are service marks of Bain & Company, Inc., Satmetrix Systems, Inc. and Fred Reichheld.

¹⁴ *Measuring Customer Experience, How To Develop and Execute the Most Profitable Customer Experience Strategies*, Philipp Klaus, 2014, ISBN 978-1-137-37546-9.

¹⁵ *Winning the New Digital Consumer with Hyper-relevance*, Cisco 2015.

Embracing the new customer

Demand-driven supply chain 2.0

Why do so many **supply chain initiatives** focus primarily on **cost reduction** and **efficiency** — rather than on **customer experience metrics**?

Customer-embracing, demand-driven companies:

- own the customer experience life cycle**
- continually adjust their operations to serve dynamic customer requirements**
- align and integrate the supply chain with the wider business**
- collaborate with all supply chain stakeholders**
- improve supply chain visibility**
- build agility and flexibility to adapt to changing market conditions**
- structure themselves to address complex competitive and regulatory environments**

The demand-driven supply chain is not a new concept. Yet Gartner, who first coined the phrase, recently found that fewer than 10 percent of companies consider their own supply chains to be fully integrated with other parts of the business.¹⁶

In many organizations, the supply chain is still largely isolated and not closely integrated with customer-facing parts of the business. Key performance indicators (KPIs) and subsequent incentives are largely focused on cost reduction and efficiency, which, although important, fail to consider measures such as order times and accuracy, which have a huge bearing on customer satisfaction and experience. In addition, performance targets in functions such as sales, marketing or procurement may not be aligned, which encourages conflicting behavior, with some groups

rewarded purely on cost targets and others incentivized on volume.

And, because the supply chain is not viewed as a single, organization-wide system, there is insufficient visibility over each step in the chain. Without such transparency, suppliers do not receive signals quickly, which can significantly impair their ability to react to order changes, promotions or stock-outs. In the worst cases, it can take as long as a month to respond, leaving the end customer dissatisfied and vulnerable to defection. The alternative is to

overstock, which ties up valuable working capital in items that may never sell.

Companies have invested huge amounts in making their supply chains more demand-driven. However, these efforts are typically confined to one geography, one business unit and/or one function, such as procurement, planning, logistics or inventory management. A lack of common, organization-wide, end-to-end processes restricts the ability to access reliable data, make robust decisions on future demand patterns or segment customers.



¹⁶ CEO Survey 2015: Committing to Digital, Gartner, 2015.

What does demand-driven 2.0 look like?

In a demand-driven supply chain 2.0, companies know precisely what clients value and organize their entire operations around satisfying these needs, to create a consistent, excellent customer experience.

Sophisticated demand planning, inventory management and distribution enable customers to

select, receive and return products/ services when and where they wish, with an ever-shortening time between order and delivery.

The supply chain flow starts with the buyer, with purchases — and an expressed desire to purchase — providing the demand ‘signal’ that triggers production and replenishment.

In a fully networked model, retailers, distributors, manufacturers and suppliers collaborate on how to respond to fluctuations in demand or to adapt to new product requirements.

Companies that have successfully adopted such a model address five key issues.

Five key supply chain questions

<p>To what extent does your end-to-end supply chain function as one virtual organization, with everyone working on aligned objectives, measured by synchronized metrics and using shared information?</p>	<p>For which part of your product/ service portfolio do you have visibility of your total demand and supply picture at any point in time, and does this visibility extend beyond your first-tier partners? To what percentage does this visibility extend beyond your first-tier partners?</p>	<p>What lead time percentage does it take for demand changes to reach second-tier suppliers?</p>	<p>How quickly can you identify and respond to a potential supply continuity issue?</p>	<p>What percentage of low/middle/high volatile product movements are driven by actual demand or by forecasted demand?</p>
<p>1. Sharing the vision: aligning the supply chain with the business</p>	<p>2. The all-seeing eye: improving supply chain visibility</p>	<p>3. Outrunning the pack: instilling flexibility and agility</p>	<p>4. Facing local and global realities: organizing for success</p>	<p>5. Acknowledging differences: addressing customer segments</p>

Sharing the vision: aligning the supply chain with the business

1.

Does your entire supply chain function as one virtual organization, with everyone working with the same information, processes and metrics?

Senior manufacturing executives are certainly aiming for this goal. When asked about their top operational priorities between 2016 and 2018, “aligning supply chain to corporate strategy” is ranked equal first.¹⁷

There is some way to go. Sales teams, desperate to please retailers, often demand and dictate excessive inventory levels — without actually holding responsibility for stock and working capital. The consequence? Unnecessarily high levels of one type of product gathering dust on shelves,

and factories unable to meet orders for alternative items, resulting in lost sales opportunities.

Real transformation involves full integration of sales, production, inventory, sourcing, product development and finance/budgeting, with harmonized business processes and technology, to enable fast, responsive manufacturing and logistics capabilities.

Control towers act as a hub to capture and use supply chain data, to enhance visibility and to ensure that decisions

are consistent with strategic objectives. In this way, organizations can connect multiple tiers of the supply chain in the same, cloud-based network and receive, and respond, instantly to signals from customers.

A shared understanding of ‘value’ means that each function and every employee is working towards a common goal of satisfying customers. Performance metrics should be less about productivity and efficiency, and more about improving customer satisfaction, experience and value.

