Top 10 Techniques For Building Effective Performance Dashboards

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So much data, so little insight

Large scale ERP implementations over the last decade have resulted in an explosion of corporate data. It seems every action, no matter how trivial is captured digitally and stored somewhere on a corporate computer. Unfortunately, this has led to a proliferation of large and complex reports as analysts attempt to gain meaningful views of their business processes.

Performance Dashboards have become popular tools in recent years for executives and analysts to mine company data for useful insight. Regrettably, in the mad rush to create them, ad-hoc development approaches have largely prevailed with IT departments (in most cases) using the latest and slickest tools without strategic considerations to industry relevant analytics, scalability or best practices.

Techniques for Effective Dashboards

This document presents 10 key techniques for building effective dashboards. It is based on industry research as well as experiences with customers who have avoided impromptu methods and taken the time to develop and deploy their dashboards in a structured manner.

1. Choose the right type of dashboard

Make the information you provide actionable. A smart way to do this is categorize your dashboards by target audience:

<table>
<thead>
<tr>
<th>Type</th>
<th>Audience</th>
<th>Key Features</th>
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</table>
| Strategic | Senior Executive Team   | o Analytics and alerts are focused on corporate, business units, key customers and product lines  
|           |                         | o KPIs often included for strategic initiatives  
|           |                         | o Evaluation period is typically weekly or monthly                           |
| Tactical  | Departmental Heads      | o KPIs measured against planned performance of departmental /major business process, e.g. Procurement  
|           |                         | o Early warning indicators for timely intervention  
|           |                         | o Drill down capability for exception analysis  
|           |                         | o Evaluation period daily or weekly                                           |
| Operational | Functional Area user  | o Analytics measured against planned performance of key functional area, e.g. Production Line  
|           |                         | o Users can create Ad-hoc metrics for their area  
|           |                         | o Drill down reports for exception analysis  
|           |                         | o Evaluation period daily, per shift or real-time                            |
2. Dashboard content: Use best practices but don’t forget your own experts

Performance dashboards primarily include:
- **Metrics**: Usually performance data such as Revenues, Commissions and Open Orders, and
- **Key Performance Indicators (KPIs)**: Metrics tied to corporate targets or industry benchmarks such as On-Time Delivery percent, Plant Utilization, Order fill rate and so on.

In addition, these metrics and KPIs are usually available at various levels such as corporate, geography, business unit, customer and material.

Performance analytics fall into any one of the following major categories:
- **Industry specific**: These are metrics and KPIs specific to your industry; example Return on Ad Spend (ROAS) in the travel industry
- **World class**: These analytics apply to all industries; Example Inventory turns
- **Company specific**: These are unique to your company

Several groups such as Supply Chain Council, European Shipper’s council, SUGEN (SAP user group executive network) can be used to reference benchmarks. In addition, you must ask business experts from within your own company to validate these and perhaps add your own internal ones to the dashboard(s).

3. The goal is Actionable Business Intelligence

Performance dashboards have one overarching objective – to provide decision support information to your audience. This can be done in several ways:

**GAUGES AND DIAL**

*These can efficiently show metrics with various actionable thresholds to compare current values against budget or prior period values*

**LINE AND BAR GRAPHS**

*These can be used to quickly spot trends in metrics and KPIs*
4. Position dashboards into an integrated reporting framework

The dashboard types discussed above have different audiences but must fit into an overall reporting framework in order to be effective. Here are some key guidelines:

- **Setup an Analytics Library**: Corporate KPIs and measures should be based on a centralized library of definitions shared across all dashboard types. This will ensure a single version of the truth irrespective of the type.

- **Synchronize Performance Milestones**: Ensure uniform policies for evaluating when to red-line or celebrate performance. The same alerts at strategic levels will be seen at the relevant operational and functional levels (hopefully sooner).

- **Development Tools**: Since several tool vendors target IT and end-users, it is not uncommon to find multiple dashboard tools being used in a company. It is important to select a single robust development kit that is scalable to the growing corporate requirements. A main factor for such selection should be the integration with transaction data.

5. Consistent screen visualization eases user navigation

Every dashboard tool comes equipped with a standard set of controls – dials, gauges, widgets, bars and charts. Your corporate dashboards, although different in their details should have a uniform layout, colors and themes for easy end-user navigation. Some suggestions:

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**BUBBLE CHARTS**

*Use these to correlate data across multiple periods and variables.*

*In this figure, the bubble size indicates the closing stock while customer orders and procurement are plotted for multiple periods.*
6. **Provide smart drilldowns of data**

Dashboards are not replacements for detailed reports. Your goal is to present data in a format that allows users to quickly identify performance issues without wading through minutiae. Some best practices are listed here:

- Drilling down to detailed reports are advisable only for Tactical and Operational dashboards
- Strategic dashboards should show analytics only on a Top n basis, e.g. Order Fill rate for Top 10 customers

7. **Data sourcing done right: Don’t forget the plumbing**

![Figure: Behind every great dashboard is a highly efficient ERP data pipeline](image)

Sluggish system response has killed many a slick dashboard since end users expect split second responses as they slice and dice their data. Design considerations for high performance sourcing include:

- **Data Warehouse**: This is the single most efficient mechanism to store your transaction data aggregated into an analytics-friendly format. Performance dashboards are executed against warehouse objects such as data cubes to instantly display KPIs and trends.
- **Data Quality**: Several vendors such as ORACLE, SAP and IBM offer tools that scrub data before loading into the data warehouse. These are best used when integrating data from multiple sources, especially external feeds. In such cases, use such tools – your users will thank you
Calculating Analytics: The rule with doing complex calculations is simple – do as little as possible in the dashboard tool and let the warehouse do the heavy lifting. This means doing the math either during the warehouse upload from ERP or in the query builder.

8. Provide simulations for decision support

Most dashboard development tools provide controls that allow data simulations. When multiple inputs can affect performance, simulation allows users to tweak them individually to instantly observe the results.

Figure: Dashboard Simulator for Travel Industry.
Sliders allow analyst to view impact on profit by changing Ticket price, Passenger counts (PAX) and Cost.

9. Allow users to document data anomalies

In some cases, the reason for a sudden change in a metric or KPI may be due to a known. For example, a sudden drop in manufacturing output may be due to planned line maintenance. In such cases, the plant should be able to attach a brief explanatory note to a dashboard analytic that is visible to all users.

10. User Feedback

Congratulations, you’ve completed your dashboard! Now what?

The only truism is that change is constant and dashboards need to be reviewed periodically. Poll your users to ensure that:

- Analytics are current
- Alert thresholds have not changed
- Drill down reports are still current
- Your audience is still using them!