PwC’s Global Data and Analytics Survey 2016: Big Decisions™ 2.0

German and international findings

July 2016
Contents

1. Big Decisions™ 2.0 survey background
2. Executive summary
3. German and international findings
4. Conclusion
1. Survey background
Big Decisions™ strives to understand how decision-making is evolving, particularly at the boundaries of automation and human judgment

**Why?**

- Strategic decisions create value for an organisation.
- Decision-makers are now face-to-face with an opportunity to learn from massive amounts of data.
- How can we apply data analytics to create greater value?

**What?**

- What types of decisions will you need to make between now and 2020?
- What types of data and analytics do these decisions require?
- What is the role of machines in decision making?
- What’s your ambition for improving your company’s decision speed and sophistication to make these decisions?
The 2016 global survey had 2100+ participants across industries and regions

Global respondent's profile

Company Responses by Revenue

- $10bn or more: 0%
- $5bn to $10bn: 5%
- $1bn to $5bn: 10%
- $500m to $1bn: 15%
- $250m to $500m: 20%
- $100m to $250m: 25%
- $100m or less: 20%

Responses by Role

- C-level executive: 24%
- SVP/VP: 13%
- Head of business unit: 7%
- Head of department: 8%

Regional Demographics

- US: 36%
- Canada: 29%
- Asia-Pacific: 24%
- EMEA: 10%
- Latin America: 10%
- Other Region: 10%

Your company can be characterized as...

- Startup: 0%
- Organic growth: 20%
- Established: 40%
- Inorganic expansion: 60%
- Other: 80%

Global respondents from 50+ countries with large presence in the US, EMEA & APAC

44% of total Global based respondents had revenues over $1 billion last year
The German survey had 168 respondents from different industries and functions

**German Respondent's Profile**

**Company Response by Revenue**

<table>
<thead>
<tr>
<th>Revenue Range</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>$10bn or more</td>
<td>15%</td>
</tr>
<tr>
<td>$5bn to $10bn</td>
<td>6%</td>
</tr>
<tr>
<td>$1bn to $5bn</td>
<td>14%</td>
</tr>
<tr>
<td>$500m to $1bn</td>
<td>14%</td>
</tr>
<tr>
<td>$250m to $500m</td>
<td>17%</td>
</tr>
<tr>
<td>$100m to $250m</td>
<td>14%</td>
</tr>
<tr>
<td>$100m or less</td>
<td>19%</td>
</tr>
</tbody>
</table>

**Industries**

- Automotive: 8%
- Energy & Utilities: 5%
- Public: 6%
- Banking, Capital Markets & Asset Mgmt.: 6%
- Insurance: 3%
- Healthcare: 4%
- Pharma: 10%
- Technology: 4%
- Communications: 4%
- Entertainment & Media: 3%
- Retail & Consumer: 11%
- Industrial Products: 28%
- Other functions: 15%

**Company characteristics**

- Established: 58%
- Inorganic Expansion: 10%
- Organic Growth: 24%
- Decline: 3%
- Exit: 3%
- Startup: 24%

**Responses by Role**

- Manager: 20%
- Head of business unit or department: 18%
- C-level executive or SVP: 63%
- Other functions: 35%
- General Mgmt.: 21%
- IT: 8%
- Procurement: 3%
- Risk: 4%
- HR: 4%
- Customer Service: 4%
- Marketing and Sales: 6%
- Strategy and Business Development: 9%
- Finance: 21%

**Functions**

- Customer Service: 4%
- Marketing and Sales: 6%
- Strategy and Business Development: 9%
- Finance: 21%
- Other functions: 35%
- General Mgmt.: 21%
- IT: 8%
- Procurement: 3%
- Risk: 4%
- HR: 4%
- Customer Service: 4%
2. Executive summary
Executive summary

1. Big Decisions: are they the right ones for right reasons?
   - Developing or launching new products to achieve market leadership and 5-50% shareholder value growth is the top selected decision.
   - Most decisions are motivated by market leadership in an industry context of evolving core assets as opposed to disruption or survival.

2. Factors impacting: despite the hype, data & analytics can play bigger
   - Companies are evolving D&A capabilities; struggle with gut-based model; hampered by decision structure.
   - German companies data-driven and rely on a considerable share of advanced analytics.
   - Multiple influences and trade-offs impact how companies use D&A to improve decision-making.

3. New mind/machine order: increasing decision speed and sophistication to create value
   - A new order is changing the balance of algorithms and human judgment that can be used across decision types, and to make “unknown” risks “known”.
   - Companies and industries differ in maturity using decision-making speed and sophistication to create value. All want to improve by 2020.
3. German and international findings
What is a big decision?

90% of global respondents think their next strategic decision will increase shareholder value, ranging up to a 200% increase.

Instinctively, what impact would this decision have on current shareholder value over the next 5 years?

