



AUTOMATION PLAYBOOK

Manufacturing Sector (MFG)

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1. PREFACE

The interest of leaders in RPA technology and its adoption has been gaining momentum with every passing day. RPA is the fastest-growing software subsegment officially tracked by Gartner, with year-over-year growth of more than 63% in 2018¹. As many as 90% of the world's most influential companies—those in the Fortune 500—are investing aggressively in automation, creating bots for everyday tasks.

Manufacturing sector started the RPA adoption later than many other sectors but now believes that their excellence journey can be accelerated by adopting RPA across the value chain. Managing Demand Fluctuations, Speed to Market, Customer Responsiveness, Efficiency & Flexibility enhancement, De-Skilling, and Cost Saving are some of the benefits that can be gained quickly by automating the right processes. Research highlights that RPA market will grow at a CAGR of over 30% YOY between 2020 and 2027². With processes being similar across plants, manufacturing sector has the inherent advantage of piloting the solution in one factory and replicating it across all other plants to gain the maximum value out of its investment.

Very few companies in this sector are currently using this technology on a large scale. When manufacturing organizations consider RPA, they invariably have three questions that need to be answered:

- Which processes should we make agile and responsive using RPA?
- Which are the most error-prone and time-intensive process to which RPA can be applied?
- Which of these will yield the highest ROI in the shortest possible time?

All three questions are important and must be answered. Depending on the industry, business imperatives and the maturity of the enterprise, the answers vary. But there invariably are a handful of operations and processes that should be the first targets of RPA. Support functions like Finance, HR, Marketing, Procurement, Planning are the first applicants of this technology for transactional processes such as Bill of Materials (BOM) management, material planning and purchase order management, invoicing, accounts receivable, logistics, reporting, compliance, etc. Use of bots to prepare error free and timely reports for analysis and performance improvement is one of the key applications of RPA.

While organizations have made a humble beginning, to make the most of this technology organizations must identify and automate processes that will lead to customer satisfaction enhancement and solve problems to deliver efficiency, effectiveness and experience. We'd say that automating those areas that impact customer experience should take precedence, followed by tasks that have high volume, are speed sensitive and have irregular labor demand.

There are many reasons why automation has been slow in making its way into the technology mix of organizations. It is important to understand why this is so. This document deep dives into the manufacturing industry processes, challenges, and potential areas for automation. This document should serve as a ready reckoner for the practitioners to understand where, and how to start their automation journey.

Happy reading!

¹<https://www.gartner.com/en/newsroom/press-releases/2019-06-24-gartner-says-worldwide-robotic-process-automation-sof>

²<https://www.grandviewresearch.com/industry-analysis/robotic-process-automation-rpa-market>

2. CONTEXT OF THIS DOCUMENT

This document captures the core processes across a manufacturing value chain and assesses the challenges faced and opportunities to improve through automation. The content of this document is based on the latest trends demonstrated by different industry players, across geographies coupled with ITC Infotech's own experience with our clients which has been normalized to present an inclusive view.

This document establishes an industry view of where automation can be leveraged to potentially improve the performance and efficacy of the process. It is of relevance to the following roles: -

- Industry leaders (decision making capacity, influencers) looking to evaluate automation as a means of boosting operational efficiency and human potential
- Sales and Business Development teams looking out to understand and set up preliminary conversations to address client's pain points
- People willing to consume this information for knowledge gain – automation / industry enthusiasts

3. TRENDS IN MANUFACTURING INDUSTRY AND RELEVANCE OF AUTOMATION

Manufacturing is the backbone of economy for most countries across the globe and hence there has been a constant focus of government in last one decade to increase its manufacturing GDP contribution. Governments are modifying policies, creating special task force and implementing new programs focused on increasing its manufacturing activity. New global manufacturing hubs are emerging, and competition is no more regional but global. Technology development is clearly eliminating boundaries and enabling access to global markets and customers. This requires manufacturing companies to stay competitive at a global level by constantly innovating and adopting technology to drive efficiency, productivity, cost reduction, quality improvement and developing differentiated products and processes. Manufacturing contribution to global economy is around ~15-16% and there is a significant scope of growth which will be seen in near future, given the continuous focus of governments in many countries.

Increased economic activity will require additional manpower. Manufacturing sector is not the most lucrative employment sector and is already facing challenges of skill shortage. As per a Deloitte and The Manufacturing Institute study³, there were 0.52 million jobs vacant in manufacturing sector in USA, in 2018. The study also highlighted that in manufacturing sector, 4.6 million jobs will be created between 2018-2028 in USA, but 2.4 million jobs will remain open due to lack of skilled workers.

The good news is that manufacturing sector has an automation potential of 60% (refer Figure – 1.0) using currently available technologies and is second amongst the 19 sectors covered under this study, as per a McKinsey survey⁴. This could lead to a saving of \$2.7 trillion in labor cost for

manufacturers in 46 countries covered under the study and lead to significant enhancement in their flexibility, responsiveness and consistency. These statistics indicate that the need and role of automation in manufacturing sector in next decade will be crucial and a key strategic tool to manage growth.

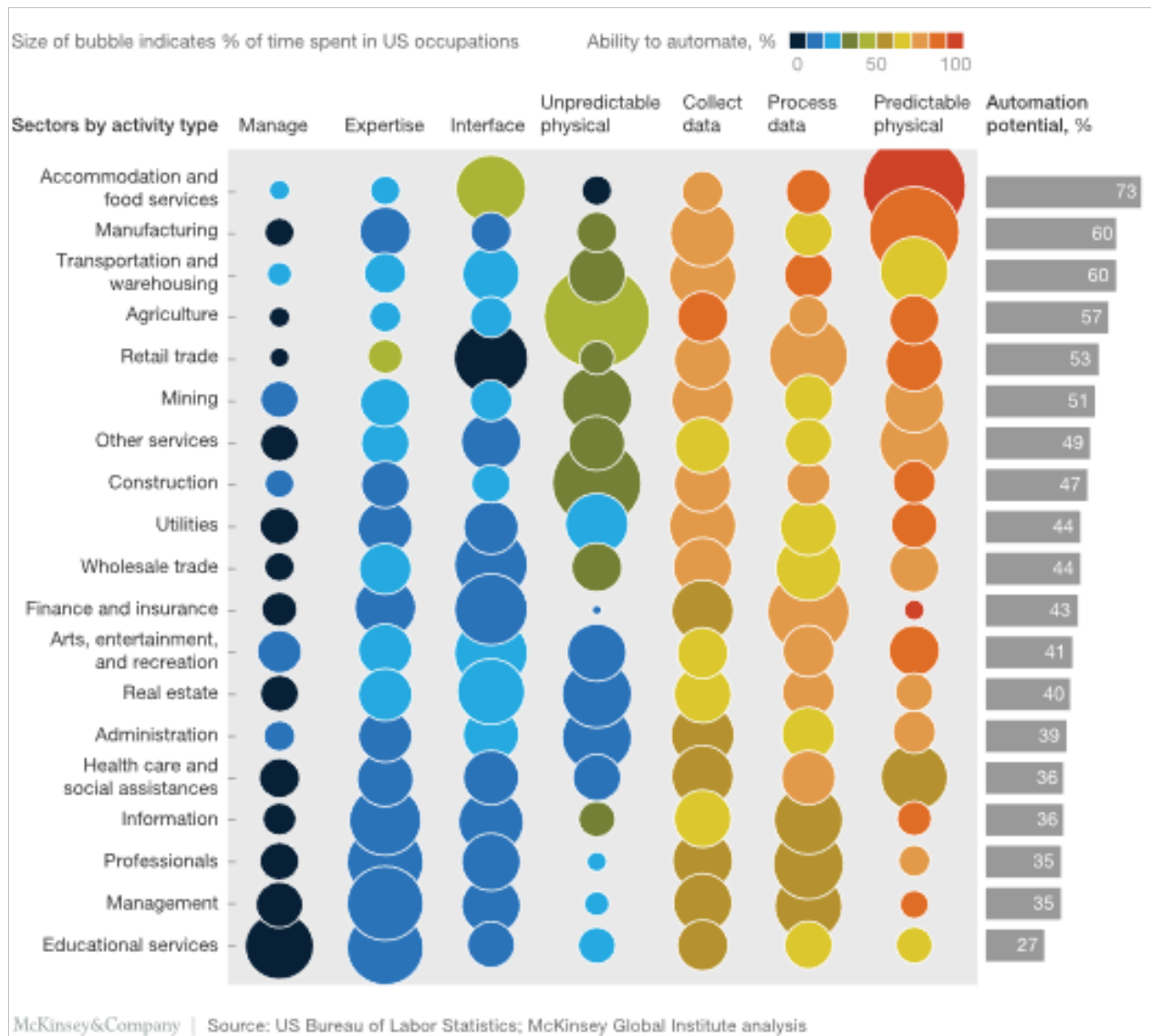


Figure 1.0: Automation Potential across Sectors

The next generation robots are quite flexible with cognitive abilities and trained work along with human workers. Similarly, bots will be used to automate business processes & transactions partially or end to end, to improve employee productivity and release employee time to be spent on problem solving and improvement initiatives. The manufacturing workforce in future will have a combination of robots and operators on the shop floor and employees and digital assistants in offices. Automation will also lead to a shift in the skills that will be required in the future. Between 2016 and 2030, demand for Technological skills and Emotional Skills like Leadership will increase while demand for basic Cognitive, Physical & Manual skill (like data input & processing, general

equipment operation) will reduce as per McKinsey Global Institute report on “Skill Shift – Automation & the future of the workforce”.

