



**CONSUMERS ARE EMBRACING DIGITAL;
IT'S TIME FOR CPG FACTORIES TO
EMBRACE DIGITAL AS WELL**





Consumers' expectations from Consumer Packaged Goods (CPG) firms are changing in the digital era. While CPG firms have ongoing digital transformation in many areas, one area which they need to focus on more is digital manufacturing. This PoV discusses digital manufacturing in CPG industry with examples and experience of ITC Infotech and its CPG customers.

Background

The CPG value chain primarily consists of Plan, Source, Make, Move and Market. As we look closer, we observe that demand fluctuations, and sourcing complexity, constraints the efficiency of value chain much more than the manufacturing inefficiency or challenges in logistics and distribution. This may not be true for other industry verticals as the bottlenecks in value chain differ from sector to sector. Over the past few decades, CPG sector has focused and invested significantly in improving demand forecasting and supply chain efficiencies through investment in IT Implementation and Operational Excellence tools.

To ensure that organizations meet the ever-increasing customer expectations and compete in the global market, companies must start strengthening the 'Make' section of the value chain in addition to the 'Plan & Source'. Continuous improvement projects through the route of Operational Excellence tools like Lean Manufacturing, Six Sigma, TPM etc. have brought in substantial improvement over past few decades and it is time that intensity of IT transformation in shop floor is considerably increased. To maximize the return from the existing IT investment in Demand Forecasting & Planning, Procurement, Trade & Distribution, the entire value chain has to be strengthened and in the current state of maturity, Manufacturing seems to be the weakest link.

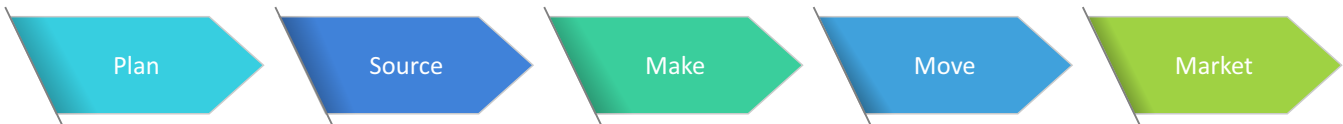


Figure 1.1 CPG Industry Value Chain

CPG Industry Challenges

Many of the challenges faced by a CPG industry is quite similar to other manufacturing industries, for example, enhancing quality consistency, cost control, delivery reliability, manufacturing efficiency, manpower productivity etc. In this article, we will delve into the specific challenges faced by a CPG industry and the role that IIoT can play in its transformation.

Delivery Reliability – In today's world, customers have the option to choose from multiple brands within the same price band. Hence, in absence of a specific brand at point of sale, customers inclination to wait for it is slowly decreasing. This trend is very common in the commodity product segment, which is slowly moving up from commodity to specialty products. The ability of the manufacturing and supply chain to deliver goods to the point of sale at very high level of consistency and reliability is crucial for business growth.

Quality Consistency – CPG industry mostly operates in a batch manufacturing mode and hence it is very important that the batch to batch variation is minimal so that customers have the same experience when they use the product over a period of time. This requires manufacturing plants to have a very high level of standardization and consistency in their manufacturing process and the ability to tweak manufacturing processes based on the variation in the inputs like raw material quality, ambient conditions, equipment condition, etc.





Price Competitiveness – CPG sector is very competitive due to presence of multiple global and regional players in each market. Low entry barriers, smaller capex requirements and growing markets have been key drivers for industries to enter this sector. To stay competitive, industries in this sector must constantly focus on cost reduction by driving continuous improvement and innovation. Material, Energy and Logistics are some of the biggest components of Cost of Goods Sold in a CPG Industry. IIoT technologies can play a pivotal role in monitoring and optimizing these cost components.

Flexibility & Agility – Seasonality, demand fluctuations and supply chain disruptions require a CPG plant to be highly flexible and agile. Manufacturing plants are expected to manufacture multiple products and SKUs and they need flexible manufacturing lines which can changeover from one product or SKU to another in short durations. This will help manufacturing plants respond to demand fluctuations in short intervals with low inventory in supply chain.