Future shock: a connected automotive supply chain

Over half the new cars sold in 2016 will be ‘connected’, raising the opportunity for data-driven aftermarket parts supply chains. Automotive manufacturers are developing their in-vehicle diagnostic systems to identify faults and using algorithms to predict when replacement parts are required, based on vehicle usage.

I expect that, by the turn of the decade, some automakers’ aftermarket supply

chains will receive demand signals automatically from original equipment manufacturers (OEMs) based on aggregated connected car usage data. Parts will be shipped to franchised dealers and repairs diarized through the in-vehicle connected car interface. This development has the potential to speed up aftermarket supply chains, eliminate waste, enhance customer service and improve profitability.



John Leech
UK Head of Automotive
KPMG in the UK

¹⁷ 2016 Global Manufacturing Outlook, KPMG International.

A shared understanding of **'value'** ensures that each function and each employee is working towards — and **measured against** — a common set of **customer-oriented goals**.

Crucially, leaders should be accountable — and rewarded — for achieving high scores on important metrics that impact customer experience. These could include critical measures such as customer order cycle time, order/inventory accuracy, percentage of orders shipped complete and on time, delivery reliability and delivery capability. Other, more direct 'experience' indicators include Net Promoter ScoreSM (NPS),¹⁸ Customer Effort Score (CES), Word of Mouth Index (WoMI) and Customer Satisfaction (Csat).

Healthcare perspective: a global pharmaceutical packaging company

How harmonizing metrics got everyone pulling in the same direction

The challenge

Given the sensitive and delicate nature of the product, the client's supply chain had to be of high quality, reliable and cost-effective, and able to cope with a complex portfolio of products. The supply chain was not harmonized across geographies, which made it difficult to compare performance, due to a lack of common metrics.

There was no clear owner for metrics, which were often determined at local country level. Consequently, a fifth of all metrics were not aligned with overall operations objectives, leading to conflicting goals: Some parts of the business were more oriented towards sales volume, others towards margins and others again favored customer satisfaction metrics.

The approach

Using a top-down approach, management sought to fully align all business functions and support end-to-end supply chain goals. Their aim was to establish one set of key executive level metrics, and then create consistent management and operational level metrics to be used across the organization.

The main supply chain objectives were defined as:

1. Increase asset utilization by raising utilization of underperforming assets
2. Improve operating margin by reducing product cost
3. Improve customer service through faster and more reliable order-to-delivery
4. Reduce total capital expenditure by cutting capital investment as percentage of revenue
5. Minimize risk by establishing reliable sources of product supply

A total of 14 KPIs are now used to manage operations performance at the executive level, with three essential performance areas to be measured, identified as: **customer service quality**; **working capital effectiveness** (managing inventory and backlog levels); and **operational effectiveness** (efficient utilization of manufacturing assets). These three metrics should drive profitability and executive decision-making, with senior management assessed and rewarded on meeting targets.

The results

The company now has a common approach to measurement worldwide, which is closely aligned with strategic objectives. This should help improve customer service, working capital management and overall operational effectiveness.

Key takeaways

- **Nothing focuses the mind more than consistent measurement and associated rewards.**
- **Your performance metrics must be in line with corporate objectives.**

Erich L. Gampenrieder

Global Head of Operations Advisory and Global Head of Operations Center of Excellence, KPMG International

¹⁸ Net Promoter, NPS and the NPS-related emoticons are registered service marks, and Net Promoter Score and Net Promoter System are service marks of Bain & Company, Inc., Satmetrix Systems, Inc. and Fred Reichheld.

Know what the customer wants

Demand-driven companies know the value a service or product brings to the customer — and to their own business. KPMG International's report, *More than Medicine*¹⁹ shows how healthcare companies that can demonstrate positive patient outcomes, and build a tighter bond with customers, are able

to strengthen brand loyalty and access broader customer populations.

Being closer to customers also helps to spot emerging trends faster and gather accurate data on attitudes and behavior, which can then be 'crunched' and analyzed to speed up product development and create targeted

pricing. A more informed understanding of customer needs and usage patterns can also improve demand forecasting along the supply chain, helping the shift towards a demand-driven approach, which, ultimately, enhances working capital management through efficient production schedules and inventory management.

Healthcare perspective

Building a data-driven supply chain

Medical device manufacturer Medtronic's 2013 acquisition of telehealth company **Cardiocom** took the business into the growing area of disease management and will provide detailed data on patient outcomes. Cardiocom's services include home monitoring for conditions such as diabetes, heart and respiratory disease, asthma and kidney disease, and bring a new level of patient understanding to Medtronic, which should aid new product development.

A lack of integration can hinder innovation

In the UK NHS, an orthopedic surgeon developed a digital database for accident and emergency patient notes, which claimed to reduce by half the number of patient complaints, as well as lowering waiting times for surgery. However, without a clear process for pitching such ideas, the inventor had to take his idea to individual hospitals and hope for approval, and at the time of writing, only a handful of the UK's hospitals had taken up the new database, with the rest continuing with slow, manual systems.²⁰

The below **targets** must be cascaded to all staff, with results broadcast to **emphasize the company's commitment** to customers.

Is your supply chain serving your customer?

Key questions

Am I serving customers effectively and efficiently?