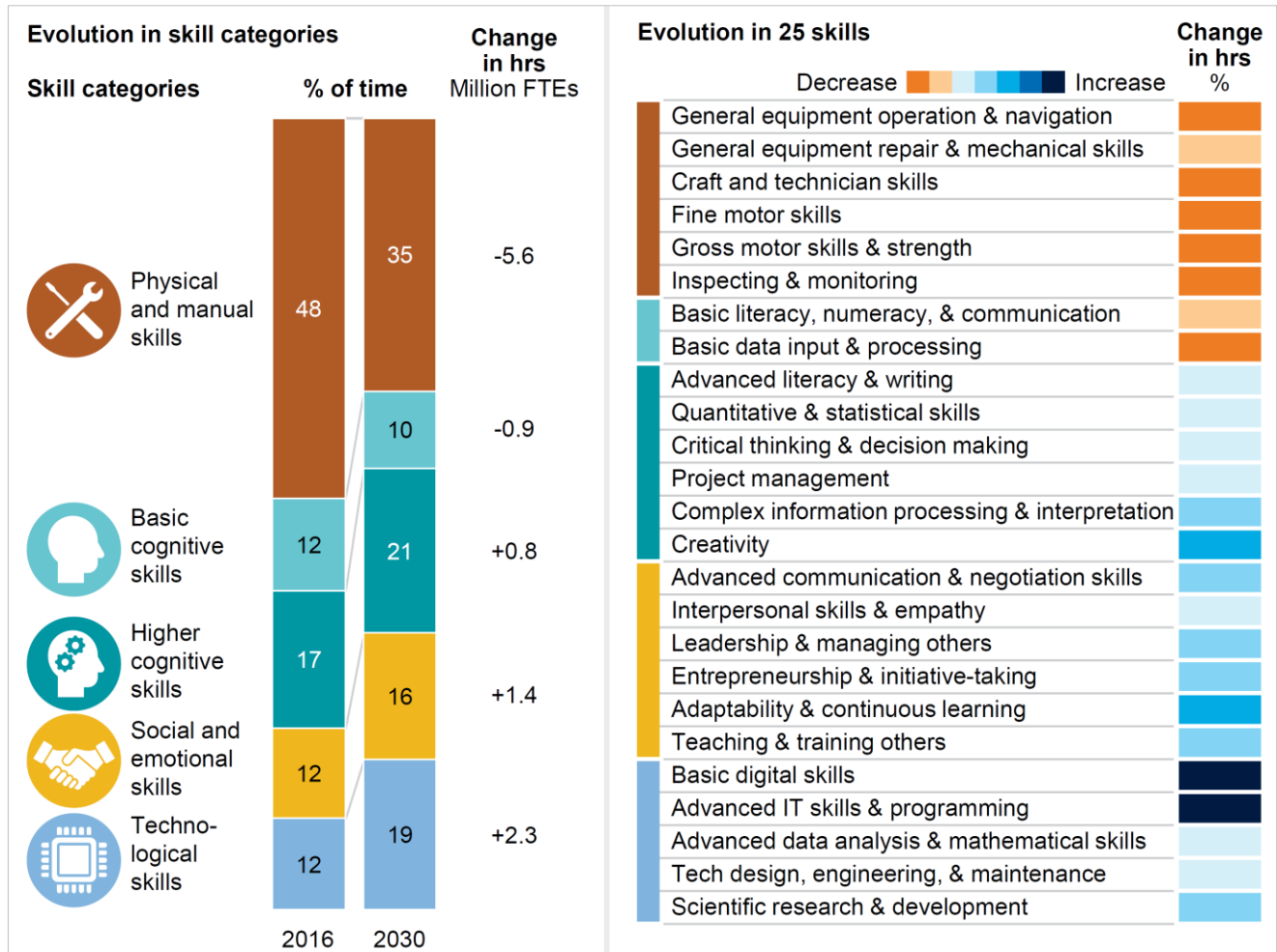


Figure 1.1: Manufacturing Sector Skill Shift by 2030

Advancement in robots with respect to its ability to handle intelligent jobs and work along with operators, and cognitive ability of bots to work as digital assistants with employees will result in higher level of adoption in the manufacturing sector. This is also expected to have a significant impact on the performance of this sector with respect to key operational and business parameters.

³<https://www2.deloitte.com/us/en/pages/manufacturing/articles/future-of-manufacturing-skills-ap-study.html>

⁴<https://www.mckinsey.com/business-functions/operations/our-insights/human-plus-machine-a-new-era-of-automation-in-manufacturing>

4. AUTOMATION ACROSS THE MANUFACTURING VALUE CHAIN

Industry 4.0 is rapidly changing the way manufacturing plants operate. The concept of Smart factory built on the principles of world class manufacturing principles and enabled by technologies like Digital Twin, Additive Manufacturing, Artificial Intelligence, Data Analytics and Automation to name a few, is the new way of manufacturing. For manufacturing plants with B2B model, the focus is on keeping their direct customers happy by meeting their target price, manage fluctuating demands, ensure quality consistency and support their innovation journey by jointly developing new products and processes. For organizations in B2C model, while most of the above parameters of quality consistency, managing demand fluctuations and innovation in product & processes are relevant, there are additional challenges of accurate demand forecasting, optimizing supply chain inventory, stock availability at point of sale, and enhance satisfaction levels for end consumers and channel partners like distributors, retailers etc. Technology has helped improve visibility across value chain, improve plant performance and reliability for factories to stay competitive and delight customers.

	Plan	Buy	Make	Move	Market & Sell	Enable
Roles	Demand Planner, Production Planner, Supply Chain Planner	Procurement Manager, Buyer, Supplier Quality Engineer, Warehouse Manager	Operations Manager, Maintenance Manager, Industrial Engineering Manager, Quality Manager, Warehouse Manager, EHS Manager	Logistics Manager, Warehouse Manager, Production & Shipment Planner	Marketing Manager, Sales Manager	Finance Manager, HR Manager, IT Manager, Customer Service Manager, EHS Manager, NPD Manager
Systems	ERP, Planning Software, Data Modelling Tools, Analytical tools, Visualization tools	ERP, Revers Auctioning software, QMS, Supplier Relationship Management tool, SQA	CAD/CAM, MES, SAP, Analytics Software, ERP, QMS, PLM	WMS, TMS, ERP, Reverse Logistics Tool, Logistics Tracking & Analytics Software, GPS Apps	CRM, ERP Systems, BI Tools	Risk Assessment Tools, Enterprise Project management, HRMS, Analytical tools, CRM, ERP, Accounting & Budgeting Tool, QMS/EMS, PLM
Inputs	Market trends, Historical demand/consumption reports, Production capacity, Pre-S&OP, Growth Plan, Sales data by SKU and Accounts	Demand & Production plan, Material Plan, Inventory Report, Vendor Master, Historical Price Rates	Line availability, Production Plan, Material availability, inventory stock report, Quality control plan	Inbound Orders, Dispatch plan, Shipment plan, Routes & Logistics Details, Vehicle Loading Plan	Promotion Schedules, Product wise sales plan, Budget approvals, Stock availability report, Production plan, Sales Forecast, Financial Plan	Resource requirement, Asset management, IT tickets, Bank statements, invoice details, claim reports, bill register, Service Requests & customer queries, Audit requirements, safety audit plans, Customer Service Requests
Outputs	Demand plan, Sales & Operation Plan, Capacity plan, Annual Budget, Material Plan	Material requirement plan, SKU and account level price, Product procurement plan, Purchase orders, Vendor ratings, Updated Vendor Masters, Updated Price Masters	Finished goods, Test and inspection reports, Production records, Defects reports, Quality Compliance Reports, Performance Reports	Outbound orders, Dispatch routing, Truck placement, Picking and packing, Invoice, E-way bill, label prints, Compliance reports, Shipment documents & delivery notes	Customer Insights, Market expansion plan, Revenue Projections, Contingency plan, Account level business plan, Competition Reports, Pricing & sales trends	Asset tracking report, Financial reports and dashboards, Senior Leadership reports, Account reconciliation reports, claims & expense settlement reports, HRMS reports, Safety Audit reports, Customer Service Report, Near Miss & unsafe acts reports
Activities	Business Planning, Goal setting, Master Production Scheduling, Executive S&OP, Production Planning, Shipment Planning	Replenishment planning, Supplier Selection, Tracking Price rates, items procurement, Vendor rating, Vendor Master Data Management, Quality checks and Inspection	Production scheduling, Line management, Material movement, Testing and quality control, Job order execution, Defect Management, Equipment Maintenance Planning, Spares Planning, Instruments and Gauge Calibration	Receiving, Put away, Pick and Pack, Shipping, Yard and Dock Management, Reporting, Material Issue & Dispatch, Material Verification, Tracking & Insurance, Logistics Management	Marketing Plan and Strategy, Market & Sales Trend Analysis, Pre-S&OP, Capturing Voice of Customers, Account Development, Sales Management, RFQ Management, Price Negotiation, Sales Order Creation, Sales Promotion, Competition Analysis	Talent Acquisition, Employee Lifecycle Management; Infrastructure & Application Management, IT Operations Planning and Governance Customer Service Management; Financial Accounting & Reporting, Payments and Reimbursements, Treasury Operations, Environment Monitoring, EHS Management
Metrics	Order Fulfilment (OTIF), Capacity Utilization, Order to Delivery Lead-Time, Order Forecasting Accuracy	Inventory Turnover Ratio, Vendor Rating, Incoming Material Defects, Slow & Non-Moving Inventory Ratio, Procurement Lead Time, PO and Invoice Accuracy	Manufacturing Plan Vs Actual, OEE, Manpower Productivity, CoPQ, Rejection and Rework Rate, Equipment Availability, Safety Index	Order fulfilment, Order to Delivery Lead Time, Logistics Cost, Logistics Lead Time Adherence, Truck Turnaround Time	New Customer Acquisition, New Market Acquisition, Promotion effectiveness, Customer loyalty & Retention, Customer Lifetime Value, Customer Profitability	Recruitment Lead Time, Employee Attrition, Employee Engagement Index, Training ROI, Employee Productivity, Accounting Errors, Lead Time Compliance, Resolution Rate, Customer Retention & Addition, Net Promoter Score, Response & Resolution Time, IT Policy Compliance Rate

