TOUCHLESS SUPPLY CHAINS FOR SMARTER, RESPONSIVE, AND FASTER MANUFACTURING

Abstract

Enabling a touchless supply chain involves more than traditional, incremental automation approaches that focus on data cleansing activities and repeatable, routine tasks. Organizations need to re-examine the entire supply chain, across internal processes and external touchpoints, and find opportunities to deliver speed and accuracy. Touchless supply chains help manufacturers achieve measurable business outcomes such as improved customer service, reduced operating costs, and higher asset utilization. This paper looks at the challenges driving the need for touchless supply chains. It also describes strategies tailored to specific supply chain processes that companies can use to systematically drive touchless supply chains.

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Introduction

Supply chain planners spend a lot of time aggregating, cleansing, enriching, and analyzing supply chain data. Some studies state that these tasks take up to 50-70% of planners' time. The remaining 30-40% of time is spent in ad-hoc reporting, troubleshooting, and exception management, all of which reflect reactive responses to operational disruptions and events. This leaves very little time for planners to engage in strategic decision-making, root cause analysis, strategic thinking, and optimization.

Similarly, on the supply chain side, line executives expend significant effort chasing other functions and business partners or collecting data for preparing status reports and dashboards. They are unable to dedicate time for strategic initiatives such as process improvements that can help achieve business outcomes and value.

Automating repetitive activities is the first step towards touchless supply chains. The scope can range from classical automation of mundane activities to implementing the latest cognitive process automation supported by artificial intelligence (AI) and machine learning (ML) for decision-making.

The objective of touchless supply chains is to create time for supply chain practitioners to strategize and improve their planning and execution approaches. Data platforms and cognitive automation are the ideal tools to achieve this.

Challenges in Enabling Touchless Supply Chains

Many factors such as disruptive business models and the advent of digital technologies are changing how business functions are carried out using IT systems and technologies. But some manufacturers still use archaic, home-grown systems for their supply chain processes and applications.

Digital is impacting the IT portfolio in unprecedented ways, allowing companies to:

- Adopt hybrid approaches to on-premises and on-cloud applications

- Replace large monolithic ERPs with smart, intelligent, and standardized core ERP systems of records

- Implement cloud-based systems with industry-specific functionalities to engage with ecosystem players

- Achieve best-of-breed omni-channel commerce, statutory and trade compliance, and third-party logistics (3PL) collaboration for operational efficiencies

- Unify interface technologies in a standardized and interoperable manner

The complexities of the existing IT landscape where a business process cuts across several IT applications makes it challenging to introduce the innovation listed above. More so, it hinders the ability to improve the efficiency of practitioners in different functional areas of the value chain.