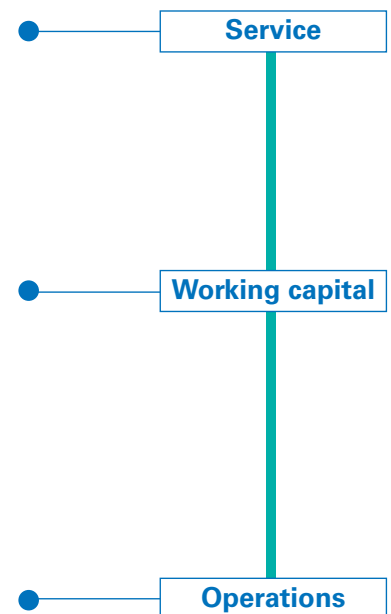
Am I managing inventory to balance service performance and efficiency?

Am I utilizing manufacturing assets efficiently?

Key supply chain objectives

- **Improve customer satisfaction and profitability**
Faster, more accurate and more efficient deliveries
 - average time-to-market in days
 - customer order cycle time in days
 - order to cash cycle time
 - order line fill rate
 - percentage of orders delivered complete and on time.
- **Minimize risk**
 - create redundancy to manage supply risks
 - have escalation procedures in place for potential risk
- **Improve margins through lower costs and premiums by extended services**
 - average monthly national forecast error
 - demand plan accuracy
 - finished goods inventory days of supply
 - inventory accuracy.
- **Improve margins through lower costs**
 - customer order cycle time Reduce total capex as a percentage of revenue
 - perfect order performance.

Performance areas



¹⁹ *More than Medicine*, KPMG International, 2013.

²⁰ *Doctorpreneurs, Many Bright Inventions Come Out of the NHS. Too Few Are Exploited*, The Economist, 4 July 2015.

“Establishing a demand-driven supply chain is a journey that often requires a company to **rethink their traditional planning** and fulfillment models to be more agile and **responsive to demand changes** at the shelf. The results can be staggering if a company is **willing to really challenge** the status quo.”

– Rob Barrett

Principal
Customer and Operations
KPMG in the US

Consumer goods perspective: improving on time in full

Establishing a customer-centric supply chain powered by a supply chain control tower

The challenge

Struggling with poor customer fill rates, excess inventory, and misaligned demand and supply planning, a leading consumer goods manufacturer had a vision to design and develop a customer-centric demand-driven supply chain whereby they could better align all of their planning, manufacturing and fulfillment activities with consumer demand at the shelf. They also wanted to establish a global supply chain control tower that would provide visibility to global demand, supply and inventory across the supply chain, while supporting rapid planning and improved decision-making.

The approach

KPMG in the US developed a blueprint for transforming the client’s current demand planning, supply planning, S&OP and inventory replenishment processes to be more demand-driven. This included a design for the future target operating model and processes for how the regional demand planning teams would work with a newly created global supply planning organization. KPMG also designed an enabling supply chain control tower to support global visibility, rapid planning and fact-based decision-making.

In the subsequent phases, KPMG assisted the client in deploying the new operating structure, demand and supply planning processes, S&OP process, and replenishment model.

The result

The client has been able to improve fill rates by 10%, reduce the planning cycle time by 80%, better align operations with anticipated demand and consumption at the shelf, and move to more streamlined and fact-based global decision-making.

Key takeaway

— **To be truly demand-driven, a supply chain needs to seamlessly integrate customer expectations into its fulfillment model.**

Rob Barrett

Principal
Customer and Operations
KPMG in the US

Mark Levy

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KPMG in the US

The all-seeing eye: improving supply chain visibility

2.

Imagine that you had a transparent supply chain, supported by a cloud-based network, which captures actual consumption, changes in demand patterns, and movement of goods and materials — all in real time.

Judging by the responses to KPMG's 2016 global survey of senior manufacturing executives, this scenario is some way off from being realized. Just 13 percent of the 360 polled say they have "complete visibility" of supply and capacity information across suppliers and logistics partners.²²

Demand forecasting — never a particularly accurate science — has become even tougher. Consumer products companies, in particular, are

launching more products in a bid to grow, with a complex combination of promotions across multiple channels, all of which can cause sudden surges or declines in demand. And, with retailers employing 'just-in-time' fulfillment, manufacturers are struggling to keep a lid on rising inventory levels.

Manufacturers across all sectors must cope with data on sales, orders, production, supplies, inventory and transportation from many sources.

According to a 2016 survey, just **13 percent** of senior global manufacturing executives say they have "**complete visibility**" of supply and capacity information across suppliers and **logistics partners.**²¹

Get closer to demand and supply data

Retailers like Walmart and Amazon have invested millions in specialized software, robotics and other high-tech approaches to track inventory. At a glance, they can find out what customers want and when they want it, trace the progress of every order, and view inventory levels and production schedules.

Such visibility extends across all tiers of the chain, enabling retailers, corporate purchasers, distributors, suppliers and manufacturers to quickly identify and address any gaps between supply and demand, and disruptions to supplies. Armed with up-to-the-minute snapshots

of product demand, they can manage procurement and replenishment more efficiently, and ensure that production is ramped up before possible shortages occur, reducing the chance of stock-outs, cutting the cost of inventory and freeing up working capital.

By sharing information within a single, virtual organization, the various partners in the supply chain can work together more closely and come up with innovative new products, as well as targeted offers and promotions. Companies can also use their extended reach to monitor trends and potential market disruptors a long way up the

supply chain — even beyond tier 1 suppliers.