Shorter Product Development Lead Time – Innovation is one of the biggest differentiators amongst the CPG companies. Companies leading the innovation process have been able to develop and market new innovative products more frequently, which has been a key contributing factor to customer retention and delight.

Advisory Solution Using IIoT to Improve Productivity, Quality, Delivery and Cost Competitiveness

Digitalization helps build performance driven organization. Availability of accurate and real time performance indicators help monitor, control and improve plant performance. IT-OT integration using the IIoT tools increase availability of real time data & KPIs for performance monitoring. This further enables loss analysis and process variability reduction by utilizing advanced analytics.

Digital Factory solutions (Process, Quality, Energy & Asset Advisor) built by ITC Infotech focuses on solving shop floor problems by improving real time and accurate performance monitoring, understanding the financial impact of low performance on operational metric, managing CAPA process, helping to predict and improve performance using advanced analytics.

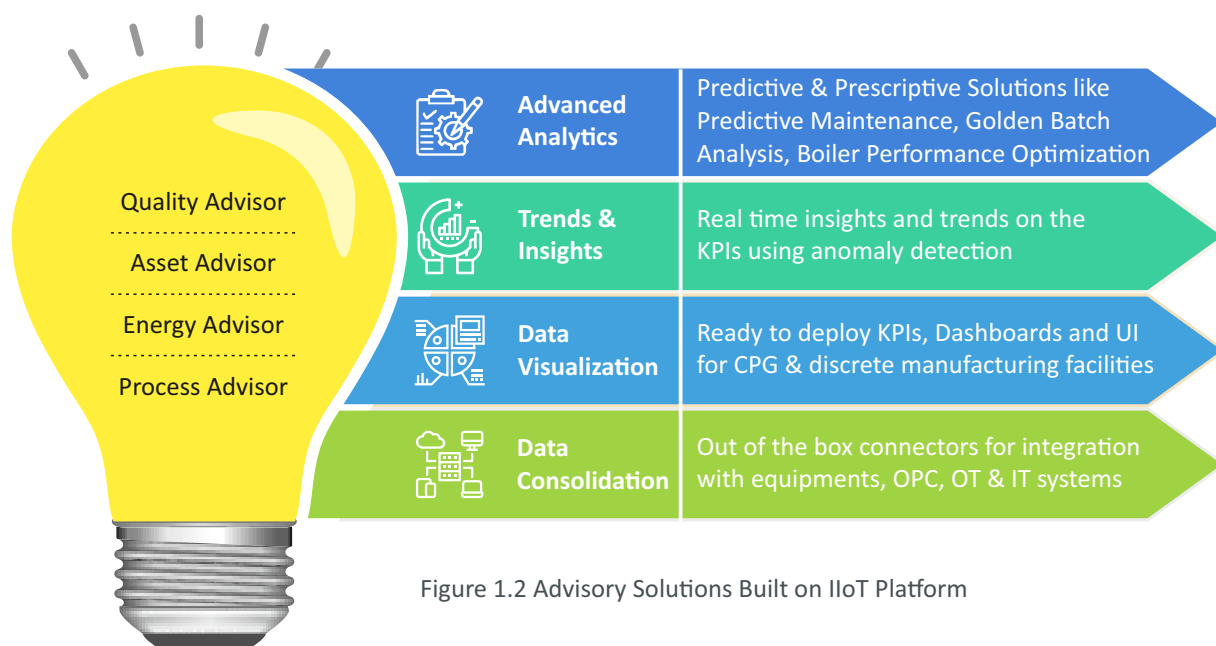


Figure 1.2 Advisory Solutions Built on IIoT Platform





- Quality Advisor** – The solution is built with an objective of ensuring quality consistency and rejection reduction, by monitoring critical to quality parameters and predicting future trends using advanced analytics. For one of our customers, the challenge was to consistently achieve the final product moisture percentage within a small range. Six quality parameters on the final product were to be optimized with moisture content being the most