Fig 1.2: The Manufacturing value chain

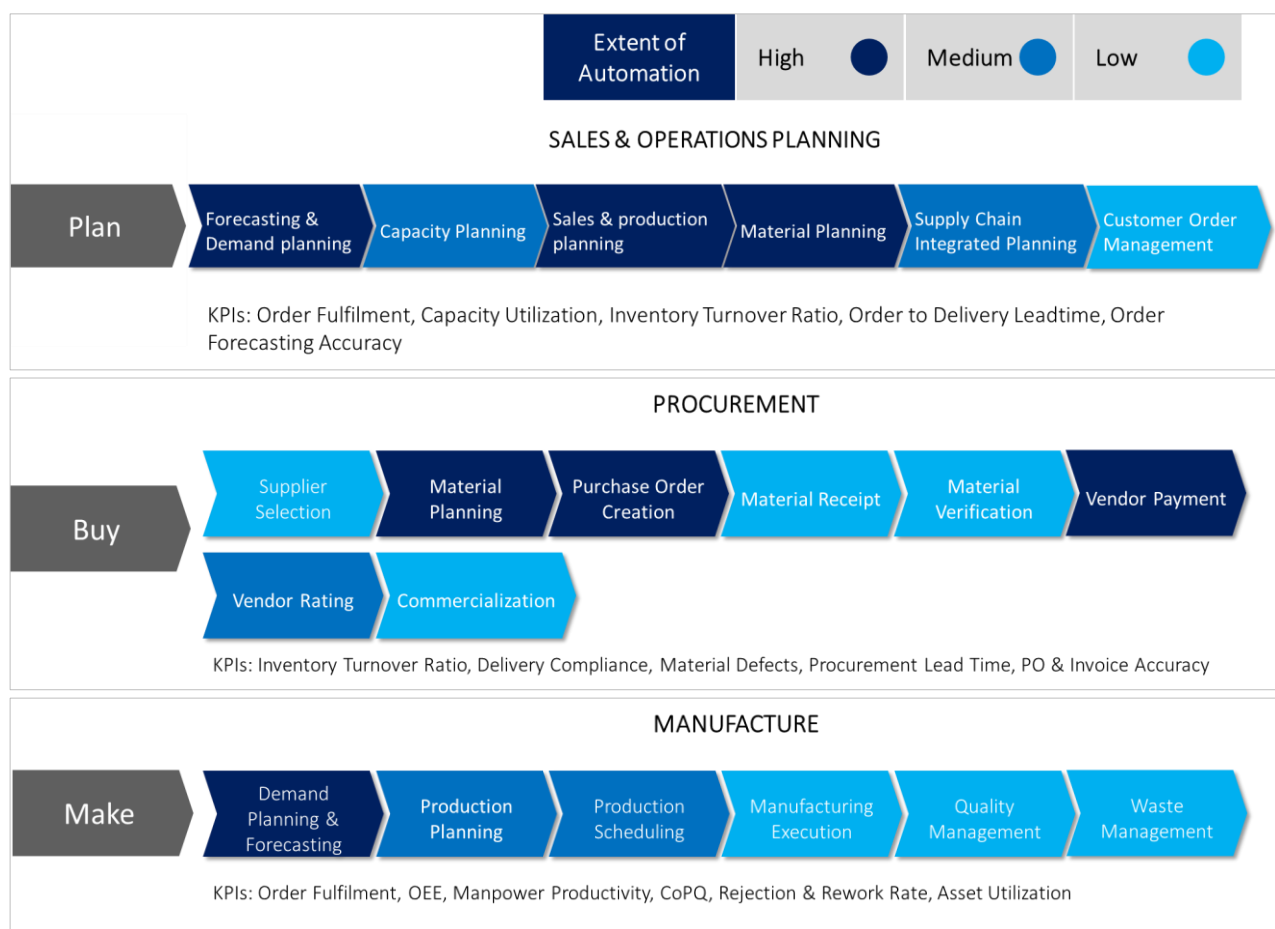
Manufacturing organizations are constantly working on optimizing supply chain inventory without impacting OTIF. The first wave of operational excellence was focused on implementing best in class systems and processes in the manufacturing plant and then in the next wave it moved to suppliers and slowly to the entire supply chain. Organizations have benefited significantly when they have

looked at optimization opportunities across the value chain level instead of just the factory level. Automation benefits will also be maximized when opportunities are identified across the value chain instead of looking at the factory operations alone.

The other focus area that is being enabled by IIoT is the concept of customization. Many industries are trying to differentiate by making their plants flexible enough to produce customized products on the same manufacturing line with similar efficiencies of a mass production. A classic example is an automotive plant manufacturing multiple models with different configurations on the same assembly line and hence making their manufacturing process totally aligned to market order. RPA will further these thought processes by bringing efficiency, reliability and accuracy in many processes across the value chain.

Keeping these Business and Technology drivers in mind, the process maps for enterprise processes have been outlined to represent where RPA can help and provide the necessary in-roads for Manufacturing companies. Benefit tracking of automation can be done through the KPIs associated with each process.

Automation areas in the Manufacturing value chain and KPIs



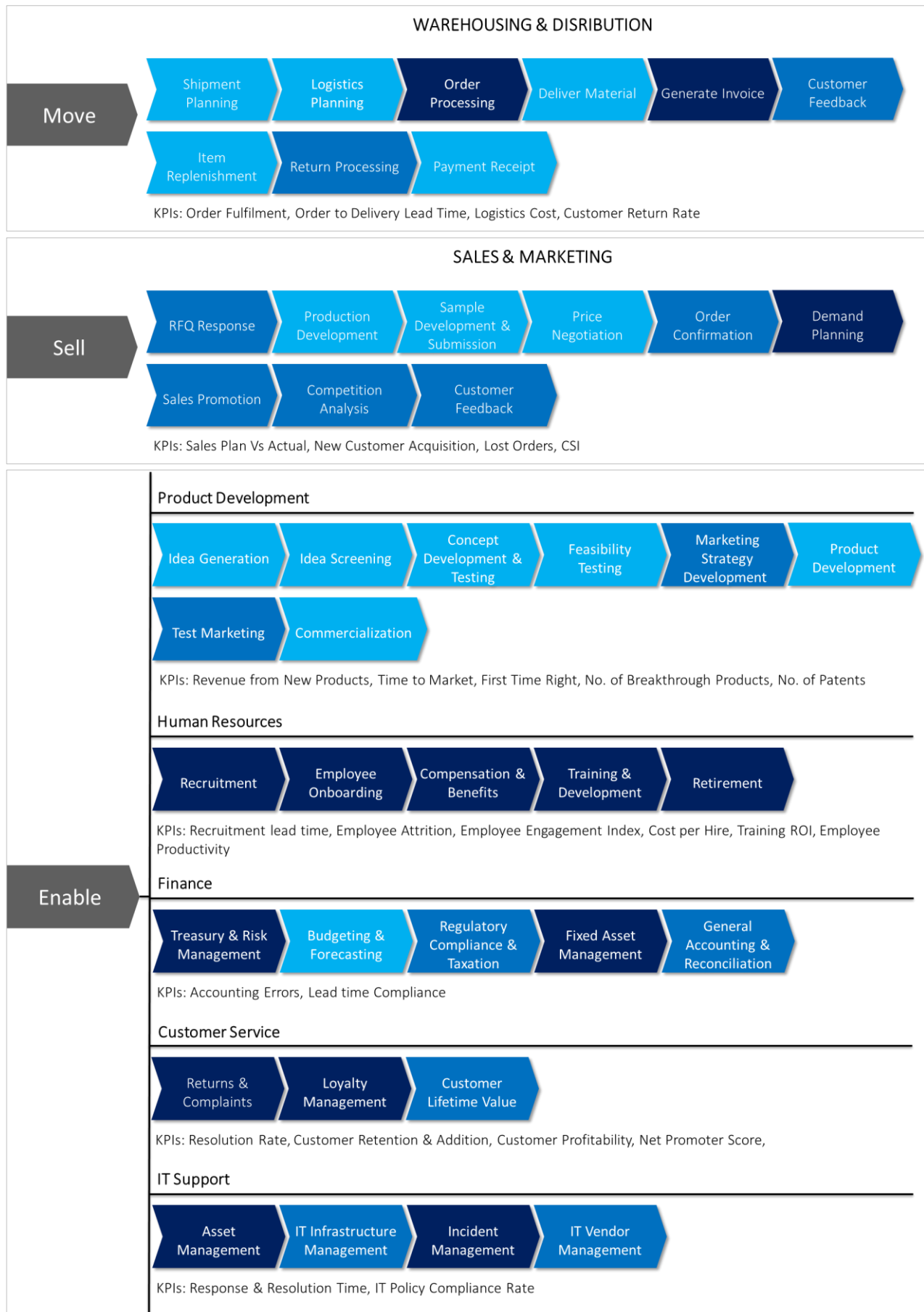


Fig 1.3: Automation propensity map across MFG value chain

In conclusion, we see that RPA will have a high impact on many of the Manufacturing processes, with broader benefits including better accuracy, faster throughput, higher straight through processing, improved tracking, reduction in handling time, increased visibility and timely monitoring of critical activities.

We will now look at the challenges within the Manufacturing industry, and the underlying opportunities for RPA.

5. CHALLENGES AND OPPORTUNITIES

IIoT is playing a critical role in transforming factories and making them future ready. RPA could be used alone or in combination with other IT and IoT tools to solve some of the challenges faced by manufacturing sector. Some of the key challenges faced by the manufacturing sector that can be addressed by RPA is as follows:

Driving Factor	Challenges	Opportunities
Managing Demand Fluctuations	Skill development and stringent manpower planning for direct manpower helps manage production activities but demand fluctuations often results in bottleneck in support functions.	Support functions like Warehouse, Logistics and Finance can automate many activities like preparation of GRN, Dispatch note, Invoicing, E-way Bill, payment processing etc. This will help manage demand fluctuation and improve efficiency.
Enhance Customer Satisfaction	- Customers expect feedback and resolution of their queries at a much faster pace. While Cost, Quality, Delivery are the key driving factors for customer satisfaction, responsiveness is also becoming a critical element. - Tracking quality of customer service and its impact on CSI. - Handling queries wrt order processing status, shipment, etc.	- RPA is used to source data from multiple IT applications in short interval (<i>that could take hours in the earlier scenario</i>) and ensure faster complaint resolution and response to queries. - Bots can collate data from customer service portal and identify trends wrt defect rate, defect type, geography, component etc. and create actionable report for managers. - Bots can be used to source data and respond to customers in real time.

Driving Factor	Challenges	Opportunities
Complex Planning & Scheduling Process	Supply Chains are becoming complex. Sales & Operations planning to ensure product availability, inventory optimization and enhance asset utilization in the complex environment.	- Multiple data points like demand, capacity, material availability, FG stock levels, maintenance plan, backlog, priority orders, shipment plan, etc. can be mined using bots and update standard templates. - Based on defined intervals, bots can update actual performance against plan, changes in demand, actual sales data etc., based on which planners can optimize their manufacturing plan to maximize plant efficiency. - Based on the MRP run, bots can be used for preparing POs and mailing to suppliers.
Error Free Reporting & Performance Monitoring	- Preparation of reports on time and error free across multiple departments at regular interval, utilizing data from multiple sources. - Few reports are complex and requires hours to be spent on preparation.	- RPA automates report preparation and delivers timely and accurate reports in a cost-effective manner. - Standard reports can be automated using RPA. This will help reduce time for report preparation and can be utilized by executives for analysis and performance improvement.
Material & Logistics Cost Control	- Tracking prices of commodity, fuel prices and product prices on real time and across multiple vendors and geographies - Logistics cost optimization based on changes in fuel prices	- Bots can be used to source data from multiple websites and collate it in the required format for buyers to track material cost trend and plan procurement. - Based on changes in fuel prices, bots can calculate the trip cost for each route and update ERP. This will ensure logistics providers are paid based on real time fuel prices instead of a monthly or quarterly pricing policy.