Pinnacle Healthcare, a leading US hospital and healthcare system in Pennsylvania, offers a full range of services from prenatal to geriatrics. Working jointly with IBM, Pinnacle developed a predictive model to determine how to maintain a constant, ideal, staff-to-patient ratio. With an optimum ratio, the organization has subsequently been recognized for fast, lifesaving treatments for heart attack and stroke, and now claims to treat all heart attack patients within 55 minutes of hearing of the episode.²³

²¹ 2016 Global Manufacturing Outlook, KPMG International.

²² *ibid.*

²³ *Pinnacle Health Sets New Record for Treating Heart Attacks*, The Sentinel, cumberlink.com, 21 August 2011.



Going mobile with supply chain data

Business intelligence is rapidly becoming accessible on mobile devices, enabling employees to view stock movements, orders and other key data on smartphones and tablets.

Coca-Cola's largest independent US bottling firm had suffered from considerable bottlenecks in its supply chain, with limited reporting on stock

availability. Truck drivers had difficulty knowing where to make the most profitable, efficient deliveries.

These workers now have access to regularly updated visual dashboards, via tablets, telling them essential details on invoices, delivery performance and timelines for product delivery. According to

Kevin King, director of reporting and analytics at Coca-Cola Bottling Co. Consolidated: "With the ability to be mobile, now delivery workers have the option to be on the truck, looking at their iPad, understanding how they're doing when they are driving to a certain location or route they are on."²⁴

Future shock: a nose for intelligence

KPMG Capital recently invested in Bottlenose, a pioneer in real-time, cloud-based trend intelligence. The company helps clients detect patterns in high-volume real-time streaming data, capitalize on emerging opportunities and mitigate potential threats.

Rather than focus on historical data, Bottlenose takes what is happening in the present, analyzing billions of changing data points daily. Decision-

makers can now identify critical trends as soon as they begin to emerge and take appropriate action early.

The vast amount of disparate and unstructured data available to an organization can be overwhelming. But Bottlenose can make sense of this complexity to reveal the hidden story, such as consumer reaction to a competitor's new offer, threats to material supplies such as crop failures, and logistics obstacles.



Mark Toon
Chief Executive Officer and Board Member of KPMG Capital

²⁴ *Modern Manufacturing: 4 Ways Data Is Transforming the Industry*, Tableau, 2016.

Forecasting in real time and cost-to-serve

According to KPMG's 2016 *Global Manufacturing Outlook*, supply chain analytics is considered the equal highest priority of any operational enabler, up to 2018. The same survey also ranks Data & Analytics tools as the highest supply chain priority in the same time period.²⁵

A number of emerging software tools can dramatically improve the accuracy of forecasting. **Demand sensing** uses leading indicators and actual data direct from point-of-sale and other touch points, to get closer to the customer and detect

'noise' on a daily basis, helping determine patterns. Armed with a more reliable understanding of expected demand, companies can adapt their production and distribution schedules accordingly, and minimize inventory holdings.

However, today's path from demand request to delivery of the right product to the right place at the right time isn't that straightforward anymore.

Recent analysis suggests that there are now more than 800 potential 'journeys'

to create customer experience.²⁶ That also means that a networked supply chain must lead the path to customer satisfaction. Therefore, to understand the cost-to-serve linked with different service or customization options, such as the 800+ journeys, is a key driver. Although many companies run cost-to-serve approaches for years, more than half of them find the required information difficult to attain.²⁷

The omnichannel shopping experience — 800 journeys and growing



Source: Cisco Systems (simplified)

Future shock: KPMG and McLaren — the power of predictive analytics

KPMG in the UK has formed an alliance with McLaren Applied Technologies, to build on the analytics and simulation used in McLaren's Formula One racing.

Consumer demand is impossible to predict, especially when it comes to new products or entry into new markets and geographies.

KPMG and McLaren believe this inevitable uncertainty should be accepted and managed by simulating a range of different possible outcomes. These could be lower/higher-than anticipated sales, high demand in certain locations, or a large number of sales through particular channels such as online. The decision support tool would then simulate the impact of various possible responses, and recommend the most successful outcome.

KPMG supply chain practitioners are working with McLaren engineers to design an intelligent decision support tool that balances multiple performance outcomes and recommends an optimal decision. This could mean re-negotiating logistics contracts to divert transport to different areas, or having extra manufacturing capacity on standby if a new product outsells its forecast.

KPMG believes that with advanced simulation, companies will be able to react to changes in real time and take decisions with confidence by knowing their impact has been thoroughly assessed in advance.

As Ron Dennis CBE, Chief Executive and Chairman of the McLaren Group, explains: "The beauty of simulation is that you know the optimum decision to make in advance, based upon the

various scenarios that you've worked through. In business, as in racing, you have precious little time to think, so when you hit the commercial equivalent of a wet track, you can act swiftly."



Scott Parker
Global Lead Partner and Leader of KPMG's Strategic Alliance with McLaren KPMG in the UK

²⁵ 2016 *Global Manufacturing Outlook*, KPMG International.

²⁶ In Retail, Insight Is Currency and Context Is King, Cisco blogs, 12 January 2015.

²⁷ How Technology Is Revolutionizing the Retail Customer Experience, Patrick Van Hull, SCM World, 12 April 2016.



Consumer and healthcare perspectives: global company with household brands

Reducing complexity to improve forecasting accuracy

The challenge

This leading global business, with world-renowned brands, is dependent on extensive promotional activity across a wide range of outlets. This often leads to variances between forecast and actual demand, inventory in the wrong place, and a costly, manually intensive process where stock is frequently rushed to sites.