Practitioners continue to use cumbersome high-touch processes and tools from planning to fulfillment. The work is data-intensive and manual with little intelligence offered by the systems, making it imprecise, slow to respond, and costly when measured per transaction or record.
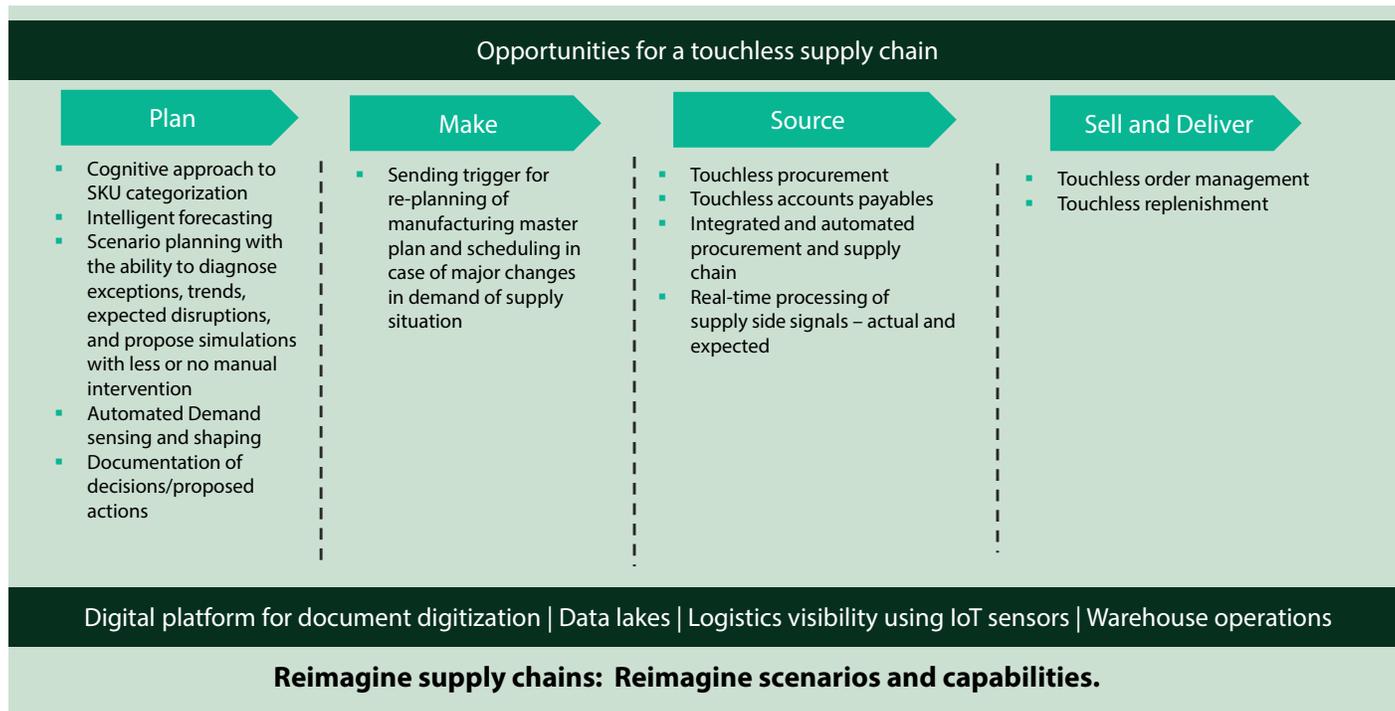
The following example explains the cost differences between automated and manual supply chain processes for order management (Source: APQC open benchmark).

Organizations without order processing automation spend US $1.64 per US $1,000 in revenue to manage sales orders. Organizations with automated ordering systems spend US $1.11 per US $1,000 in revenue on the same process. The difference in cost amounts to over US $1 million in savings for a company that automates the entire process and has US $2 billion in annual revenue.

Capabilities for Touchless Supply Chain Transformation

There are several areas within the value chain process such as plan, make, source, sales, deliver, and serve. Each of these areas have the potential to build high-velocity response systems supported by automation and cognitive approaches.

Opportunities for a touchless supply chain

Plan
- Cognitive approach to SKU categorization
- Intelligent forecasting
- Scenario planning with the ability to diagnose exceptions, trends, expected disruptions, and propose simulations with less or no manual intervention
- Automated Demand sensing and shaping
- Documentation of decisions/proposed actions

Make
- Sending trigger for re-planning of manufacturing master plan and scheduling in case of major changes in demand of supply situation

Source
- Touchless procurement
- Touchless accounts payables
- Integrated and automated procurement and supply chain
- Real-time processing of supply side signals – actual and expected

Sell and Deliver
- Touchless order management
- Touchless replenishment

Digital platform for document digitization | Data lakes | Logistics visibility using IoT sensors | Warehouse operations

Reimagine supply chains: Reimagine scenarios and capabilities.

Touchless planning

A traditional approach to the monthly demand planning cycle takes approximately three weeks of preparation. During this period, much of the planners' and analysts' time is spent on managing data alone. Weekly and daily planning activities include performing mostly IT tasks in a pre-defined sequence, verifying results manually or semi-automatically, and manually evaluating exceptions lists.