Driving Factor	Challenges	Opportunities
Sustainability Reporting & Compliance	Reducing environment impact of industrial operations is resulting into stringent requirements around environment laws compliance and reporting.	Bots can be used to automate report preparation in the required format and update information on government authority's website or on company portal, ensuring high level of compliance and accuracy.
Handling Supplier Queries	Suppliers reach out to the buyers for multiple queries like GRN & payment status, rejection details etc.	Bots can respond to these queries by sourcing data from IT applications and responding to vendors in short intervals. This will help improve their satisfaction level and at the same time reduce buyer's time spent on NVAs.

6. INTRODUCING PROCESS DRIVEN AUTOMATION

The traditional method of approaching automation opportunities, is to conduct a detailed time and motion study of the individual processes across the value stream and determine what improvements can be made through automation. This approach to study business processes at a detailed level and identifying the automation opportunities is called the Process Driven Approach. The process driven approach qualifies the opportunities based on Efficiency, Effectiveness and Experience factors from perspectives of:

- Volumes which consume a person's critical bandwidth
- Execution time – the time spent by the person doing redundant work or non-value steps
- Degree of rework and propensity of errors
- Tasks making a person's work mundane e.g. checks and verifications

Once the detailed study of the opportunities has been completed, a qualification report is generated based on the degree of automation possible, impact of the automation on dependent flows, cost-benefit factor. Based on the qualification report and client's preference, creation of a priority matrix helps to plan out the RPA roadmap, deployment and support frameworks.

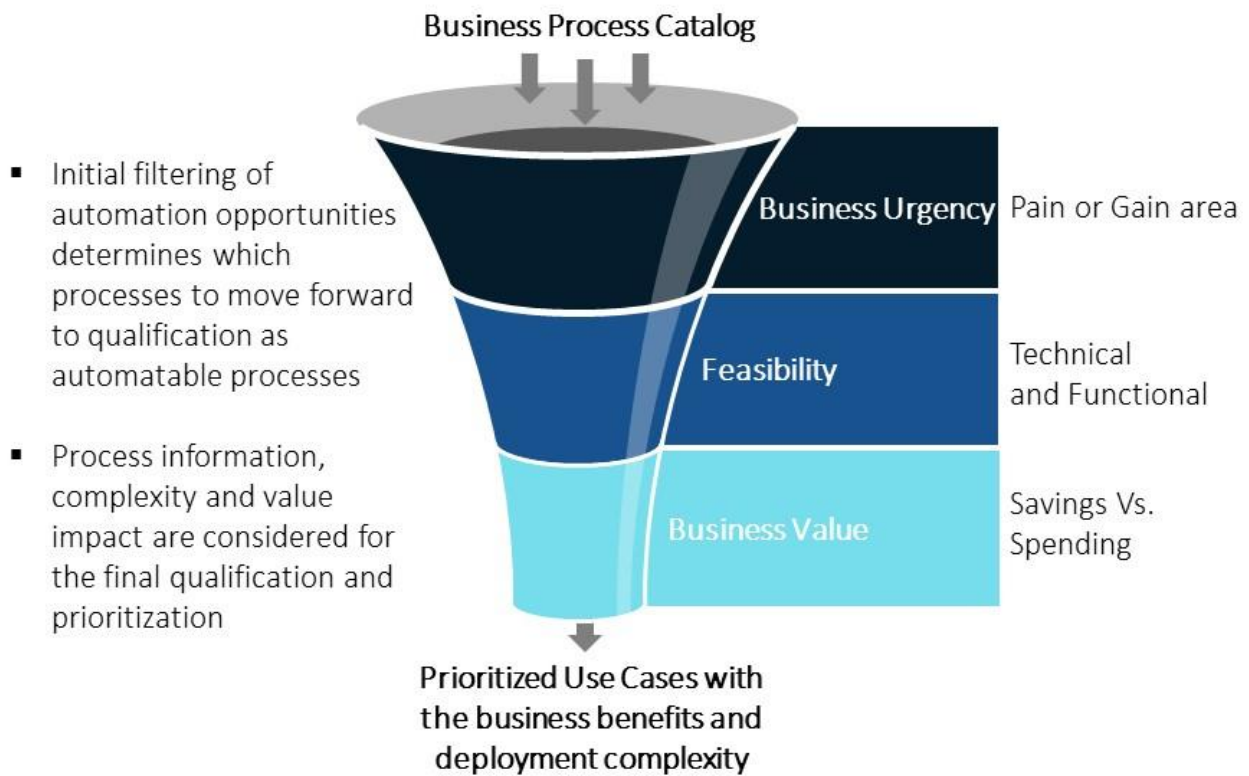


Fig 1.4 – Process Prioritization Funnel

Following the prioritization process, derive the 'value benchmarking' and 'measurement' as follows: -

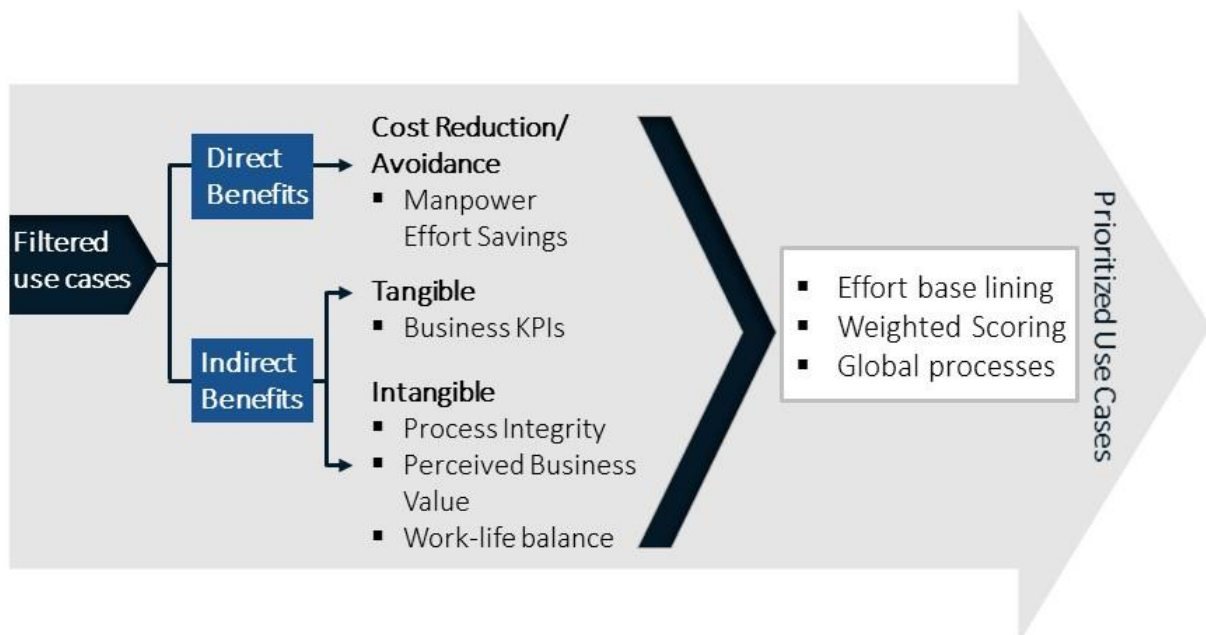


Fig 1.5 – Value Measurement Framework

Initiate the value measurement once the automated processes are implemented and BOTs start to execute the day-to-day activities. Capture the performance parameters to identify the resulting value from automation in terms of Effort savings, Cost savings, SLA adherence, accuracy and additional baselined business KPIs.

6.1. PROCESS CATALOG

After conducting a detailed analysis of the MFG value chain, business functions and multiple MFG industry players, following is the process catalog with the list of processes which can be automated. (Refer Appendix for the Process Catalog)

6.2. FUNCTION WISE AUTOMATION PROPENSITY

Based on the processes study and process cycle mapped in Section 5, we find that the eligibility of automation across different core and supporting functions of the MG industry is as follows –

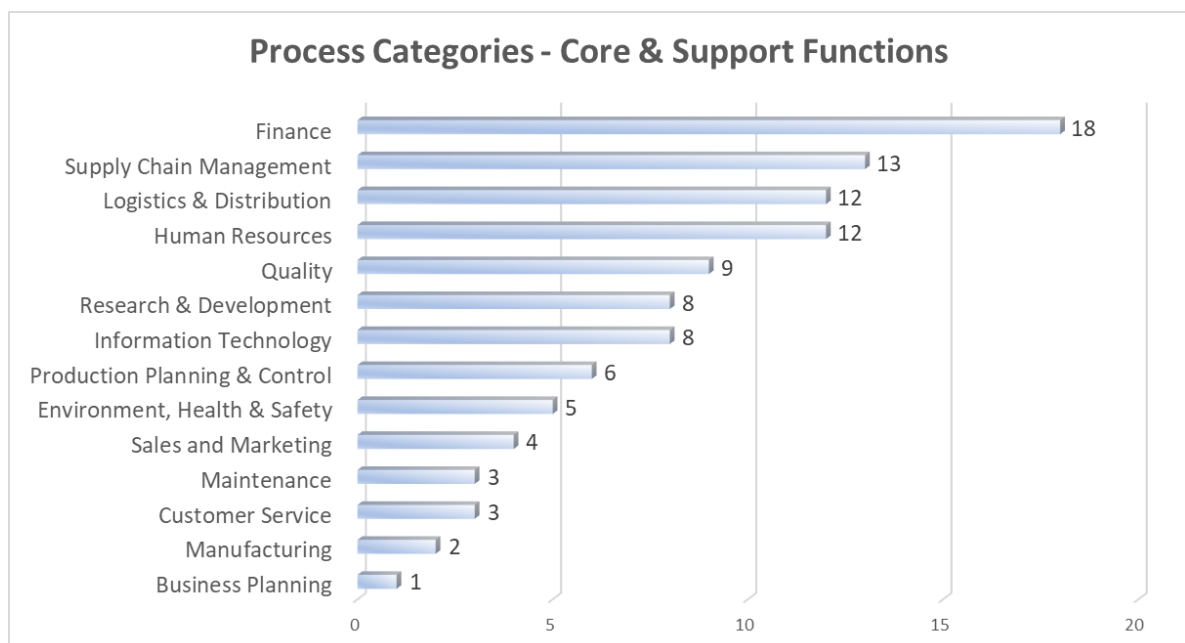


Fig. 1.6 – Function-wise Automation Propensity

*Based on a study of 104 processes, the above chart shows the function-wise propensity of automation

The advantages of the above representation are: -

- Quick view of functions with a greater number of automation candidates
- Opportunity to look persona-based standardization

Automation Propensity Overview

In this view, we are representing some of the processes pertaining to the above functions in terms of their complexity and the degree of automation possible. Processes in Quadrant 1,2 & 3 should be the first priority for automation.