- More than a 200% increase: 2% (Global), 3% (Germany)
- 100 - 200% increase: 7% (Global), 8% (Germany)
- 50 - 100% increase: 20% (Global), 22% (Germany)
- 5 - 50% increase: 50% (Global), 61% (Germany)
- 0 - 5% increase: 7% (Global), 5% (Germany)
- Decrease: 1% (Global), 2% (Germany)
- Don’t know: 10% (Global), 5% (Germany)

*n = total # of the top key coming strategic decision
Compared to global findings, German respondents‘ key strategic decisions are less likely to be made by the board, but rather by specific organizational roles.

Who is likely to be involved in making the key strategic decision?

- **Specific organizational roles**: 55% (Germany), 34% (Global)
- **Large number of employees**: 14% (Germany), 10% (Global)
- **Business unit**: 14% (Germany), 18% (Global)
- **A single executive**: 9% (Germany), 7% (Global)
- **The Board**: 10% (Germany), 26% (Global)
- **Other**: 3% (Germany), 0% (Global)
The leading big decisions in Germany as well as across global markets are focused on new products and services, new markets and IT investments.

<table>
<thead>
<tr>
<th>Decision Description</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developing or launching new products or services</td>
<td>25%</td>
</tr>
<tr>
<td>Entering new markets with existing products or services</td>
<td>21%</td>
</tr>
<tr>
<td>Investment in IT</td>
<td>18%</td>
</tr>
<tr>
<td>Developing Partnerships</td>
<td>10%</td>
</tr>
<tr>
<td>Corporate restructuring or outsourcing</td>
<td>10%</td>
</tr>
<tr>
<td>Entering a new industry or starting a new business</td>
<td>10%</td>
</tr>
<tr>
<td>Shrinking existing business</td>
<td>4%</td>
</tr>
<tr>
<td>Change to business operations</td>
<td>3%</td>
</tr>
</tbody>
</table>

Exemplary comments from respondents:

- “We need new products for a digital world.”
- “Challenge to find new business fields and products to assure our company’s survival.”
- “Will our current core business remain successful or do we need to diversify or even refocus our business?”
- “Continuous expansion of our core business”
- “Managing growth in China.”
- “International integration of the IT landscape.”
- “Move to Cloud Applications (Software as a Service).”
- “Investments into Big Data and Industry 4.0 systems.”
The most anticipated limitations of strategic decisions are availability of resources, leadership courage and policy regulations, but not data limitations or analytics.

Strategic decisions will likely be limited by...

- Availability of resource/manpower: 21%
- Leadership courage: 19%
- Policy regulations: 17%
- Budgetary considerations: 14%
- Operational capacity: 12%
- Issues with implementation: 8%
- Poor market response: 7%
- Data limitations: 2%
- Ability to analyze data: 0%

* n = top decision by top limitation

What are the constraints in your organization that impede decision making? How much is data & analytics related?
Belief about industry change sets the context for the strategic decisions and key motivations

Industry change dynamics set context...

Between 2015 and 2020, change in my industry will likely be...

Global:

- **Incremental** (status quo preserved, incremental progress) - 22%
- **Creative** (stable core activities but new playing fields, core assets evolving) - 42%
- **Intermediating** (core activities threatened, relationships fragile) - 14%
- **Radical** (game-changing, everything up in the air) - 21%

* *n = # of anticipated industry change factor

The key strategic decision will be motivated by...

Global:

- **Market leadership**
- **A need to survive**
- **Ability to disrupt**

*“Incremental” and “creative” changes refer to a rather stable business, whereas threats and disruptive changes are defined by “intermediating” and “radical” changes

* *n = proximity to motivation
Compared to global findings, German respondents anticipate a more stable core business\(^*\) (75% vs. 65%) and less threats and disruptive changes (25% vs. 35%)\(^*\) over the next 5 years.

Between 2015 and 2020, change in my industry will likely be...

**Germany:**
- **Incremental** (status quo preserved, incremental progress)
- **Creative** (stable core activities but new playing fields, core assets evolving)
- **Intermediating** (core activities threatened, relationships fragile)
- **Radical** (game-changing, everything up in the air)

**Global:**
- **Incremental** (status quo preserved, incremental progress)
- **Creative** (stable core activities but new playing fields, core assets evolving)
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*\(^*\)n = # of anticipated industry change factor

*“Incremental” and „creative“ changes refer to a rather stable business, whereas threats and disruptive changes are defined by „intermediating“ and „radical“ changes.
The majority of key strategic decisions likely drives revenue/market share, while only 24% focus on costs/efficiency and risks

Anticipated impacts of key strategic decisions:

Germany:

- More innovative products or services: 76%
- Increased customer retention: 16%
- Increased customer acquisition: 19%
- Increased market share: 20%
- Reduced cost: 23%
- More innovative products or services: 8%
- Increased customer retention: 15%
- Increased customer acquisition: 1%
- Improved business processes: 1%
- Reduced risk or regulatory exposure: 1%

*n = total # of decision impacts
Compared to the global findings, strategic decisions in Germany have a higher expected impact on employees and less on customers.

