



Supply chain visibility is more than what the current conditions are. It is critical for the system to predict and show what is expected in the future to mitigate risk and prevent disruptions.

# Supply Chain Predictive Analytics

## Predictive Analytics & Performance Management

If a company can look into the future and predict supply chain key performance indicators (KPI's) it will understand what needs to be changed in order to meet financial goals.

Planning is the ability to look into the future and proactively change it. The plan provides the critical information required to generate the KPI's of the future.

Unless you have the capability to predict the issues, it would be very costly to correct the problem. Although not everything can be predicted, the right KPI's allow problems to be identified before they occur, so that new plans can be created to get back on track.

This requires the ability to learn potential causes and predict patterns of behavior. Machine learning can help tremendously in this area.

The right metrics can also enable a company to set priorities as to what is the most important problem to address first. Creating a good plan is critical, but it also has to be communicated to all the stakeholders in the extended enterprise, including customers and suppliers to quickly get agreement and alignment.

The plan then needs to be monitored by management to ensure that the company is on track.

Companies have shown that world-class supply chain planning combined with solid performance management can have a significant impact on profits and Return-on-Assets.

Our own customers' results include increases in customer service levels by up to 30%, reduction in inventory by up to 35%, with further reductions of 5%-10% in COGS.

### The challenge you face

Putting in place a best-in-class planning and performance management system has its challenges. It can be difficult to identify, track, and communicate the plan and metrics that measure and predict company performance.

Visibility to the plan and performance measurements must be made available to the right individual, at the appropriate level. This means that executives need to have access to management level scorecards related to tracking metrics such as revenue, COGS, days-of- inventory, on-time performance, and resource utilization.

Planners and personnel executing the plan need to have access to summarized information, and capability to drill down into details when necessary. Moreover, operational KPI's change over time.

## Key operational metrics include:



### Financial

- Revenue
- Gross margins
- Materials cost
- Production cost
- Distribution cost
- Inventory cost
- Cash-to-cash



### Demand

- Forecast trend
- Forecast accuracy
- Order fill-rate
- Fill rate to CR
- Fill rate to CCD
- Order to delivery- lead-time



### Inventory

- Days-in-inventory
- Inventory turns
- Inventory write-off's
- Finished goods
- Work-in-process
- Raw material



### Operations

- Resource utilization
- Distribution plans
- Production plans
- Sourcing plans
- Performance to plan
- Production yield
- Production on-time



### Material

- Vendor sourcing
- On-time performance
- Slow moving material
- Age of material



A closed loop process is required in which KPI's are derived from plans. This will show the direction of the enterprise, as it is constantly measured against the actual performance.

“An ounce of prediction is worth a pound of response”

**The advantage of predictive analytics**

In every supply chain there are patterns of behavior that are not easily observable or detectable to the users. Examples are supplier lead time changes, safety stock variations based on new orders or seasons, and equipment availability etc.

These parameters must be constantly monitored and corrected in order to maintain an up to date and accurate digital twin of the supply chain and production sites. Adexa Genies® are distributed processes that sense, act and learn continuously in order to self-correct the model and self-improve the policies such as min/max values of safety stocks and or multiple causes of demand forecast changes.

Thus, predictive analytics offer much more than having access to KPI's generated by the planning engine. They provide an insight into the potential risks and patterns that can be deployed to run a much ore efficient and resilient supply chain and operations.

Adexa offers a comprehensive supply chain predictive analytics that enables enterprises to establish strategic, financial, and supply chain goals and then monitor actual results.

Every solution of Adexa combines operations with financials. So that every operational decision can be made based on potential financial consequences. At the same time, ensuring a true digital twin of the operations.

The solution consists of a combination of Adexa Genies® for self-correcting and self- improving operations, a supply chain management data store, a catalog of defined KPI's, along with reports, analytical tools, dashboards, and scorecards that are critical to monitoring the supply chain and operations. In order to satisfy the needs of each stakeholder the system allows each user to customize their supply chain performance view starting with a configured dashboard to bring them the right data, at the right level of detail.

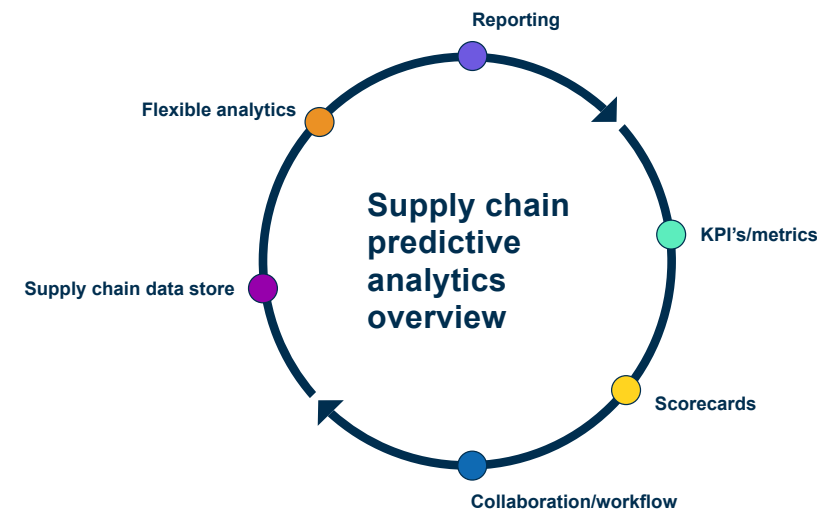
Executives are provided with summarized scorecards to monitor how the supply chain is performing. Managers, have the ability to go from their dashboard into summarized analytics and reports. Individuals may start with

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summarized reports and drill-down, as needed. Adexa Genies can be set up to recommend changes in the model and changes in policies, or changes in customer and supplier behavior to the users or make changes automatically.

In addition to including the information from the Adexa planning solutions, the system can integrate data from other enterprise-wide systems and databases, including ERP, SFA, MES, PLM, CRM applications, data warehouses, and more. This is essential for causal analysis and finding multiple causes of different patterns that might be emerging in the supply chain. Data granularity is critical for identifying underlying patterns in the operations and their causes.

Adexa’s complete library of pre-built financial and operational KPI's are based on industry’s standard metrics, or best-practices, and can be customized. Measure business performance across the supply chain; including revenue and forecasted demand, order fulfillment, inventory levels, supplier costs, manufacturing costs, and more.



Adexa delivers smart solutions that synchronize corporate planning with operations planning and execution on a local and enterprise level, to ensure all assets are utilized to achieve strategic objective.

Moreover, the system is capable of constantly self-correcting and self-improving policies using the digital twin of the supply chain and factories. This enables manufacturers to reduce the cost of goods sold, shorten lead-times for orders and reduce inventory costs with improved supply chain collaboration and management.

**“An ounce of prediction is worth a pound of response. ML techniques help to understand underlying patterns and root causes so that we can predicting what to expect and be more resilient.”**