The approach

The company leveraged demand-sensing software, using external data to drive both replenishment and manufacturing. Point-of-sale data from its three biggest retail outlets are fed into the system daily and combined with data from inventory distribution and warehouses, as well as retailers' own forecasts. Another trade promotion planning system is employed to determine the impact of various promotions.

The result

Forecast error rates fell by as much as 35 percent. The company was able to move from a weekly to a daily forecast, allowing faster reaction to demand volatility and better supply chain responsiveness. Safety stock levels have been significantly reduced, saving millions of dollars. Most importantly, customers are far less likely to encounter stock-outs, which should raise satisfaction levels.

Key takeaway

- **Value-driven analytics supports complex promotion and distribution networks to fulfill customer requirements faster and more reliably.**



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3.

Outrunning the pack: instilling flexibility and agility

As companies attempt to shift from efficiency and cost-savings to grow market share, how do they create responsive supply chains that offer differentiated services, are value driven, flexible and agile?

Flexibility

When a supply chain is flexible, managers have looked ahead and planned for an unpredictable but nevertheless potential development. These are events that are relatively unlikely but place big demands on the inventory. For example, a car manufacturer may order additional parts if it fears that trade embargoes could block off certain sources. In anticipation of wider industry upheaval, they may also have built relationships and external capabilities with a wider range of suppliers and partners, or forged strong partnerships with manufacturers and research bodies, enabling them to produce new, cutting-edge products ahead of the competition.

Agility

Agility refers to an ability to respond/adapt to a completely unplanned or unscheduled external circumstance, such as the Japanese nuclear disaster. In this case, the same automaker would not have anticipated such an event, which would test its capability to find alternative sources of supply.

Flexible organizations can make appropriate changes within normal working processes. Agile businesses, on the other hand, can actually change their overall systems significantly, in

order to respond to external forces and move quickly and nimbly, to take advantage of new opportunities. This might mean arranging alternative transport, scaling up or down in volume, or moving into new territories and markets.

New innovations and market developments can test agility — and flexibility. **In the pharmaceutical sector**, the demise of blockbusters is part of a major shift towards more personalized therapies, with a greater number of products flowing through the pipeline, selling in smaller quantities.

The winners in this new environment must be agile, changing production from large batches to lower volumes, manufacturing locally to get closer to the end customer, and collaborating with suppliers to swiftly source new component materials. Many are outsourcing major parts of manufacturing, which calls for greater rigor in contracting, to avoid any quality or delivery issues that could impact the customer experience.

In addition to traditional solutions such as unique identifiers (stock-keeping unit, or SKU, which aids inventory management) and network design (which determines the physical configuration and infrastructure of the supply chain), some new tools can be added: notably, 3-D printing.

Flexible, agile companies are prepared for both the expected and the unexpected, often **building relationships** with a wide range of **suppliers** and **partners**.

Life sciences giant Novartis has invested in a fully integrated, end-to-end continuous manufacturing facility, which, with additional support from the Massachusetts Institute of Technology (MIT), promises to deliver operational cost savings ranging from 25–60 percent.

Consequently, the company has created its first prototype, a continuous process

for producing finished drug tablets from raw chemical ingredients without any interruption, by integrating small-scale technologies into a seamless manufacturing process.

Novartis has also managed to improve quality through a plant-wide Quality by Design (QbD) strategy, where automated corrective actions occur in real time

during manufacturing, avoiding the need for intervention. Not only does this keep the production lines rolling, but medicines also remain within regulatory pharmaceutical specifications throughout the entire manufacturing cycle.

Future shock: 3-D printing

A classic supply chain produces a lot of waste. You need to estimate demand for a wide range of products, source components, manufacture and transport them. At the end of this process, many items may never be sold.

3-D printing enables manufacturers to change the components and the output rapidly, and create flexible contracts to deal with changing demand. Referred to by some as 'mass customization', it means that companies can, in effect, mass produce customer-specific products, using standard tools and materials to produce unique, one-off items.

Virtually all hearing aids are now 3-D printed, and more and more items will follow suit.

At a stroke, the supply chain is dramatically shortened, by placing

production very close to the customer, with distribution limited to the 'last mile' delivery. Lead times and inventory levels are reduced significantly, while producers can give customers what they want, including changing designs, faster and at less cost.

In the future, doctor's prescriptions may be replaced by algorithms that allow medication to be printed at home with a 3-D printer. **Organovo is a 3-D printing company** specializing in organ re-creation for medical research purposes, and it has successfully tested the effects of the pain relief drug acetaminophen on an array of 3-D printed liver cells. This form of testing has the potential to significantly reduce product development costs for pharmaceutical companies. Advanced 3-D printing is also being used to create hip and knee replacements within hospitals.

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Facing local and global realities:

4. organizing for success

Does your organization have appropriate procedures for making timely decisions that impact the supply chain and contribute to a positive customer experience?



Companies with large, **complex organizational structures** should work towards common global standards and **cross-functional governance structures**.

Relevant activities include forecasting, product development, sales and marketing strategies and tactics, payment terms and delivery times.

One senior leader should be responsible for the entire operations and supply chain across business units and geographies, in order to leverage best practices to the benefit of the internal supply chain network. This individual has the ultimate say on prioritizing different initiatives across business units and functions, and must be fully aware of trade-offs between cost and value, to ensure that the business grows and remains profitable.