The idea behind touchless planning is to let automation take care of rudimentary repetitive activities. While some degree of automation does exist in most organizations, the level of manual intervention remains high. Companies should leverage the latest technologies that can learn from data and recommend actions for decision-making. To integrate demand sensing with demand planning, companies can adopt the following strategies:

- **SKUs:** Identify products with predictable demand. This means less volatile to short lifecycles, seasonality, and consumer whimsy. The patterns and rules for these items are less complicated to capture and define and, therefore, easier for the cognitive engine to learn.

- **Demand sensing:** The hardest part of demand sensing is collating vast amount of data about SKUs and customer segments from a variety of structured and unstructured data sources in different forms. But this is critical for automation. Pattern analysis helps demand planners develop accurate, short-term, and granular demand plans across product, market, and time dimensions.

- **Exception management:** Based on the pattern analysis of actions taken in the past, a cognitive engine can learn to produce a set of recommendations in case exceptions occur, thereby improving operational efficiency.

- **Intelligent forecasting:** Traditional forecasting is carried out based on historical sales data. The planner is responsible for evaluating factors that affected the sales history using the limited capabilities of planning tools (such as outlier correction). This step can be automated to AI/ML-enabled data analytics solutions. These will analyze factors ranging from market fluctuations and constraints such as manufacturing capacities to logistics issues.

- **Trend analysis:** This includes analysis of past trends, current consumer-related trends, economic, political, social, and weather-related data. It also predicts future trends that may potentially impact the demand outlook.

- **Documentation of actions taken:** Manual documentation is used to keep track of manual decisions. In the case of system-driven decision-making, the system itself generates notes, saving time and effort.

Touchless order management

An order entry typically goes to many systems and through different touchpoints before being promised, scheduled, and executed as a delivery. Order management has become one of the most complex process areas due to omni-channel proliferation and the increasing customer engagement and order intake points. These include mobile applications, e-commerce portals, kiosks, email, phone, live chat, social media, etc. Based on APQC's customer credit and invoicing research, here are some reasons why companies should consider automating their order-to-cash processes:

- Invoicing issues account for 25% of all manual sales order interventions

- Pricing issues account for 20% of manual sales order interventions

- Contract issues account for 18% of manual sales order interventions

- Incorrect customer master data account for 15% of manual sales order interventions

A good starting point for the touchless order-to-cash is to delve deeper into the accounts receivables and other processes associated with these areas to look for process improvements. Automation can standardize all incoming orders and deliver operational benefits such as:

- Reduced order processing time

- Reduced error rates

- Reduced costs per order

- Lower Day Sales Outstanding (DSO)

- Higher staff productivity

- Reduced personnel and overhead costs

- Faster cycle time for the end-to-end order-to-cash process

According to APQC Open Standards Benchmarking in supply chain planning, top performers are able to process 94% of their orders without human intervention while low performers still require 20% or more human intervention.

Touchless procurement

Touchless technology in the procurement space helps the department reduce error and rework, gain more control and transparency over processes, quickly locate misplaced or lost records, and speed up the purchase order (PO) generation and ordering process. Over the last two decades, e-procurement solutions have come a long way. They become smarter with every release that introduces elements of automation and AI/ML-based built-in scenarios. The main areas for optimized procurement include but are not limited to:

- **3-way invoice matching and processing:** This functionality exists in all ERP systems and e-procurement solutions. The latest features include AI/ML algorithms to perform invoice matching with PO and delivery, manage exceptions based on cognitive learning capability, and provide recommendations to buyers at the time of PO or invoice processing. This helps avoid errors during 3-way invoice matching in the future.