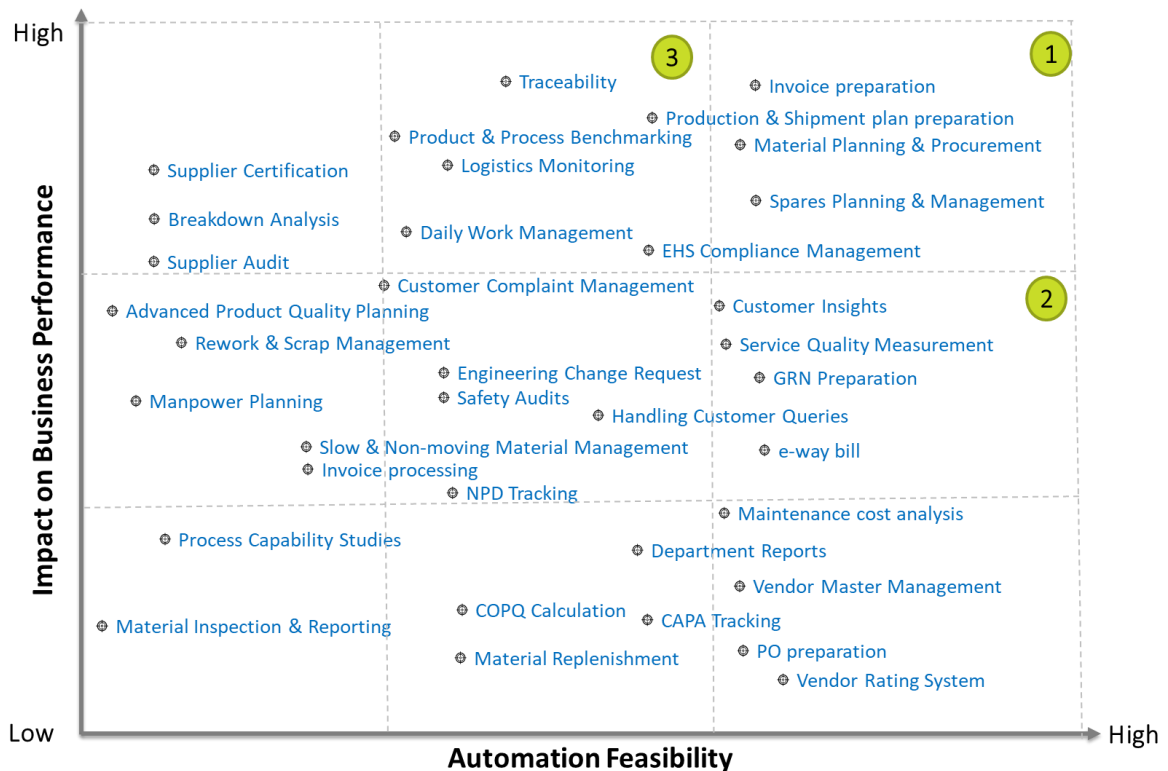


Fig. 1.7 – Process Automation Propensity

The advantages of the above representation are: -

- A pin-point view on which process to start with
- A foundation to create a process prioritization matrix

Now let's see what the possible approaches could be to embark on the RPA journey or take the RPA journey to the next level of enabling transformation within an organization.

7. INTRODUCING THE DIGITAL WORKFORCE – PERSONA DRIVEN AUTOMATION

While the Process Driven Approach is a standard and widely adopted method to start the automation journey, we have come up with a new approach of amplifying human potential with a hybrid workforce where human skills are complemented with digital skills. This concept is based on: -

- A. Looking at creating helper bots across job roles – Digital Buddy
- B. Looking at creating bots which can take a major part of the job role thus streamlining workforce – Traditional Persona or Digital Workforce

In both cases the, method of approaching an automation opportunity is largely people centric. This is a purely design thinking led approach which captures efficiency, effectiveness and experience from perspectives of: -

- Repeatability vs Redundancy – the frequency of execution of a task over a period of time vs the number of times the task is executed without much value
- Time taken to execute – the time between the arrival of the task request and initiation of processing of the task
- Number of steps that are manual and are automatable
- Decision making vs Discretion

To construct a Persona, following is the structured approach to identify the manual tasks which can be transformed into digital skillsets: -

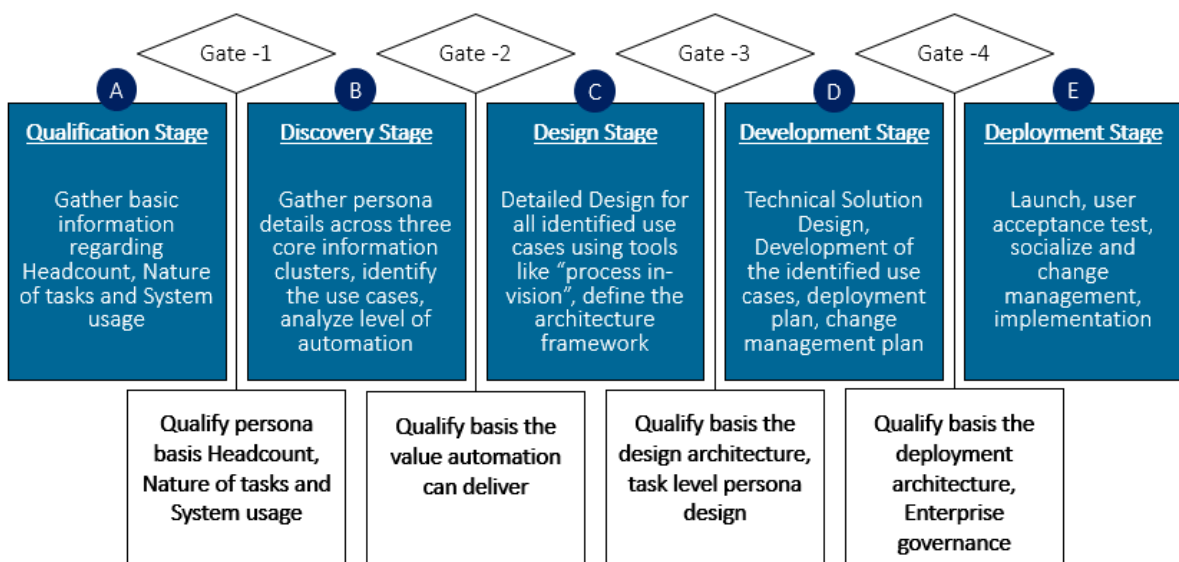


Fig 1.8 – Persona Modelling approach

Extending the Digital worker concept to Manufacturing, outlined are 3 major personas through which this industry will benefit the most based on the assessment of the degree of automation possible, tasks across roles and the value expected from automation.

7.1. PROCUREMENT EXECUTIVE

Key KPIs of a Procurement Executive

Material Availability as per Plan | Inventory Turnover Ratio | No of Stock-Outs | Material Cost Saving | Sourcing Lead Time Reduction | Vendor Satisfaction Index | Average Time to Respond to Vendor Queries

The buyer's role in an organization is critical as raw materials cost is in the range of 50-70% of the product cost in most manufacturing companies. Hence procuring the material at the right time and at optimum cost becomes critical for the plant's performance. He also identifies vendors, approves and register them, monitors and report their performance. A buyer also spends significant amount of his time following up with the vendors on the material status, material requirement plan preparation, stock status monitoring and reporting performance.

Keeping the criticality of end user bandwidth in mind, the following Procurement Executive persona construct complements the day-in-life activities with digital skillsets:

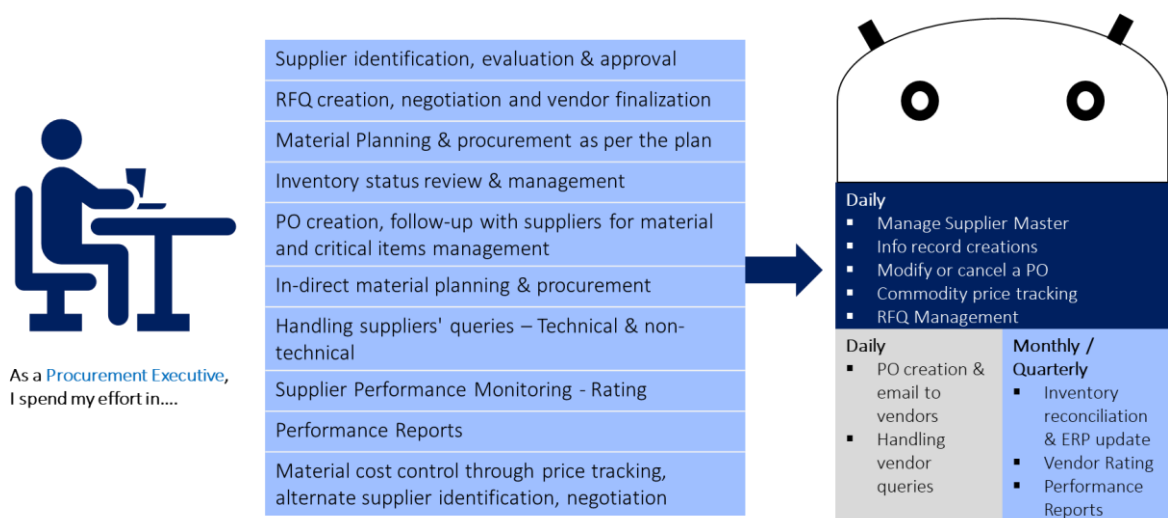


Fig 1.9 – Modelling the Procurement Executive Persona

7.2. PRODUCTION PLANNER

Key KPIs of a Production Planner

Manufacturing Plan alignment to Sales Plan | Capacity Utilization | Shop Floor Inventory Control |
Manpower Utilization | Rework Planning | OTIF

The Production Planner plays a critical direct role in the Plan and the Make phase and an indirect role in the Market and Sell phases (market response to the product, complaints, demand will have impact on production and therefore the Production Planner). His/her key responsibilities lie in ensuring efficient and risk-free operations and implementation of new industrial techniques at the plant. He/she coordinates workflows for one or more products, planning and prioritizing operations for maximum efficiency, enforcing quality control measures and minimizing wastage.