However, a recent survey by GT Nexus found that three-quarters of

manufacturers have no supply chain chief. Yet, in the same research, which polled the views of senior manufacturing executives, 40 percent reported that a supply chain disruption had impacted their business in the last year.²⁸

In large, complex organizational structures, with many different supply chain stakeholders, companies should work towards common global standards, cross-functional governance structures and continuous improvement processes, all supported by a central analytics team. Leadership has to articulate the business value of this approach, and emphasize the importance of aligning global and regional structures with those of individual business units.

Coping with a complex and changing environment

In the Asia Pacific region, China, India, Korea, Japan and the ASEAN countries (Indonesia, Malaysia, Philippines, Singapore, Thailand, Brunei Darussalam, Vietnam, Laos, Myanmar and Cambodia) support a large number of Free Trade Agreements (FTAs), each with its own set of rules and regulations. Ideally, these agreements should be more closely aligned to reduce administrative burdens in getting goods cleared through customs.

Supply chain costs can also rise as a result of country-specific royalties, taxes and license fees, which impact customs valuations and transfer pricing of goods crossing borders, and can slow down the delivery times for goods and materials.

Supply chain decisions are likely to be affected by the Organization for Economic Co-operation and Development's (OECD) Action Plan on Base Erosion and Profit Shifting (BEPS). This initiative is designed to prevent

companies structuring themselves to take advantage of the lower tax rates in certain countries. When considering how to establish a tax-efficient supply chain, such issues will have a significant impact upon where to locate key activities.

Businesses will need to review their current operations to ensure that the true value generated from each location and activity is fully recognized and remunerated. They should expect to be more transparent in their inter-company transfer pricing documentation, and demonstrate that any particular establishment is fully operational, with appropriate real estate, business activities and staffing, and true generation of intellectual property.

Failure to meet such demands could lead to significant tax charges that could reduce the profitability of supply chains, and reduce the cash available for reinvestment in the business.

²⁸ *Three-quarters of Manufacturers Have No Supply Chain Chief*, Supply Management, 22 February 2016.

Acknowledging differences: addressing customer segments

5.

By segmenting end-to-end supply chains, companies can optimize profitability in fulfilling customer expectations.

Segmentation is all about designing and operating distinctly different end-to-end supply chains (from customers to suppliers) optimized by a combination of a unique customer value, demand-specific patterns and manufacturing/supply capabilities.

Sounds easy — but this is often hard to implement.

A strong change management effort focusing on key success factors is important.

The starting point is always the customer. Interestingly enough, this is often overlooked. Key questions to ask are: “who are our customers, what are their unmet needs, and are we delighting our customers?”

Secondly, a mapping of the demand pattern is required, which often leads to focus SKU groups that have a clear demand behavior.

For example, some business-to-business customers may want especially fast delivery, with guaranteed availability, so they can create a predictable manufacturing process. They may well be prepared to pay a premium price for such a service. Others may simply seek the lowest prices, and accept that delivery could be slower and less assured. Others again may prefer payment-by-results agreements, where part of the fee is dependent upon achieving certain outcomes.

Finally, to design and operate the supply chain from the customer backwards helps to identify the decoupling points and the right supply chain strategy for every supply chain archetype, based on a smart combination of customer, product, channel, region and product life cycle stage.

Each archetype should be managed to optimize profitability, with appropriate overhead allocation that reflects the cost-to-serve for that group. By understanding the sales/profit profiles of their customers and products, companies can tailor a more profitable supply chain strategy to each archetype.

This approach is very much in line with a broader trend, seen in many sectors, for more personalized products. In other parts of this document, we discuss phenomena such as 3-D printing, smaller, and niche products in pharmaceuticals. The networks that supply these customers will be based upon responsiveness and be closer, physically, to customers, replacing traditional, centralized manufacturing units that rely on scale economies and mass production.

Rather than invest in a huge plant overseas, companies are more likely to seek a number of smaller, local, outsourced partners to better manage unpredictable demand.





Healthcare perspective: global pharmaceutical company

Meeting different customer needs effectively and profitably

The challenge

Having grown via a number of mergers and acquisitions, the client, a global life sciences company, faced rising complexity in its supply chain, with an expanding product range and a growing number of markets and customer segments.

Market dynamics were also changing, with increased competition, industry consolidation and heightened regulatory scrutiny for new products. Management wanted to gain a clearer understanding of its different customer segments, to establish differentiated supply chain strategies to fulfill the segment specific requirements.

The approach

Products, customers, regions and sales channels were grouped according to similar attributes, leading to four distinctive segments. One example was an 'efficient' segment characterized by high volume, mature products, stable demand and premium customers.

Accordingly, supply chain archetypes were then defined, based on data, relevance to the business, and ability to de-complex supporting (e.g. geographic presence) and future expansion plans. Not one option was 'right', but the archetype that was the best fit for growth was selected. Operating models were re-designed or amended to suit each segment.

The result

The company now has a detailed insight into its main segments and related supply chain archetypes, which allow differentiated services. Critically, the approach was in line with overall corporate objectives of improving top-line growth, raising profitability by reducing cost of goods sold and increasing efficiency. In each of these areas, the company has achieved improvements in the region of 5–10 percent.

