Performance Dashboards – how digitalization broadens their scope and capabilities

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We all rely on different dashboards in our daily life

- Visualising data
- Prioritizing data
- Processing data
- Monitoring the status
- Alerting about exceptions, warning
- Controlling
- Forecasting and anticipating

**It is a single point of truth for:**

- Predictive dashboard: anticipates & controls
- Real time dashboard: what happens now
- Health app in mobile phone: shows what did happen

Degree of reliance & reliability
Always underestimated and underinvested

Normally we know quite well what was our performance over the last year but ..

Did we have container on that ship?
What customer is affected?

What is the impact of June naphtha swap price change when we have 90,000 MT in a propane cavern and 40 KT short position on PRP-NAP swaps?

How many companies can answer such questions just by glancing on a dashboard?
Getting Ready for the Future: SC 4.0

- Only 7% of respondents were satisfied with their ability to view and interact with data*
- Existing solutions are often blamed for: lack of end-to-end visibility and limited support for decision making in real time.
- There exist strong need to dashboards which can give visibility to end-to-end supply chain with decision making capabilities

Another case study:

Establishing a proper dashboard | synchronisation of production and logistics

19% | 38% | 20%
Waiting time of finished goods | Transportation time from plant to warehouse | Production-logistic velocity in SC

Growing recognitions of strategic importance of end-to-end visibility & control:

Already in 2011 P&G establishes logistics “Control Tower” as a centrepiece of its SC**

*Source: “Data Visualization and Discovery For Better Business Decisions” by David Stodder
**Source: Supply Chain Quarterly Staff, Q3 2011 issue
What are the ingredients of a good Supply Chain dashboard?

**Data layer**
- Collection of data from a variety of sources and systems
- Across entire supply chain i.e. across different companies
- Real time

**Business logic layer**
- Predictive and simulation functionality
- Top-down and bottom-up; value at risk

**Visualisation layer**
- Within a single screen, mobility
- Layout
- Alerts and warnings
- Interactive functionality
- Forward looking, simulation functionality

**Collection of data** from a variety of sources and systems across the entire supply chain, ensuring real-time updates. The layout is designed to be mobile, allowing for alerts and warnings, and features interactive and forward-looking functionalities within a single screen.

Adapted from "Business Intelligence Dashboard Design. A Case Study Of a Large Logistics Company" by Presthus, W. & Canales, C.A.
Data collection layer:

This is what we dream about, but....

- Average global manufacturer has between 100 to 200 different systems in place;
- Business partners are even less connected;
- Heavy reliance on people to read individual data;
- Connections between trading partners are highly customised;
- Data is rarely collected in real time.

Adapted from “Synchronized production and logistics via ubiquitous computing technology” by Luo, H. et al.
Business logic layer – simple tool might be very effective:

Case study: sometimes even Excel is effective and good enough

- Relevant KPIs
- Various data source
- Drill-down capability
- Risks reflected
- Forward looking
- Simulation capability
- Value-related
- User friendly
What was a business impact:

Case study: sometimes even Excel is effective and good enough

- Avoidance of losses due to underperformance of the asset caused by unhedged positions – **2-3 million euro per tactical season**;
- Heavy reduction of losses caused by rail tank cars demurrages caused by overfilling of storage caverns – **1-2 million euro per year**;
- Visualisation of risks ubiquitous to operating large feedstock storages in a petrochemical company;
- Enabling traders to undertake hedging activities before too late;
- Early warning about deviations from the plan;
- Clear visibility on tactical and operational levels
- Immediate feedback of the impact of production plan change on risk exposure and logistics
Visualisation layer:

- Different level of the tasks performed
- Interactive visualisation
- Mutual feedback

Formulation ability:
- Query Formulation
- Query Refinement
- Result Processing

Recognition ability:
- Search
- Show Context
- Expand-on-Demand
- Overview
- Zoom & Filter
- Details-on-Demand

Bottom-up

Top-down

Adapted from “Visual analytical dashboards for comparative analytical tasks – a case study on mobility and transportation” by Nazemi, K. & Burkhardt, D.
Visualisation layer: different dashboards for different users

- **Strategic dashboard**
  - Executives/Board

- **Tactical dashboard**
  - Managers/Analysts

- **Operational dashboard**
  - Operations staff

Adapted from “Visual analytical dashboards for comparative analytical tasks – a case study on mobility and transportation” by Nazemi, K. & Burkhardt, D.
Getting Ready for the Future: SC 4.0

