Supply chain transformation in the era of Industry 4.0

Opportunities and challenges

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Industry 4.0 – Industrie 4.0 – the 4th Industrial Revolution

DEFINITION...

WIKIPEDIA

Industry 4.0 is a name for the current trend of automation and data exchange in manufacturing technologies. It includes cyber-physical systems, the Internet of things, cloud computing and cognitive computing.

Industry 4.0 creates what has been called a "smart factory".
Industry 4.0 – enabling technologies

Nine Technologies Are Transforming Industrial Production

Source: BCG analysis.
Connected Industry 4.0 – The ultimate goal

suppliers

Internal

Customers
Connected Industry 4.0.....

Disruptive new technologies

Networked IT infrastructures

Advanced Data analytics

The Digital Supply chain...
- Highly connected
- Flexible
- Efficient
- Resilient
- Responsive to customer needs
Digital Supply Chain framework – creating end to end visibility

1. Automated e-Sourcing
2. Digital Factory Design
3. Real-time Factory Scheduling
4. Flexible Factory Automation
5. Digital Production Processes
6. e-Commerce Fulfilment
7. Extended Supply Chain (near) real-time Monitoring
8. Digital Product Quality
9. Digital Supply Network Design
10. Product Lifecycle Management

Source: IFM Center for International Manufacturing, University of Cambridge
## Digital Supply Chain framework – creating end to end visibility

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<td>Seamlessly connected automated replenishment in line with real-time KPI monitoring with predictive disruption analytics (all tiers back to mine)</td>
<td>Digital 3D modelling systems for factory layout design, process and material flow simulation</td>
<td>Advanced factory execution systems with sensor-enabled, smart devices, real-time data KPI monitoring, predictive maintenance</td>
<td>Advanced manufacturing plant/machine reconfiguration, scale flexibility, varied levels of human-robot-collaboration</td>
<td>Application of digital production processes (e.g. additive manufacturing, continuous processing) with advanced process analytics</td>
<td>Web-based order management (configuration, pricing etc.) and inventory deployment to multiple points of sales, covering last-mile and direct delivery (all tiers through to end users)</td>
<td>Extended end-to-end supply chain visualization watch towers for near real-time monitoring and decision making</td>
<td>Digital product quality management systems for connecting “traceability islands” back from customers to suppliers (root cause analytics)</td>
<td>Design tools to architect supply network configuration – optimization and visualization of site location, capacity, inventory etc.</td>
<td>Nextgen PLM systems that provide accurate, up-to-date product information accessible throughout the value chain and product lifecycle</td>
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Source: IFM Center for International Manufacturing, University of Cambridge
Digital supply chain – Challenges in implementation

Internally
- Legacy systems
- Silos in organization structure
- Data accuracy

Externally
- Legacy systems
- Silos in organization structure
- Data accuracy
- IP concerns
Challenge – Data accuracy

Top issues for manual data management:
- Lack of / Incorrect demand data in the system
- ECO Implementation & BOM structure (NPL)
- Customer configuration changes

Inputs
- Master Scheduling
- Material Availability
- Products Structure & CT
- Master Data
- Peripheral demands

Outputs
- Production Planning
- Supply Chain Planning

= Data manipulation
= Trust Data

MRP
End to end visibility - a dream or reality?

The gap between visibility requirements and reality

80% say that it is of significant importance to have visibility of risks affecting supply. This has been achieved by just one quarter (25%).

75% want visibility of all events affecting the inbound flow of goods from suppliers. This has been achieved by only 29%.

Source: Zetes Manufacturing Research report 2017
Connected Industry 4.0 - Digital Supply Chain....

• A great vision of how the future supply can/will look like
• Many challenges still ahead

• Our industry enables the solutions to these challenges.

The Future looks bright!