Stakeholders most impacted by key strategic decision are likely to be:

- **Employees**: 40% (Germany), 25% (Global)
- **Competitors**: 22% (Germany), 18% (Global)
- **Customers**: 16% (Germany), 27% (Global)
- **Shareholders**: 15% (Germany), 24% (Global)
- **Suppliers**: 7% (Germany), 6% (Global)

*n = total # of decision impacts
Most of global respondents’ companies are not highly data-driven and rely on descriptive and diagnostic analytics

Majority are “somewhat” data-driven...

Which of the following best-describes decision-making in your organization?

Global:

- Highly data-driven: 39%
- Somewhat data-driven: 53%
- Rarely data-driven: 8%

Similar pattern across industries

...and use basic analytics

The use of analytics in your organization is mostly...

Global:

- Descriptive (What has happened?): 28%
- Diagnostic (Why did it happen?): 29%
- Predictive (What will/could happen?): 29%
- Prescriptive (What should happen and how?): 13%

*n = # of type of data-driven organization by type of analytical technique applied
Compared with global findings, data-driven decision-making is more widely-used among German respondents, with a higher share of advanced analytics.

Which of the following best describes decision-making in your organization?

Germany:
- Highly data-driven: 49%
- Somewhat data-driven: 48%
- Rarely data-driven: 3%

The use of analytics in your organization is mostly...

Germany:
- Descriptive (What has happened?): 17%
- Diagnostic (Why did it happen?): 30%
- Predictive (What will/could happen?): 33%
- Prescriptive (What should happen and how?): 19%

* n = # of type of data-driven organization

* n = # of type of analytical technique applied
Compared to global decision-makers, German respondents rely slightly more on experience and intuition than on data & analytics for strategic decisions.

*Strategic decisions rely on...*

**Germany:**
- Experience and Intuition: 41%
- External Advice: 25%
- Internal Data and Analytics: 34%

**Global:**
- Experience and Intuition: 36%
- External Advice: 26%
- Internal Data and Analytics: 38%

*n = proximity to motivation*
For both global and German decision-makers, a significant share of risks is still unknown or uncertain

*Risks will be likely...

**Germany**

- Known, manageable: 55%
- Unknown, uncertain: 45%

**Global**

- Known, manageable: 53%
- Unknown, uncertain: 47%

*n = # of decisions*
Conclusion
Creating a data driven organization requires focus on eleven dimensions that are underpinned by a data-driven decision process.

### Dimensions

**Business Value**
- Strategy Connection
- Use Case Value Potential
- Speed & Sophistication Needs

**Operating Model**
- Engagement Model
- Talent Model
- Metrics / Incentives
- Repeatable Solutions

**Culture**
- Group vs. Individual
- Decision Style: Intuition, Analytics, External
- Experimentation Acceptance
- Visible Symbols
- Machine / Mind Mix

### Appropriate Speed

#### Data View
- Timely
- Accurate
- Comprehensive

#### Data Type
- External
- Internal

### Appropriate Sophistication

#### Analytics Maturity
- Descriptive
- Diagnostic
- Predictive
- Prescriptive

#### Need
- Opportunistic
- Proactive
- Reactive

#### Account-ability
- Decision Rules
- Person/Group
- Org Links

#### Workflow
- Steps
- Decision Nodes
- Impact Points

#### Targets
- Financial
- Operational

#### Results
- Gap to target
What we have learned from the survey

- More and more organizations are taking a data-driven approach to making strategic decisions. Are you?
- Executives have great ambition to increase decision speed and sophistication.
- Organizations face many limitations in their decision making, however data and the ability to analyze data are the least of their concerns.
- A large portion of German companies already uses advanced analytics, but still relies slightly more on human judgement for making strategic decisions.
- Machines don't replace human judgment, but the right mix of mind and machine can reduce the impact of human bias, yield more accurate answers and de-risk the decision - even for complex problems.
A way to think about applying analytics for your big decisions
For each type of decision, what do you need?

**Decision Archetypes**

<table>
<thead>
<tr>
<th>Speed</th>
<th>High</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Accelerated Agility</td>
<td>Intelligence in the Moment</td>
</tr>
<tr>
<td>Low</td>
<td>Cover the Basics</td>
<td>Master the Chess Moves</td>
</tr>
</tbody>
</table>

**Sophistication**

<table>
<thead>
<tr>
<th>Level</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data-driven decisions</td>
<td>Data-driven decisions</td>
<td></td>
</tr>
<tr>
<td>Intuition based decisions</td>
<td>Hindsight &amp; foresight</td>
<td></td>
</tr>
</tbody>
</table>

**Accelerated Agility**
- Speedy decisions trump analysis /consensus
- Descriptive reporting with internal data
- Rapid analyse-decide-act feedback loop

**Intelligence in the Moment**
- Data & intuition drive decisions
- Hindsight & foresight with all available data
- Advanced analytics with feedback loop

**Master the Chess Moves**
- Data-driven decisions trump intuition
- Hindsight & foresight with all available data
- Slow consensus driven & analytic decisions

**Cover the Basics**
- Intuition based decisions – little analysis
- Descriptive reporting with internal data
- Low frequency data and model refresh
Thank you.