Key trends in performance dashboards will change the way Supply Chain elements are managed:

- **Real Time Data being fed by IOT devices**
- **Functionally Granular Data from internal and external resources**
- **More visibility / collaboration among stakeholders**
- **Cascading dashboard with access on the go via. Mobile apps**

- **Self learning, automated root cause assessment and forward looking capabilities**
- **Responsiveness (not just giving alerts but rather taking decisions)**
- **Not just a reporting tool, but a risk management system**

Classical monthly occurring process of performance review is shifting to becoming an “operational activity” aimed at risk management, exception handling and continuous improvement.
Next generation performance management are expected to automatically identify risks / exceptions and change SC parameter to mitigate them.

*In Classical dashboards data was needed to be manually extracted, cleaned, modeled, aggregated and published. This eventually led to higher cost, complexity and lower quality results over long run.*

*With the help of Machine learning (predictive analytics) the cost of managing complexity can be reduced drastically and quality of the information is rising to the next level, enabling managers to act on the best information.*

### How does it work?

- Identify and analyze key product segment behavior
- Pattern matching: Identifies data misalignment
- Uncover hidden patterns, correlations and other insights
- Collaborate outcomes in order to make logic

### Effect

- Deep data profiling & identification of sensitive data
- Formatting suggestions and adapting
- Highlighting anomalies and data cleansing
- End to end connection of dots

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**Impact on Supply Chain** → Rising Effectiveness, Cost Reduction, Better Correlations & Improved Decision making
Each organisation is at different level of maturity and hence need a customised approach to reporting systems & dashboards assessment / development.

- **Very basic**
  - Each department has its functional KPIs and reports;
  - There is no single overview for the whole organization;
  - Only past events are reported, no forward looking capability.

- **Intermediate**
  - Scorecards are in place;
  - ERP core system can bring all transactional data together;
  - ERP reports are in principle available;
  - Reports are cumbersome, difficult to read and static.

- **Advanced**
  - Some kind of BI tool is in place; important KPI and drivers are visualised and analytical tasks are enabled;
  - Dashboard is used in S&OP process and provides a forward-looking and simulation capability;
  - Data from different departments are partially integrated.

- **It can never be perfect**
  - By incorporating drill-down, forward looking and simulation capabilities, dashboard and reports become part of strategic advantage;
  - Manufacturing is synchronized with logistics and partners in VC;
  - Dashboard indicated risks, facilitates decisions;
  - Ubiquitous on all levels.

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- **We recommend to start with defining key attributes of SC(s)**
  - Understand underlying business drivers;
  - Develop proper KPIs;
  - Cascade KPIs across departments, define shared KPIs.

- **Do not underestimate and do not economise on reporting interface**
  - Understand your business priorities: sometimes a good Excel is better than badly implemented BI;
  - Weight cost and benefits of implementing BI tool.

- **Invest in user training**
  - Invest in quality of the user interface;
  - Focus on the quality of the business processes;
  - Focus on integration of data, reports and dashboards across the whole enterprise.

- **Continue investing in user training**
  - Synchronise manufacturing with logistics;
  - Convert your company dashboards into SC Control Tower and make it another element of your strategic advantage.

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- **Relevant KPIs**
- **Various data source**
- **Drill-down capability**
- **Risks reflected**
- **Forward looking**
- **Simulation capability**
- **Value-related**
- **User friendly**
Recap: Performance Dashboards, how digitalization broadens their scope and capabilities

Dashboards have become a very important enabler in achieving the business objectives, and digital enablers will enhance their value further.

A future dashboards will encompasses a number of different aspects:
- formulation and recognition ability
- relevant KPIs from different elements of Supply Chain;
- ability to drill down to more detailed levels for root cause analysis;
- forward-looking and scenario simulation capabilities;

Opting for fancy (and expensive) piece of software will not guarantee on its own that you get the dashboard that is right for you; we suggest to invest in conceptual design and to exhaust the capabilities of available solutions first.

Properly designed dashboard is in itself a powerful tool in synchronising production and logistical operations and even different players in cross-company value chain.

Do not underestimate the effort and investment required to create a dashboard that does serve its purpose and create benefits for business!
Thank you

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