Key takeaway

- **A maximum of three to five supply chain archetypes help companies to reduce supply chain complexity support top-line growth, reduce cost of goods manufactured (COGM) and cost of sales (COS), improve overall supply chain performance and serve clients with standard and premium services.**

Erich L. Gampenrieder

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An improved customer experience means a better bottom line

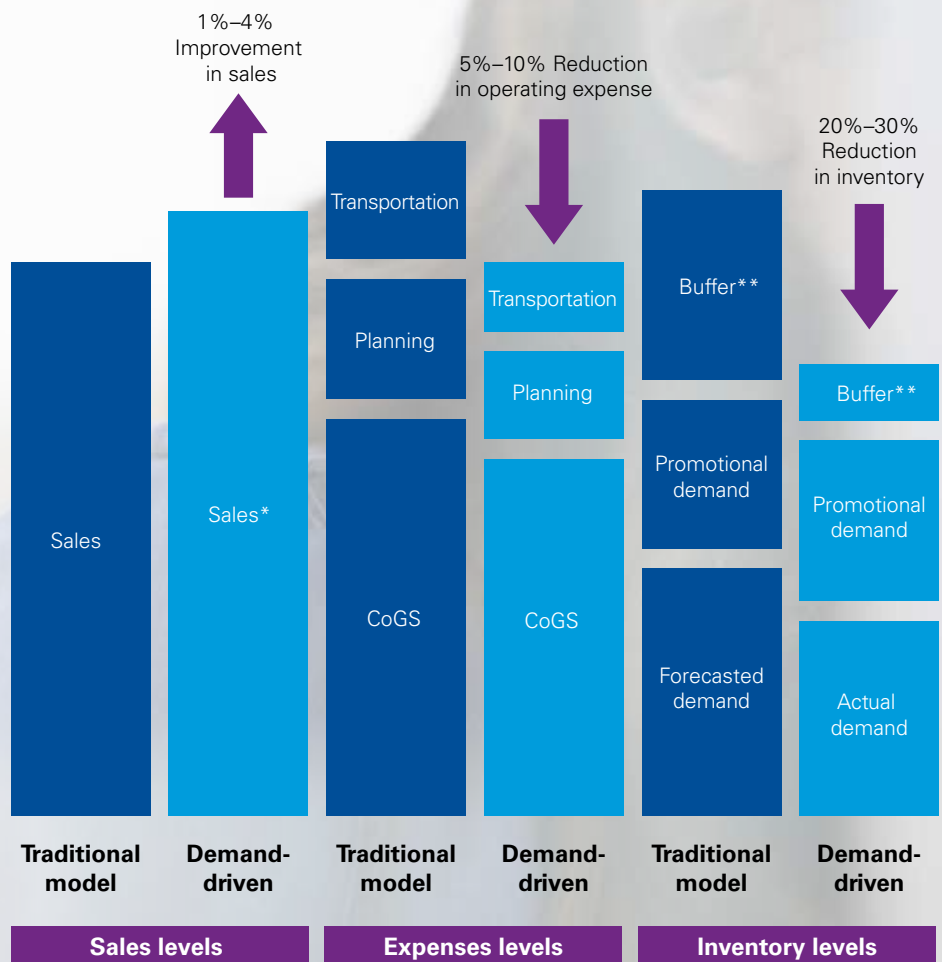
Companies adopting demand-driven supply chains typically enjoy increased sales, reduced operating expenses and improved working capital.

- Improved fill rates and reduced out-of-stocks drive increased revenue and recoverable sales.
- With greater certainty over demand, organizations can carry less stock.
- Better visibility of supply and demand should lead to fewer disruptions to supplies.
- Process automation reduces operating expenses, allowing buyer/planners to manage by exception.

One study by Gartner found that organizations with integrated, demand-driven supply chains grow revenue faster, achieve more than 15 percent higher 'perfect' order rates and reduce inventory levels by as much as one-third.²⁹

In another KPMG study, companies with real-time access to data on physical and financial flows were far more likely to be in the top industry quartile for revenue growth and margin.³⁰

A demand-driven supply chain can enhance performance



*Lift from out-of-stock forecast accuracy improvements resulting in recoverable sales.

**Safety stock adjustment for uncertainty/information latency.

²⁹ CEO Survey 2015: Committing to Digital, Gartner, 2015.

³⁰ Driven by Demand, KPMG 2014.





Upgrade to a demand-driven supply chain 2.0 in five steps

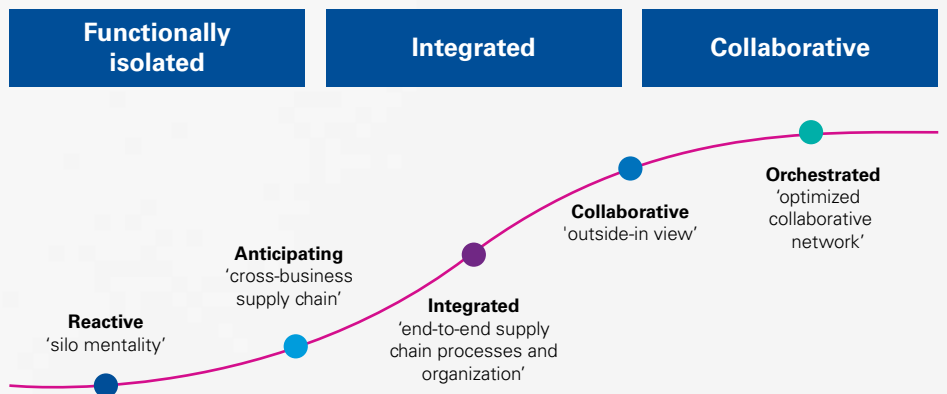
An exciting future beckons, where supply chains respond almost instantly to customers' needs.