important CTQ parameter, as it impacted other quality parameters also. The solution was built using multiple linear and non-linear regression models, multivariate adaptive regression splines, generalized additive models and random forest. The target moisture value of 6 -8.5% was achieved consistently as targeted by the customer.
- Energy Advisor** – Enables operators with the ability to modify the operating range for the utility equipment based on the loading factor to operate at high level of efficiency thus reducing energy consumption leading to cost optimization. The energy advisor solution deployed at one of the ITC factories has resulted in 4.7% reduction in energy cost with the project ROI of less than 2 years. The scope of the project included helping the infrastructure setup, designing the performance monitoring system, KPI calculations and building models for advanced analytics on boilers and compressors, simulation for dynamic scenarios to achieve best in class performance.

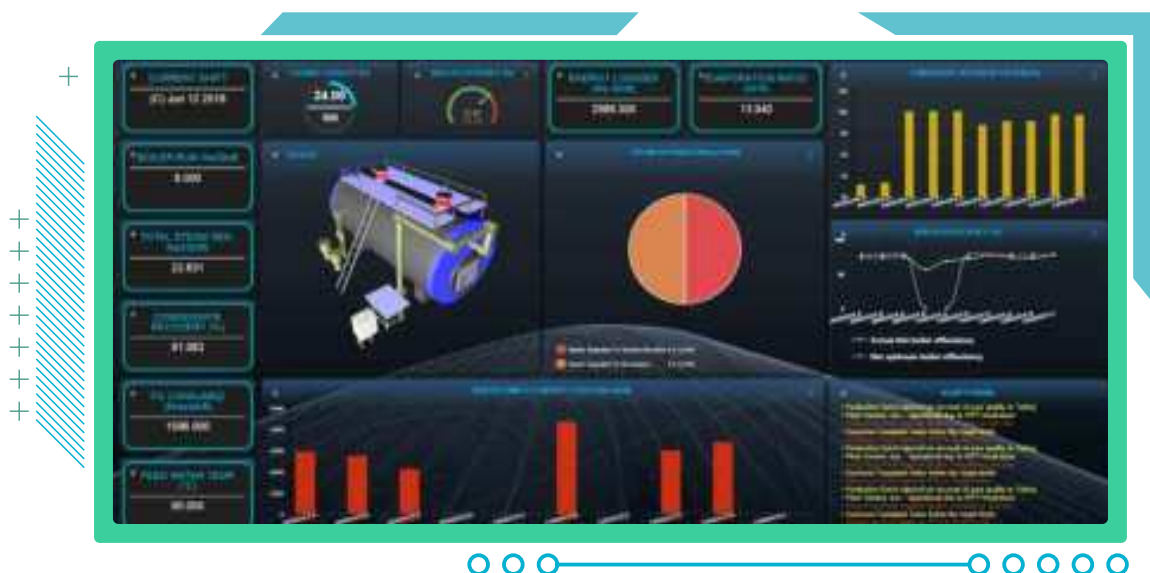


Figure 1.3 Energy Analytics for a CPG Industry

- Asset Advisor** – Equipment uptime is a critical factor for ensuring high level of delivery reliability and performance efficiency. The predictive maintenance solution helps predicts potential equipment failure and correct them before it occurs.

- Process Advisor** – Monitoring shop floor performance in real time, highlighting anomalies and prescribing actions to operate at the highest level of efficiency is the objective of the solution. Reducing process deviations with an objective of improving process efficiency, improving material yield and consistent quality is the focus of the Process Advisor solution.



