



With increasing competition and ever more demanding customers, manufacturing is not easy. While factory floor automation has significantly improved all areas of processing for manufacturing companies, it has also created a staggering amount of data.

There never seems to be enough time or resources to meet the needs of factory managers who face the 'fact gap' that exists between the data and the usable information required to make real business decisions.

Agile enterprise is always one step ahead of the competition, which cultivates a responsive environment and delivers major improvements in lead time, product quality and lower production costs.

BI is very effective for all types of manufacturing, be it process, discrete or automatic. BI can close the 'fact gap' by improving the availability and delivery of actionable data with minimal IT involvement.

Optimising performance requires managers to have an in-depth understanding of how products and customers consume resources and this is why manufacturers adopt

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more sophisticated cost and profitability analytics, solutions that go beyond production and include the supply chain, support functions and infrastructure.

With a robust and reliable understanding of costs and profitability and their sensitivity to changes in demand, managers are able to make informed and incisive decisions about strategy and tactics.

Manufacturing MIS

- Material Requirements Planning (MRP).
 - Determine when finished products are needed.
 - Determine deadlines accordingly.
- Manufacturing Resource Planning (MRPII).
 - Network scheduling.
 - Improve customer service and productivity.
- Just In Time (JIT) Inventory System
 - Inventory and Materials delivered right before usage.



Companies adopt Business Intelligence (BI) Reporting & Analytics software as part of their strategic approach for attaining their goals. They are streamlining the information flow, both across the organisation and through the tiers of the supply chain to reduce cycle and manufacturing time and adapt quickly to market changes.

Reports generated in high data volume environments normally take a long time to run. To speed up report generation, many systems use tools that employ a summarisation technique, to reduce the amount of records, by aggregating records together with common characteristics. Problem with this technique includes inherent inflexibility and inability to cope with the constantly changing information needs of manufacturing.

BI helps companies in the manufacturing industry to:

- Increase the value of customer relationships.
- Respond quickly to changing markets and company sensitivities.
- Accelerate new product time-to-market.
- Reduce inventory investment.

- Improve planning, scheduling and the procurement schedule.
- Maintain and develop quality assurance.
- Select and apply world-class technologies.

Benefits of BI

BI can be used to increase the flexibility and speed of operational reporting as:

- Quickly generate established reports.
- Easily create ad-hoc reports.
- Isolate specific problems.
- Analyse data across multiple systems.
- Integrate new data sources.

BI helps manufacturers get a better visibility of their financial performance and the insight and understanding to improve it. These include solutions for cost and profitability analytics and solutions for operational planning and budgeting. Being able to quickly assess the impact of internal and external changes, BI helps such companies become more agile and better able to keep the bottom line on track.

Manufacturing Scheduling and Production Planning

Manufacturing planning encompasses the hourly, daily, weekly and monthly production and machine schedules across multiple plants or production lines to meet orders or forecasted demand. Success hinges on accurate materials planning. Manufacturing managers, product managers and purchasing analysts review metrics such as production capacity and current inventories to plan appropriate production schedules, ensure raw material availability and make plant reallocation decisions when appropriate.



Basic analysis includes real-time status of plant utilisation and trends in market demand versus planned production runs. Advanced analysis includes hedging analysis on commodities used in production, forecasting of machine output and linear programming to optimise production resources.

Following business area are prime areas of concern for manufacturers:

- Having a bird's eye view of customer information which helps sales team to coordinate and collaborate customer interactions.
- Trace the metrics and indicators that improve customer satisfaction.
- Lead time to fulfill customer orders across sales and distribution channels.
- Improve 'order promising' (when a customer is promised delivery or issue resolution) through an analysis of historical statistics, expected lead time and inventory levels.
- Analysis of current usage of products to launch new range of products.
- Tracking service, to better predict and prepare inventory and production levels.
- Benchmark distributors, regions and individual locations against each other in an attempt to foster increased attention to goals and metrics, and reward high performers and aid underachievers.

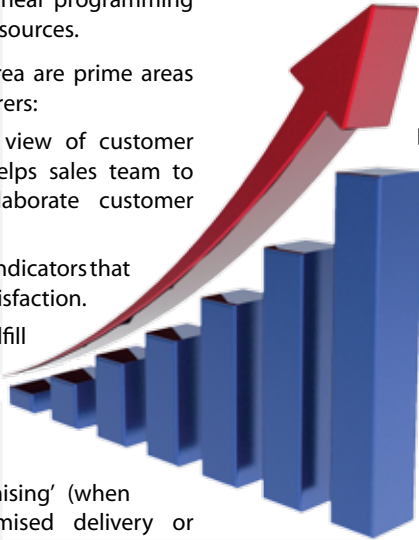
To overcome this, they need to maintain optimum level of inventory so as to avoid overstock or short-supply and bring innovative and profitable schemes at the marketing level. Business Intelligence is the right tool to achieve this.