- **Policy-driven indirect procurement:** Since direct procurement is typically automated via MRP, source determination, etc., the main challenges lies in indirect procurement. This is a high-volume, low-value, and high-compliance area with a lot of manual intervention needed for jobs such as approvals, manual release of an order to the source of supply, etc. A simple, rule-based policy-driven self-procurement solution can improve operational efficiency.

- **Integrated SCM and procurement:** This provides opportunity for tremendous improvement in operational efficiencies and reduces human intervention. Generally, plan-driven procurement drives PO automation in case of direct procurement while event-driven procurement still requires human intervention. Supply chain unplanned events and disruptions require SCM, manufacturing, and procurement to work very closely to meet customer commitment. This is an area that requires a single source of truth and visibility as well as system-generated recommendations to be sent to different departments to expedite action.
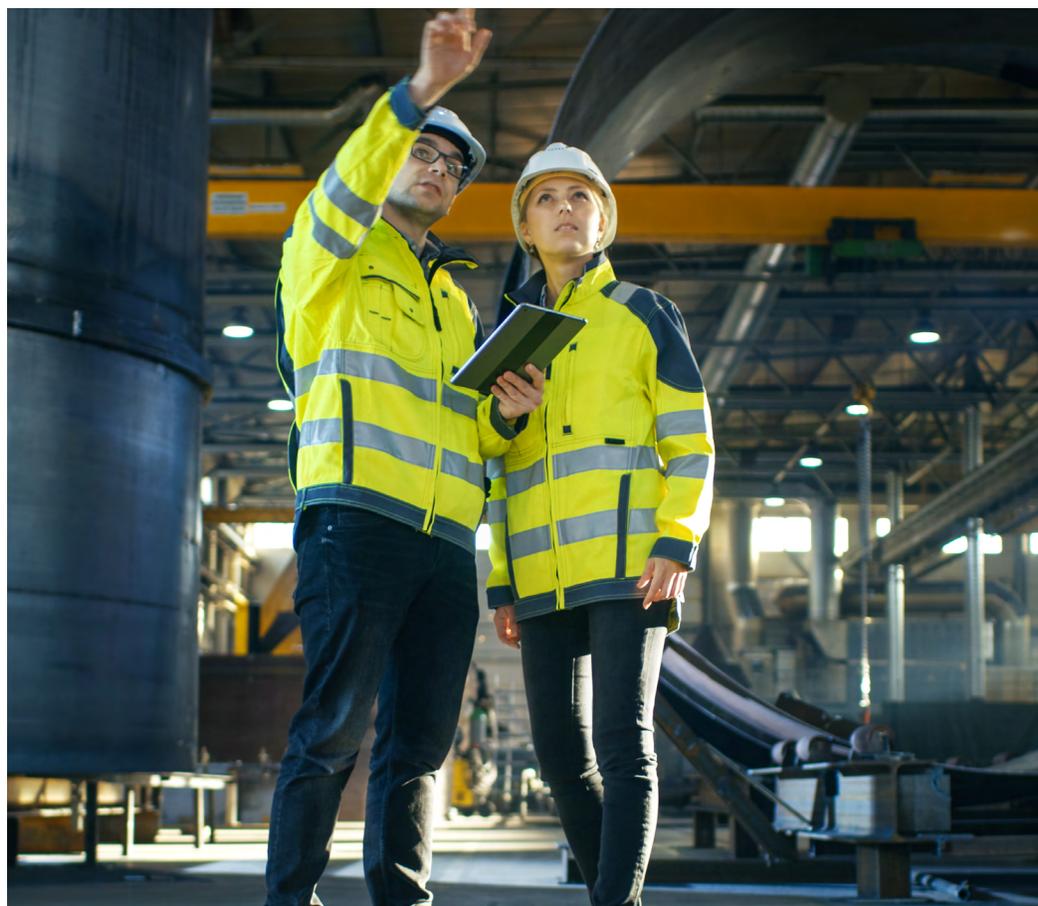
Touchless replenishment

Traditional distribution requirement planning (DRP) is a multi-step, multi-day process that proposes a feasible rolling 90-120 days distribution/replenishment plan. It is cumbersome and lengthy. Given the current market volatility and dynamic supply chains, there is a time-lag between the plan for replenishment and the reality. Like other processes, this process also connects with multiple systems and users. Smart DRP is a useful step towards touchless replenishment. Touchless replenishment automatically creates recommendations for stock replenishment using the customer delivery schedule. It can also consider the current and projected inventory situation, transportation, and warehouse constraints.