Figure 1.4 Performance Monitoring in a CPG Industry

The following benefits are achieved in CPG Firms with ITC Infotech IIoT solutions

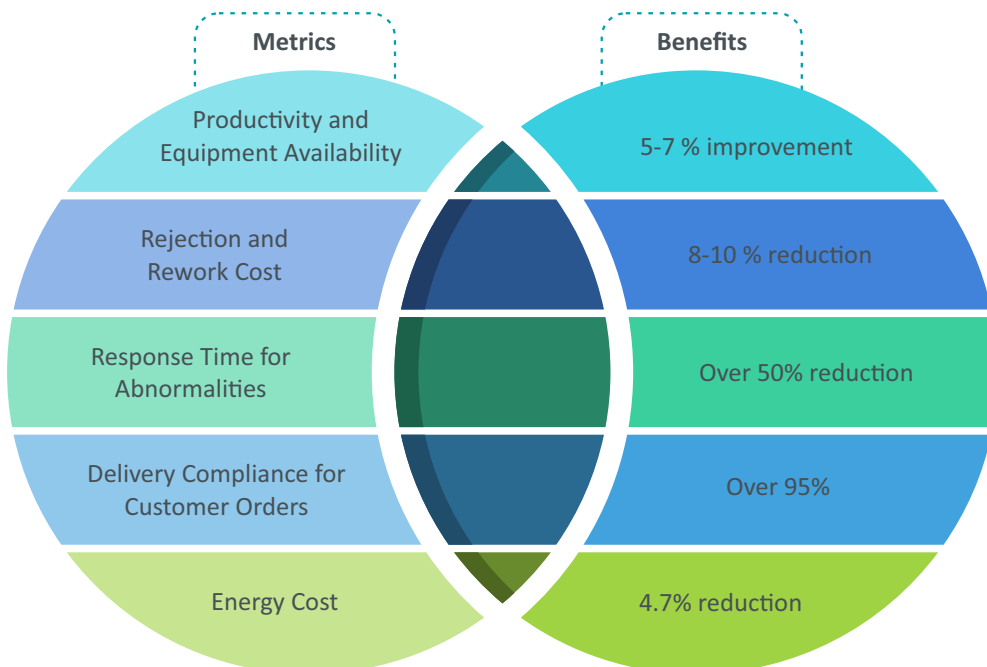


Figure 1.5: ITC Infotech IIoT Solution Benefits For CPG Firms

One of the other aspects that improved significantly for customers is the data accuracy and data integrity which improved regulatory compliance and reduced violation issues.



Learnings & Advise to CPG Firms

The learnings from each project are incorporated in the subsequent ones. Some of the key learnings for a successful Digital Transformation in manufacturing are:

- Prioritize and focus on metrics that will improve customer satisfaction. Metrics like Delivery compliance to customer Orders, Customer Quality, etc. should take precedence over improvement in internal metrics
- CPG industry is different. Develop CPG industry specific solution approach along with partners
- Invest in building a long-term digital transformation plan but breakdown the implementation in smaller modules. Do not attempt a big bang approach. Focus on one core area, prove the technology, develop the solution, and then scale
- Follow a platform approach and compliment it with enabling technologies. This will require a medium to long term view
- Use Digital Transformation in manufacturing to compliment your business transformation and growth plans.

Conclusion

CPG industries have a potential to unearth a minimum of 10-15% improvement in their operational metrics by adopting IIoT based solutions. Need for greater flexibility, responsiveness, and consistency in product quality in addition to on-going cost reduction will continue to drive improvement in this sector. Benefits of using IT in demand prediction, integrated planning and scheduling process and better supply chain synchronization is already being harnessed by most CPG industries. The next wave of improvement will be driven by improvement in manufacturing capability and leveraging technology for better integration between design, planning, sourcing, manufacturing and supply chain functions. CPG Firms need to embrace digital manufacturing for the next normal.

Author Details



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About ITC Infotech

ITC Infotech is a leading global technology services and solutions provider, led by Business and Technology Consulting. ITC Infotech provides Business-friendly Solutions to help clients succeed and be future-ready, by seamlessly bringing together digital expertise, strong industry specific alliances and the unique ability to leverage deep domain expertise from ITC Group businesses. The company provides technology solutions and services to enterprises across industries such as Banking & Financial Services, Healthcare, Manufacturing, Consumer Goods, Travel and Hospitality, through a combination of traditional and newer business models, as a long-term sustainable partner.

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