Whether it's drones delivering umbrellas or medical supplies, 3-D printers producing an ever-wider range of personalized products, or real-time adjusting of production to match varying demand; changing the supply chain into an integrated, transparent network has the potential to bring enormous benefits. However, many

organizations have failed to deliver such a transformation, succeeding only in making relatively minor improvements to individual functions.

Don't try to leap directly to full supply chain maturity. A sensible starting point is to align the end-to-end supply chain objectives with functional and cross-functional goals.

The journey towards a demand-driven supply chain



Source: Demand-driven supply chain 2.0, KPMG International, 2016.

The following five steps can help bridge the gap to reach a new level of customer responsiveness.

1 Align the supply chain with the business

Commit to the customer experience

A supply chain can only deliver its full value when the entire organization is oriented towards delivering an exceptional customer experience. This is as much about philosophy as it is about process and is likely to involve a wider cultural change.

Focus on value

A value-based management approach can build a foundation for each

supply chain decision, and help to communicate the supply chain story to a broad variety of stakeholders. As mentioned earlier, a lack of congruence can cause barriers, due to conflicting goals, with management in different functions measured and rewarded for different types of targets. Therefore, KPIs for different groups should be shared and complementary, including metrics such as timely order periods

and customer experience. By regularly questioning and discussing overall strategic objectives, and what drives value (margin, customer metrics, market share, etc.), companies can foster a culture of continuous improvement and harmony.

2 Improve supply chain visibility

Develop a digital strategy

Cloud-based software, increasingly via mobile devices, can accelerate the speed of data transfer across the supply chain, enabling customer-facing partners to link transactions to inventory reports (updating systems in minutes) and, ultimately, all the way back to the

manufacturer. Other digital media such as social media can help to gauge the volume and types of customer demand.

Utilize the power of data and analytics

Analytics can inform segmentation, help predict customer needs, forecast

volumes, anticipate disruptions, manage inventory levels and simulate the outcomes of potential responses to different scenarios.

3 Instill flexibility and agility

Become more flexible

By anticipating future market changes, and taking appropriate steps, companies can be better prepared for either shocks or opportunities.

Develop agility

Businesses that recognize the increasing pace of change build more flexible business models that can adapt. This will likely mean a deconstruction of

the classic business model into a more collaborative, virtual organization that can scale up or down faster, tap into innovation from a wide range of sources and bring new ideas to market swiftly.

4 Organize for success

Establish cross-functional governance

As companies climb the supply chain maturity curve, cross-functional governance becomes vital to ensure that decision-makers in different parts

of the supply chain are communicating with each other and making decisions in the best interests of the wider organization. Robust governance requires global and regional process owners, process communities

and business expert communities, preferably located in centers of excellence. These groups and individuals will oversee supply chain decisions and demand harmonization.

5 Address customer segments

Through data analysis and one-to-one research, find out exactly what matters to customers, and what trade-offs they are prepared to make. When these

findings are combined with cost-to-serve data, companies can meet the demands of each segment cost-effectively.

Also, the alignment of internal and external stakeholders on services, processes and actions, to efficiently deliver customer satisfaction is key.

How KPMG Operations Advisory practice helps you

Chart a path

KPMG's specialists know where to start the journey. We prioritize initiatives to help you build customer-embracing, demand-driven supply chains that can adapt swiftly to changing customer needs. With a strong focus on growth, we seek to integrate customer-facing and operational functions, so that every part of the organization is dedicated to improving the overall customer experience.

Sort through the noise

With a bewildering range of technology options, we help you find the most appropriate choices to match your specific needs and accelerate the return on investment. We tailor supply chains to the requirements of different customer segments, and enhance the integration of new product launches, planning, procurement, fulfillment and customer service processes.

Get it done

Because we are a network of member firms with a very wide range of skills and experience, we don't just draft a plan; working with your team, we innovate and implement throughout the transformation, bringing in experts in restructuring, working capital, risk management and tax to drive value.

Make it stick

Our commitment doesn't end after your demand-driven supply chain 2.0 is up and running. Our established and well-proven methods provide sustainable benefits, allowing your supply chain to continually evolve to meet your business needs and changing market conditions.

See the related video:
kpmg.com/demanddriven ▶

Driven by Demand
Transforming Your Supply Chain

Related KPMG thought leadership publications



REACTION – The future of chemical conglomerates and demand-driven supply chains

(April 2016)

This edition of Reaction magazine focuses on supply chain and operations, and how a demand-driven, pull approach focused on real-time updates on customer demand, and backed by deep visibility across the supply chain, can help companies keep pace with change in today's chemical industry.

Future Proof Procurement

(May 2016)

This study will offer insight into the possible scenarios of what the procurement function will look like in the year 2035 and points out the strategic implications for the procurement function.

Global Manufacturing Outlook 2016

(May 2016)

In the 7th annual edition of KPMG's global survey of C-level manufacturing executives across 14 countries, supply chain is highlighted as one of the three key themes as it relates to companies, growth objectives.

Global Consumer Executive Top of Mind Survey 2016

(June 2016)

KPMG's annual survey of senior consumer executives examines top priorities across consumer businesses of all types, sizes and in all geographies, with a close look at the critical role of the supply chain.

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