Touchless replenishment along with touchless order management, integrated production, and touchless planning (demand planning and smart DRP) represent the foundation for a more comprehensive digital supply chain vision because of the impact it can have on information flow across the supply chain for faster, more intelligent decisions to drive better performance outcomes. These are as follows:

- **Suppliers and service providers** receive better forecasts for planning freight, materials, labor, and equipment

- **Customer service partners** can ensure faster fulfillment commitments to customers

- **Manufacturing** is assured of efficient and timely material flow to support optimal production schedules

- **Distribution planners,** relieved from manual data-intensive work, have more time to monitor performance of high-volume items with volatile demand patterns

- **Inventory analytics** can be tuned to provide better intelligence compared to decisions made solely on human judgment

Document digitization

A great deal of time is spent on processing information from documents such as PDFs and data from unstructured sources, particularly in order management, purchasing, warehousing, and transportation functions. Machine learning-based applications can easily detect the document, extract data, and populate it in a predefined rule-based template. It can also upload it into the system much like standard electronic data interchange (EDI) messages.

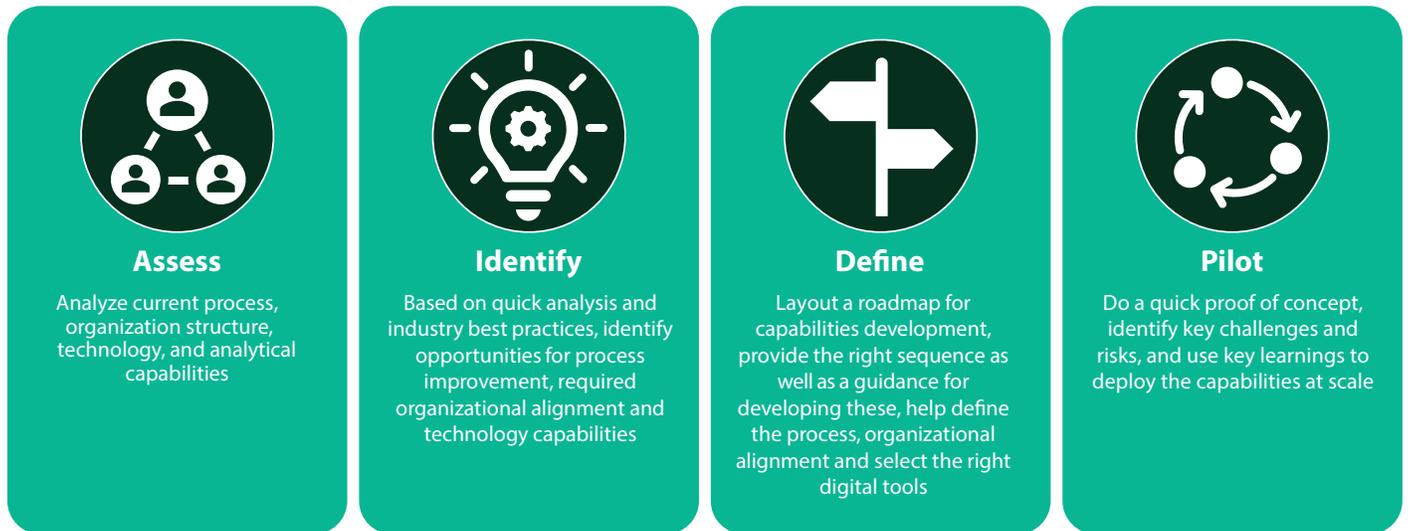# Recommended steps to achieving touchless supply chain

Organizations are already dealing with a complex network of supply chains, business units, demand chains, and a high number of SKUs. Large volumes of data are scattered across different systems and platforms. Further, the business environment has become increasingly volatile due to macro and micro factors. The impact of this is seen in customer satisfaction, profitability, and market sharing.