Keeping the criticality of end user bandwidth in mind, the following Production Planner persona construct complements the day-in-life activities with digital skillsets:



Fig 1.10 – Modelling the Production Planner Persona

7.3. WAREHOUSE EXECUTIVE

Key KPIs of a Warehouse Executive

Dispatch Plan Compliance | Truck Turnaround Time | Dispatch Errors – Quantity & SKUs | Documentation Error | ERP Vs Physical Stock Mismatch

The warehouse executive plays a key role in receiving the materials in the warehouse from suppliers and dispatching the finished goods to customers. He/she must prepare multiple documents while receiving and shipping materials. Timely and error free documentation is necessary to ensure that the received materials are available for production and finished goods are dispatched on time to reduce truck turnaround time.

Keeping the criticality of end user bandwidth in mind, the following Warehouse Executive persona construct complements the day-in-life activities with digital skillsets:

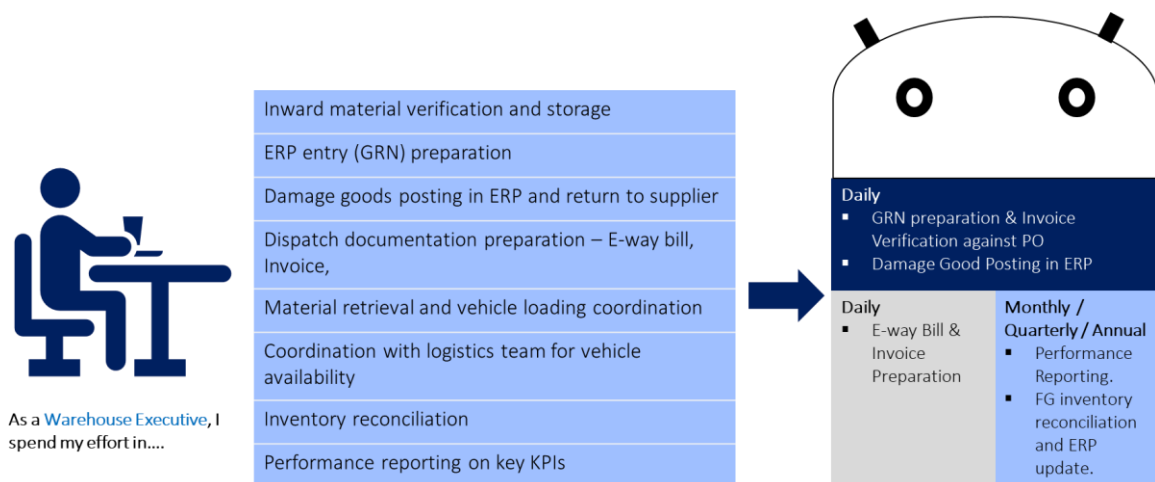


Fig 1.11 – Modelling the Warehouse Executive Persona

8. GETTING STARTED

8.1. APPROACH TO AUTOMATION

From an approach standpoint, a process and technology landscape study to identify automation potential is a must. However, to accelerate this process we have created a starter kit which gives a ready reference list of processes across the different high automation propensity functions based on time and motion perspective. While the Starter Kit will help quick start the automation process for new adopters, the traditional approach of Discovery to Sustain remains relevant to create automation waves for sustainable outcomes.

Outlined is our consulting led approach for an end to end automation cycle: -

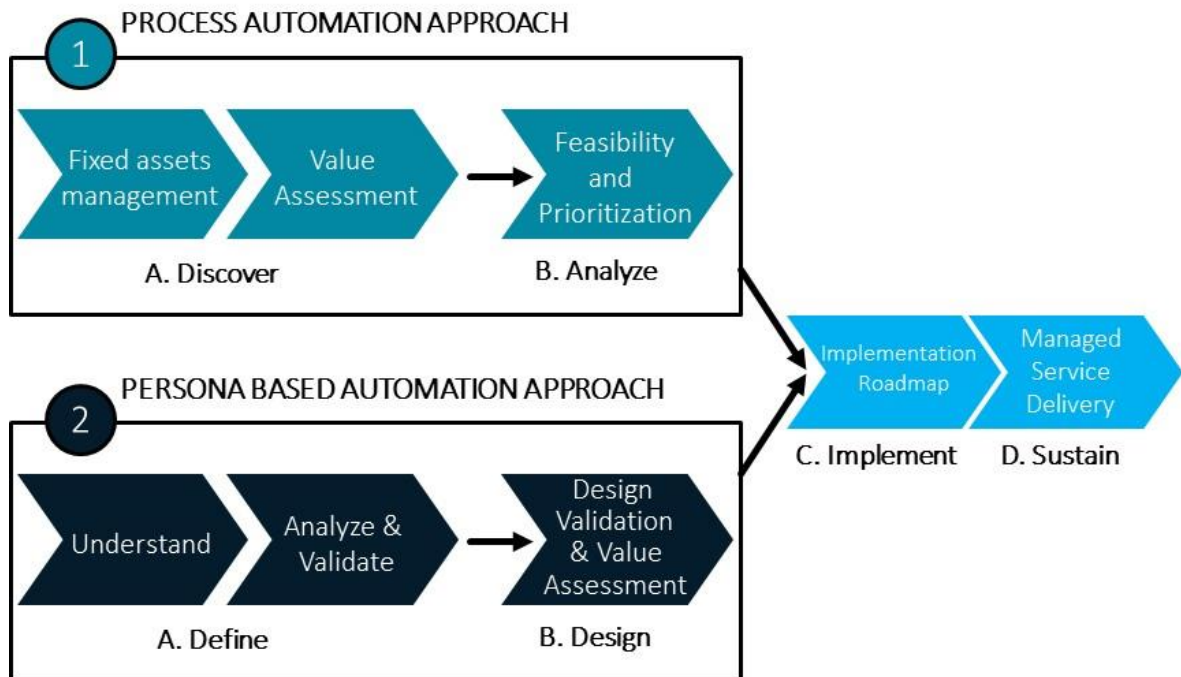


Fig 1.12 – Process Discovery and Mining Approach

8.2. METHODOLOGY

Process Discovery and Prioritization Methodology

Our Process Discovery and Analysis phases are powered by IP driven methodologies and frameworks that has been built based on industry best practices and execution experience. The discovery, process prioritization and value assessment are conducted using our E³ Framework (Efficiency, Effectiveness and Experience) wherein each process is studied in detail and key parameters are captured to determine the following:

- Dependencies – Technology, People, Upstream-downstream process
- Actions Performed at each step – determine whether it is a necessary action, action leading to non-value add, action prone to error or deviation from expected method, repetitive, manual interventions needed

- Degree of Repeatability
- Degree of Redundancy
- Time Factors – time to response, time to wait, time to execute, frequency etc.
- Degree of work not happening on IT e.g. reading and understanding data before being fed into IT system

Perform a detailed data/response collection based on the key attributes of Efficiency, Effectiveness and Experience, our framework determines the degree of automation and complexity based on predefined rules and thresholds.

Based on this output, we correlate the candidate processes with automation priority for business. Predict the notional ROI considering the total effort involved in executing the as-is process, the TCO for automating the process against the expected returns on automating the process.

Persona Discovery Methodology

Our QD4 framework is used for qualification and to design the Digital Persona. The data collected and the correlations derived from the design-thinking led approach helps to determine which role and tasks have a higher propensity for automation to deliver a higher return.

After helping our clients by creating an opportunity wave, detailed roadmaps are created for implementation and carry out business as usual. It is achieved through the following: -

- **Pure Play Automation Ownership** – Where we help the client with consultancy, on how to go about automation, do the implementation and handover so that the client own and manage the program by themselves.
- **Managed Services** – In this model we own the delivery and sustenance of the automation program end to end. We may play the role of license reseller in certain situations. Additionally, we have Bot as a Service – In this model, we own process as whole therefore the infrastructure, licenses also come under our responsibility.
- **POV as a Service** – Should a client wish to test waters before deep diving into automation investments, we also provide a POV (Proof of Value) as a service, wherein we help simulate a critical part of the opportunity and establish the fitment of solution (the bot framework, automation tool) and present the value to our clients. This is a Pilot of mini-project model wherein the scope of the deliverable is limited to prove the concept and the value.
- **RPA Support as a Service** – Under this model, we may take up the support and governance of an RPA program that we have developed or any other entity has developed, with the main aim of running it at high efficiency, performing bot rationalization to optimize resource consumption and maximize output.

Based on the different stages of automation maturity that our clients have; we can assist them with an aligned strategy for growth.

Stage	Challenges	How can we help
Seekers – Planning for RPA investment	• Relevance and feasibility of automation • Risk and cost of transformation • Product evaluation	• Product comparison and selection • Starter kit • Process mining
Samplers – Conducting Proof of Technology / Concept	• Selecting the right product • Identifying the right use cases for automation • Business case for Automation	• Business case creation • Alternate platform selection • Process mining and prioritization • Implementation services • Functional and Technical experts • Value modeling
Embracers – In early stages of implementing RPA	• Enterprise process discovery • Process standardization and streamlining • Bot development and deployment • Bot support and maintenance	• Value baselining and measurement • Industry specific automation process catalog • Establish governance and RPA CoE • Different engagement models (Automation as a service / Managed service) • Change management • Use bots for end user support and issue triaging
Champions – Have done RPA implementation at scale and innovation	• Scale Bot implementation and deployment • Intelligent Automation • Bot KPI improvement	• Integrated Automation solutions – End user computing as a service, PLM Support automation, Test Automation • Change Management • Intelligent Automation Establish RPA CoE • Validate coding best practices using QC bot • Use of bots for end user support and issue triaging

8.3. STARTER KIT

In order to kick start the automation journey for our client <minimize the time from discovery to design, we offer the Starter Kit catalogue in which the client is free to choose from the process catalogue and based on the complexity assigned to the process, there will be a fixed rate charged for the services (* RPA Licensing is exclusive of this).