BI helps in keeping managers updated and equipped with state-of-the-art and exact information that helps in taking critical business decisions rather than going on assumptions.

BI helps improve visibility and communication across increasingly complex manufacturing supply chains, while satisfying customer

demands for new products and product enhancements.

Using BI, one can assess cash-management and monitor operational effectiveness of the payables department to ensure lowest



transaction costs. Identify most profitable customers, products and channels, and understand profitability drivers across regions, divisions and profit centres. Improve inventory management for those products that consistently fall into backlog due to lack of appropriate stock levels. Gain visibility into inventory activities to minimise unnecessary expenditures and optimise inventory to conserve working capital. Gain detailed visibility

into direct and indirect spending, and identify opportunities for consolidation and reduction of costs. Monitor price, delivery and product quality to determine the best and the worst performing suppliers.

BI can be accessed by top management who need to obtain strategic information that can help them decide the future course of action. Business Intelligence is being more equipped for decision making, predicting trends, analysis and delivering information.

Manufacturing Industry needs to look out for a solution that can help them lower lead time, help in reducing production costs, improve product quality, have a better tracking system and improve customer satisfaction. The industry also needs to respond quickly to changing market environments. Currently, delivering key information to key people has gained extra importance that can help plan for production, reduce hidden costs, keep optimum level of inventory and maximise profits.

Changing customer and distributor requirements, internal operations demand an optimal way of decision making by the manufacturer. Each manufacturer



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has its own processes, own tracking system, order processing and its own challenges. All this add up to the need of having effective BI system in place and providing results out of it. Again, there has been a long debate on the quality of data that is available with the manufacturing industry since most of them have to depend on external parties like retailers, distributors, contractors, suppliers, their own customers and others. If a proper feed is given to the Supply Chain and Order Management, then it will definitely ensure deep customer insight and inventory data for better and more effective decision making.

One of the challenges that the manufacturing industries face is due to changes in demand. If managers have a proper understanding of costs and demand, they can make better decisions. Some of the manufacturers also have a customer specific costing.

Manufacturing companies product portfolios are larger to manage, have large number of suppliers to negotiate on cost and quality, and maintain huge inventories which need to be tracked and moved to meet customer demands. Along with this, there is always a need to analyse and identify customer needs, maintain and improve customer delight and add new customers so as to remain in business and be profitable. BI definitely helps in making the right decisions to overcome these pressures and helps to manage and sustain in business in this complex environment.



Key Performance Indicators (KPI)

Manufacturing Management Analytics

- Production Goals
 - o Back Log %
 - o Capacity Utilisation %
 - o System Uptime %
 - o Failure Cost Value
 - o QC Reject Rate %
- Inventory Management
 - o Inventory Ageing Days %

- o Inventory ABC Analysis Value
- o Inventory Turns Ratio %
- New Product Life Cycle
 - o Product Development Cost Value
 - o Product Development Lead Time Days
 - o Product Milestone Plan V/s Variances

Manufacturing KPI's

- Production Capacity Trends
- Projected Inventory Surplus
- Days on Hand
- Production Shortage as percentage (%) of Demand
- Inventory Turns
- Production Cycle
- Equipment Utilisation Percentage (%)

Inventory KPI's

- Average Item Inventory
- Days of Inventory Supply
- Finished Goods on Hand
- Inventory Costs
- Inventory Turns
- Lease Expenses
- Order Fulfillment Lead Time
- Percentage of Backorders
- Sum of Shipment Lead Times
- Work in Progress Costs

Financial KPI's

- Operating Expense
- Total Sales
- Planning Costs
- Procurement Costs
- Cost of Goods Sold
- Cash-to-Cash Cycle Time
- % POs Invoiced Properly
- Inventory Costs
- Investments
- Raw Material Costs



Conclusion

BI is very effective for all types of manufacturing, be it process, discrete or automatic. BI can close the 'fact gap' by improving the availability and delivery of actionable data with minimal IT involvement.

BI for manufacturing industry leverages all the sources of data available throughout the manufacturing process to deliver a holistic view for smart decisions, based on data that accurately reflects the true state of the entire manufacturing process.