Based on our experience, Infosys recommends that companies adopt a high-velocity approach to transformation so that they can align vision, structure, and processes. We believe that touchless supply chains are less about technology itself and more about combining structure, processes, and the latest technologies in a cohesive manner. The following guidelines are useful when developing the roadmap:

- **Organizational change management and training:** Organizations must develop a culture of touchless supply chains by first training their people in the use of new technologies. Companies must focus on developing these skills internally with the help of strategic service providers

- **Holistic approach across SCM:** Define a vision for 'touchless SCM' with a comprehensive, rather than piecemeal, outline of the plan-make-source-sell-and-distribute roadmap and its impact

- **Review departmental/functional KPIs:** Incentivize departments to align and automate processes that enhance customer-facing processes and KPIs such as order management, dynamic fulfillment and availability, on-time-in-full and in-transit visibility

- **Rule-based decision-making:** Develop rule-based automation for cross-functional process areas to reduce friction between departments

- **Prioritize and automate customer-facing processes:** For each process step, identify and prioritize customer-facing areas that may become a potential bottleneck due to manual/repetitive work

- **Adopt cloud-based applications:** An inexpensive way to bring efficiency and flexibility to the supply chain is to adopt cloud applications. They can be easily integrated with existing systems and hence are faster to deploy. Being designed for non-technical staff, they are easy to use. Cloud apps can track precisely and in real-time every component that goes into a finished product. These apps help democratize data so that supply chain managers can run more simulations and scenarios for better forecasting of demand. Lastly, they offer compatibility and interoperability, thereby enabling other technologies such as AI and ML.

- **Automation at the core of digital transformation:** Automation and touchless process execution should be at the center of the digital transformation initiative. The value to be delivered should also be clearly articulated. There should be shared vision among the senior leaders and across business units and geographies