Based on our experience in handling various client requests, following is a representative development to deploy timeline: -

Automation Complexity	Avg. Turnaround Time (in days)
Simple	15 – 20
Medium	25 – 35
Complex	35 – 45

Following is the Starter kit process catalog: -

Sl. No	Business Area	Simple Use Cases (Pick any 2)	Medium Use Cases (Pick any 1)	Complex Use Cases (Pick any 1)
1	Research & Development	- NPD Status Tracking - New SKU creation	- Engineering Change Request Management - Prototype Test Reports - Conducting VOC studies	Product & Process Benchmarking
2	Supply Chain Management	- Purchase Order Creation - Commodity Price Tracking - Supplier Master Management	- Goods Receipt Note Entry - Vendor Rating - Inventory Status Report - Slow & Non-moving Material Management	- Material Requirement Plan Preparation - RFP to Quotation & Comparison Sheet Preparation - Spares Planning & Control - ERP Vs Physical stock verification
3	Manufacturing	- Quality Reports - OTIF Report - Daily Power consumption Report - Material Yield Report - Maintenance Cost Report	- Scrap Reporting - Material Traceability Reports - Monitoring EHS Compliance - CAPA Status Tracking & Escalation - Capacity Planning	- Customer Complaint Handling - Production Report - Production & Shipment Plan Preparation
4	Logistics & Distribution	- E-Way Bill - Shipment Tracker - Freight Tracking - Truck Turnaround Time Tracking	- Stock Transport Order Execution - Post Goods Issue - Logistics Cost Tracking - Inter Depot & Inter Plant Transfers - Logistics Partner Performance Monitoring	- Truck Indenting - Dispatch Plan Preparation - Returns Management - Shipment cost calculation & ERP update
5	Finance	Order Information Report	- Budget Vs Actual – Cost Report - Monthly P&L Report - SKU Profitability Report - Pay slip and Tax Deduction Certificate Generation - Spend Analysis - Process Petty Cash Transactions - Stock Valuation report	- Bill register vs GRN reconciliation - Bill Processing - Bank Reconciliation System - Freight Settlement - Voucher Processing - Reimbursement Processing - Travel Expense processing - Medical Claims processing - Credit Limit Sanction & Management
6	Human Resources	- Attrition report - Employee Probation Confirmation - Candidate Connect - Appreciations and Award	- HR Compliance reports - Exit process - Deputation Cycle Management - Employee application - Employee Onboarding	- HR Helpdesk - Recruitment source mix - Employee Onboarding
7	Information Technology	- Asset Tracking - Ticket logging - Website availability and accessibility	- Backup Monitoring - Vendor Service Request Handling - System Audits - Ticket triaging	- IT Helpdesk management - Expense Report
8	Customer Service	- Customer Feedback Reports - Customer service ticket logging & allocation	- Customer Support Management - Customer Feedback Analysis to Product Design Team	
9	Sales and Marketing	Orders for payment processing report	- Sales Order Creation - CRM Update - Competition Analysis	- Sales Trend Analysis - Customer Profiling - Demand Planning - RFQ Tracking & Respond

9. CONCLUSION

The top reason why automation is still viewed with unease lies in the demands made by automation technology on process maturity. Organizations are not certain if they are ready for automation. In many instances, they have already failed to extract real benefits from their automation pilots. This is because of the type of end objectives set for their automation programs, the most popular being, “I want to reduce X people in the organization.” Just replace X with any number from 5 to 500.

Other objectives that lead to failure are, “I don’t have enough manpower and I want automation to fill the gap.” This is even though organizations have, for years, developed macros to automate worksheets—each time to ensure that tasks are done faster and more accurately by their workforce, and never with the goal of eliminating or replacing manpower.

To succeed, we offer one thumb rule: Continue to keep the benefits of automation narrowly focused on making the workforce agile, amplify human potential, make more time available to employees so that they can perform better and elevate their cognitive potential.

People are being loaded with more work than ever before. They are expected to quickly learn new skills and if they do, it is at the cost of being able to use their cognitive skills. Automation is a way to regain cognitive ground.

Boosting employee potential is a remarkably powerful objective. But we have seen it fail in 80% of the engagements that we have been involved with. Reason: Organizations fail to see the larger picture; they feel that once you apply automation, employees will be free when in reality what needs to be measured (and reported) is the improvement in throughput, reduction in turnaround time and accuracy of process execution.

Let’s examine a commonly experienced problem—that of worker fatigue from repetitive tasks such as creating purchase orders from voice calls, emails and chat applications. After doing this task repeatedly, fatigue injects errors into the process. The cost of inaccurate purchase orders slipping into the system and the cost of rework are huge. Robotic Process Automation and Virtual Assistants can easily reduce this cost by improving worker efficiency and reducing fatigue.

If automation can deliver such major impact, what can organizations do to eliminate barriers to the technology? The truth is that organizations don’t know where to begin. Traditional organizations want to see value in automation that is tangible. Often that is difficult to demonstrate in the first few cautious projects. But the deeper truth is that by not proposing an adoption plan they are making it harder to assimilate automation into their business and culture, while the rest of the world moves ahead.

We hope this document has been able to bring clarity in the thought process, the start and the end points, and most importantly, appreciation of the fact that the hybrid workforce is here to help, sooner than later. Earlier one adopts, faster is the road to nirvana.

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10. APPENDIX

Sl. No	Functional Area	Use Case	Use Case Description	Role
1	Customer Service	Recording and resolving customer queries and service request	Chatbots for complaint registration and allocation of service request to engineers automatically based on pre-defined rules	Customer Service Manager
2	Customer Service	Measuring & improving customer experience and quality of service	Automate survey on completion of service. Prepare summary & trend reports - Customer Service Index on service quality	Customer Service Manager
3	Customer Service	Monthly service reports on quality & type at product, sku & geo level	Generate customer service reports to be analyzed by Customer Service & Quality Department for Design, Manufacturing or Customer Communication improvement	Customer Service Manager
4	Environment Health & Safety	Licenses and certificates issuance and renewal	Tracking of expiry dates, notification for renewal and escalation	EHS Manager
5	Environment Health & Safety	Periodic testing and Environment monitoring by external agency	Tracking of expiry dates, notification for renewal & escalation. PO creation and email to the vendor for executing testing activity	EHS Manager
6	Environment Health & Safety	Internal safety audit plan, execution, NCs recording and tracking for closure	Safety Audit planning, tracking status of action items, reminders and escalation	EHS Manager
7	Environment Health & Safety	Safety equipment inspection & condition monitoring	Tracking of expiry dates, notification & escalation. PO creation and email.	EHS Manager
8	Environment Health & Safety	Sustainability reporting automation	Collation of data from multiple departments and operating units, and metrics calculation based on reporting requirement and	Sustainability Manager
9	Finance	Spend Analysis	Generation of summary reports, creation of payment headers for the customers and reporting across to stakeholders	Finance Manager
10	Finance	Credit Limit Sanction	Perform credit control to determine payment terms and extent of credit benefit allowed	Finance Manager
11	Finance	Order Information Report	Report generation of an orders including historic data, geographical data in order to create consolidated product consumption view	Finance Manager
12	Finance	Net profit calculation	Report generation based on collation of data on the expenses on the product and the revenue generated from the products. Involves prior level of data collation, messaging followed by running calculations to find the profit	Finance Manager

Sl. No	Functional Area	Use Case	Use Case Description	Role
13	Finance	Bill register vs GRN reconciliation	Performing a reconciliation of the bills received against the goods that have been received	Finance Manager
14	Finance	Bill Processing	3-way invoice matching and disburse payment on successful reconciliation, generate discrepancy note in case of mismatches	Finance Manager
15	Finance	Bank Reconciliation System	Bank book and bank statement reconciliation for intercompany and intra-company transactions	Finance Manager
16	Finance	Freight Settlement	Process freight settlement request based on the bill registered, taxes/tolls paid and the service order	Finance Manager
17	Finance	Invoice Processing	Process Invoice based on purchase orders, service entry registrations.	Finance Manager
18	Finance	Employee Wages Schedule (Gross V/s Net V/s Bank Payment)	Detailed wage report based on employee salaries, bonus/benefit payouts, recovery and bank transactions performed for the same	Finance Manager
19	Finance	Reimbursements	Under employee benefits and perks, process payouts/reimbursements based on employee eligibility and expenses shown. Will involve document verification and validation	Finance Manager
20	Finance	Pay slips and Tax Deduction Certificate Generation	Generation of pay slips, benefit notes, tax certificates and forms based on labor rules and regulations, which are part of employee payroll management	Finance Manager
21	Finance	Travel Expenses	Process payouts under travel expense reimbursement schemes based on employee eligibility and other factors (conditional approvals, client interventions, natural disaster etc.)	Finance Manager
22	Finance	Medical Claims	Process payouts under medical expense reimbursement schemes based on employee eligibility and other factors (conditional approvals) majorly under Health Schemes and for Tax Benefits	Finance Manager
23	Finance	Payment processing under Media and Marketing activities	Reconciliation and payments based on booking/engaging media for promotions/advertisements	Finance Manager
24	Finance	Process Petty Cash Transactions	Process petty cash transactions based on authorization, cash limits and due approvals	Finance Manager
25	Finance	Stock Valuation	Valuation of the complete stock and generation of monthly reports	Finance Manager

Sl. No	Functional Area	Use Case	Use Case Description	Role
26	Finance	Insurance Requests	Raise insurance claims in case of damages to insured company assets with submission of substantiating collaterals (as necessary)	Finance Manager
27	Human Resource	Attrition report	Reporting of attrition rate - number of employees onboarded vs number of employees resigned	HR Manager
28	Human Resource	HR Compliance reports	General reports on LOB wise adherence to core company mandates - IT rules awareness, GDPR awareness etc.	HR Manager
29	Human Resource	Employee Probation Confirmation	Confirmation on retention or release based on performance feedback provided by reporting managers on employees under probation	HR Manager
30	Human Resource	Exit process	Reconciliation of pending dues, interacting with different stakeholders and updating the records in the SF system, closing the licenses if any intimation to be sent to IT Department.	HR Manager
31	Human Resource	HR Helpdesk	Handling of basic HR related queries and concerns raised by employees	HR Manager
32	Human Resource	Recruitment source mix	Sourcing of profiles based on provided job descriptions	HR Manager
33	Human Resource	Employee Onboarding	Onboarding (document verification, alignment to reporting manager, seat allocation, emp id creation, entry of employee data in database) and Joining formalities for permanent and contractual workforce	HR Manager
34	Human Resource	Deputation Cycle Management	Update employee pay, benefits, perks and allowances based on deputation plans created	HR Manager
35	Human Resource	Candidate Connect	Managing important notifications and communications with prospective candidates	HR Manager
36	Human Resource	Appreciations and Awards	Creation of certificates of excellence and allocation of reward points based on manage recommendation	HR Manager
37	Human Resource	Training & Development Planning & Management	Training courses allocation based on the role and training report preparation	HR Manager
38	Human Resource	Payroll Processing	Time & Attendance data validation & sharing with finance for payroll processing	HR Manager
39	Information Technology	Backup Monitoring	An audit requirement where the machines need to be checked for the Backup files in different servers, this is a repetitive task which can be taken remotely for 'N' number of machines.	IT Manager

Sl. No	Functional Area	Use Case	Use Case Description	Role
			Report the status of the backup to business user	
40	Information Technology	IT Helpdesk	IT Helpdesk is a platform which is used to help employee to enquire about any query related to IT issues and needs to allocate as per policies to respective stakeholders like servicing the tickets (against queries by employees)	IT Manager
41	Information Technology	Asset Tracking	Real time tracking of allocated assets and permissions of usage. Timely software updates and patches	IT Manager
42	Information Technology	Expense Report	Generation of report regarding spend on procurement of assets, licenses, repairs etc. created to track against budget estimated for IT spend	IT Manager
43	Information Technology	Vendor Service Request Handling	Generation of service requests (complaints) with software, hardware vendors and tracking request lifecycles	IT Manager
44	Information Technology	System Audits	Perform system audits to identify malpractices if any	IT Manager
45	Information Technology	Access Control Management	Provide access to applications, websites and other IT applications based on the role & designation	IT Manager
46	Maintenance	Maintenance cost – Budget vs Actual Report Preparation for comparison & analysis	Report can be prepared and mailed to maintenance manager for analysis and cost control	Maintenance Manager
47	Maintenance	PM activity trigger, compliance management and escalation	PM work order creation, allocation to technician and weekly compliance report	Maintenance Manager
48	Maintenance	Spare Material Planning & Ordering	Data collation for consumption trend and storage analysis, stock level definition based on pre-defined rules and ERP update, PO creation for replenishment	Maintenance Manager
49	Production Planning & Control	Monthly and annual capacity planning & revision update	Annual & Monthly Capacity Planning, Bottleneck identification and plan for de-bottlenecking. Revising machine capacity in multiple documents based on improvements made on the equipment	Production Planning Manager
50	Production Planning & Control	Sales plan conversion to production & dispatch plan	Production planning & Scheduling and dispatch plan preparation	Production Planning Manager
51	Production Planning & Control	Monthly plan conversion to weekly and daily plans	Generate schedules for running productions for every machine or line for each shift	Production Planning Manager
52	Production Planning & Control	Revised sales plan incorporation in the monthly production plan	Update production, shipment and material procurement plan based on changes in sales plan	Production Planning Manager

Sl. No	Functional Area	Use Case	Use Case Description	Role
53	Production Planning & Control	Job work and contract manufacturing plan based on marketing demand	Planning job work due to process or capacity constraint. Manufacturing plan preparation for contract manufacturing sites	Production Planning Manager
54	Manufacturing	Daily shop floor performance monitoring	Preparation of multiple reports (DPIR, OITF, Inventory, Quality, Safety, OEE, etc.) for monitoring shop floor performance by collating data from multiple sources and functions	Department Executives & Heads, Factory Head
55	Manufacturing	Manpower planning & allocation based on their skills & machine running plan	Matching skill set to machine running plan and employee allocation in multiple shifts based on pre-defined logics	Production Manager
56	Manufacturing	Order Fulfillment	Segregating the orders, updating of inventory status in real time to all the internal teams for decision making and action like a Days of Cover under standard safety stock to provide a trigger	Production Planning Manager
57	Quality	Customer Complaint Recording	Updating details of customer complaints in a portal and email to relevant stakeholder for analysis and action	Quality Manager
58	Quality	Customer complaint resolution and response	Data collation from IT systems for complaint investigation and report back to customers	Quality Manager
59	Quality	Corrective & Preventive Action Implementation & Tracking	Tracking status of CAPA implementation and escalating non-compliance	Quality Manager
60	Quality	Traceability	Identification of material and process details for a specific batch number for investigation	Quality Manager
61	Quality	COPQ Calculation	Calculate & report cost of poor quality by sourcing data from multiple applications	Quality Manager
62	Quality	Instruments and gauge calibration	Tracking status of calibration and sending out auto reminders. Creating Work Order and mailing to vendors for calibrating instruments	Quality Engineer
63	Quality	Material Inspection & Reporting	Perform basic quality control checks on raw materials, semi-finished goods etc. Data transfer & update in multiple IT applications	Quality Controller
64	Quality	Scrap Reporting	Generate reports on rejection and rework items and conduct comparative analysis	Quality Manager
65	Quality	Scrap Note for material disposal	Scrap note for moving material from shop floor to scrap yard and disposal by a vendor from the scrap yard	Quality & Warehouse Manager

Sl. No	Functional Area	Use Case	Use Case Description	Role
66	Research & Development	Engineering Change Note Management	Update revised documents in multiple IT applications based on the ECN modifications	R&D Manager
67	Research & Development	Project Expense vs Budget Tracking	Reporting project cost vs budget for each product development for cost control	R&D Manager
68	Research & Development	Advanced Product Quality Planning	Report generation on the different types of tests performed on the prototype and identification of variances based on the pre-defined performance models	R&D Manager
69	Research & Development	Voice of Customer Study for NPD Inputs	Automating VOC studies to regularly collect customer's inputs for new product development and feedback on new launches	R&D Manager
70	Research & Development	Monitoring and review of NPD status	Progress of every product development against the pre-defined timelines	R&D Manager
71	Research & Development	Documentation and filing for new patents	Preparing documents for patent filing by sourcing data from multiple sources	R&D Manager
72	Research & Development	Product & Process Benchmarking	Collating data from competitors and technology providers websites and providing inputs on new products and processes	R&D Manager
73	Sales and Marketing	S&OP estimation	Preparation of the data for S&OP Estimation, Data to be collated from various sources for Potential Sales vs Forecasting Vs Production Requirements to arrive at decision making and needs to be prepared before a stipulated time.	Supply Chain Planner
74	Sales and Marketing	Competition Tracking	Collecting information on competitors from multiple channels and preparing a comprehensive report	Marketing Manager
75	Sales and Marketing	Benefit Programs	Allocation of rewards/benefits to distributors/retailers meeting pre-set targets	Marketing Manager
76	Sales and Marketing	Customer & Market Trend Analysis	Multiple reports are prepared based on past sales information to analyze trend for specific customers, channels, markets and products	Marketing Manager
77	Logistics and Distribution	STO Execution	Creation of Stock Transfer Order from 3rd party entities requesting for stocks to be moved into their premise for further processing	Supply Chain Planner
78	Logistics and Distribution	PGI	Processing Post Goods Issue (PGI) requests to facilitate movement of goods issued or drawn to customers.	Logistics Manager

Sl. No	Functional Area	Use Case	Use Case Description	Role
79	Logistics and Distribution	E-Way Bill	Generation of e-way bills for transferring finished or semi-finished goods from the plant to the distribution centers or customer's warehouse.	Finance Manager
80	Logistics and Distribution	Truck Indenting	Planning of truck indents based on set of accepted business rules.	Logistics Manager
81	Logistics and Distribution	Dispatch Plan	Generation of plans for the dispatch of finished and semi-finished goods based on the zone of transfer, mode of transfer and transportation partner onboard.	Supply Chain Planner
82	Logistics and Distribution	Returns Management	Handling the return of goods, materials from customer site, retailers, distribution centers back to the company's storage area.	Logistics Manager
83	Logistics and Distribution	Inter-depot or inter-plant material transfer	Material transfer report from one location to another and cost associated tracking	Logistics & Finance Manager
84	Logistics and Distribution	Logistics Cost & Premium Freight Tracking	Tracking logistics cost and expense related to premium freight	Logistics Manager
85	Logistics and Distribution	Logistics Partner Identification & Performance Monitoring	Monitoring performance on predefined criteria of transit time, truck placement, damages, etc.	Logistics Manager
86	Logistics and Distribution	Vehicle tracking and performance monitoring	Real time tracking of shipments, point of docking, issues/queries raised at point of docking	Logistics Manager
87	Logistics and Distribution	Truck Turnaround Time	Collating & reporting data on average, min & max truck turnaround time	Logistics Manager
88	Supply Chain Management	GRN Entry	Data extraction and entry creation on receipt of good receipts note for further matching against PO and Invoice	Warehouse Manager
89	Supply Chain Management	Purchase Order Creation	Creation of purchase orders for procurement of supplies	Buyer
90	Supply Chain Management	Slow & Non-moving Material Management	Identify slow & non-moving materials in the stores based on pre-defined rules, share the report with key stakeholders, prepare liquidation plan	Supply Chain Manager
91	Supply Chain Management	Inventory Reconciliation Report	Reconciliation of the physical inventory with the inventory in the system, and update ERP for variations post approval	Warehouse Manager
92	Supply Chain Management	Order turnaround tracking	Prepare report on order to delivery lead time and track compliance to pre-defined lead time	Production Planning Manager
93	Supply Chain Management	Return Rejected Material to supplier	Debit Note & Dispatch Note Preparation. Mailing rejection details for suppliers using CAPA format	Finance Manager, Supplier Quality Manager

Sl. No	Functional Area	Use Case	Use Case Description	Role
94	Supply Chain Management	Engineering Items Planning & Procurement	Stock level definition based on analysis like ABC, VED, FSN and stock norms update in ERP	Buyer & Maintenance Manager
95	Supply Chain Management	Raw Material & Packing Material Planning based on production plan	Prepare supplier-wise material procurement plan	Procurement Manager
96	Supply Chain Management	Commodity price tracking	Tracking commodity pricing from multiple sites and prepare trend reports	Procurement Manager
97	Supply Chain Management	Vendor Selection & RFP Management	RFP preparation and email, comparison sheets preparation and internal approval. PO release to selected vendor	Procurement Manager
98	Supply Chain Management	Vendor Rating	Calculation of vendor rating and email to vendors at a pre-defined frequency	Buyer
99	Supply Chain Management	New Supplier Addition	Supplier registration, vendor creation and update vendor master automatically	Procurement Manager

End of Document