- **Data-driven thinking:** Transforming into touchless supply chains requires the organization to think and act like a data-driven organization. The data strategy must put data at the center and enable interoperability with systems of records, systems of engagements, and best-of-breed industry solutions. This landscape will support real-time decision-making using cognitive approaches.
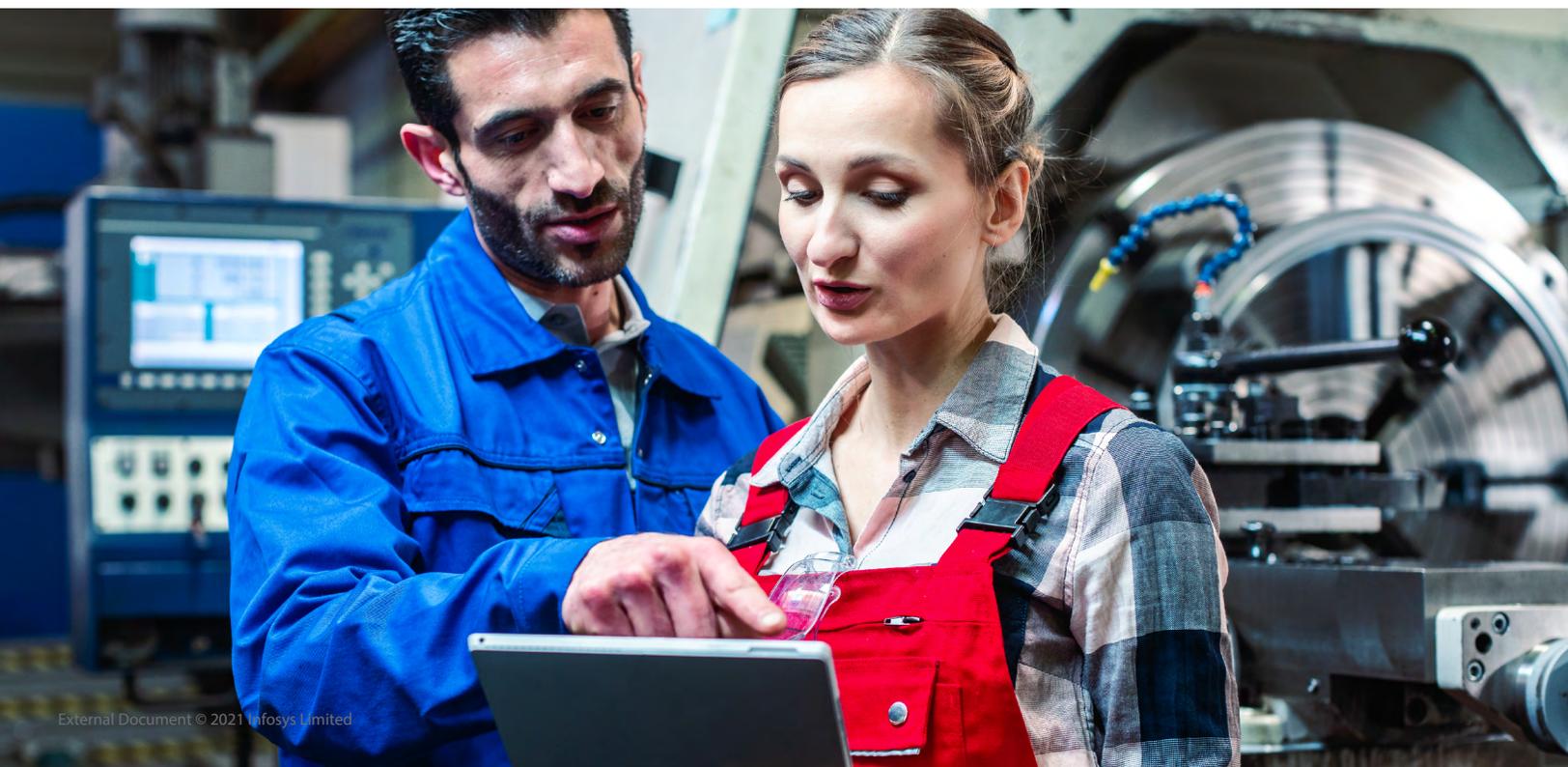
At Infosys, a roadmap for automated, touchless, and cognitive supply chains is defined in four steps, as shown below. Infosys has enabled several large CPG companies to define a roadmap for automated, touchless, and cognitive supply chains along with early-stage solutions that improve operational efficiencies of the supply chain planning team.

Assess
Analyze current process, organization structure, technology, and analytical capabilities

Identify
Based on quick analysis and industry best practices, identify opportunities for process improvement, required organizational alignment and technology capabilities

Define
Layout a roadmap for capabilities development, provide the right sequence as well as a guidance for developing these, help define the process, organizational alignment and select the right digital tools

Pilot
Do a quick proof of concept, identify key challenges and risks, and use key learnings to deploy the capabilities at scale

References

- APQC Open Benchmark from APQC.org

- Supply Chain Brief: Use Touchless Replenishment as a Vision to Drive Inventory

- Analytics Value by Gartner

- The Route to No-touch Planning: Taking the Human Error Out of Supply Chain Planning by McKinsey & Company

About the Author

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His area of focus also includes solutions related to execution, procurement, and supply chain planning. Giriraj has more than 20 years of experience in deploying SAP ERP and planning solutions for industries such as CPG, consumer goods, industrial manufacturing, and medical devices among others with global and complex supply chain networks.

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