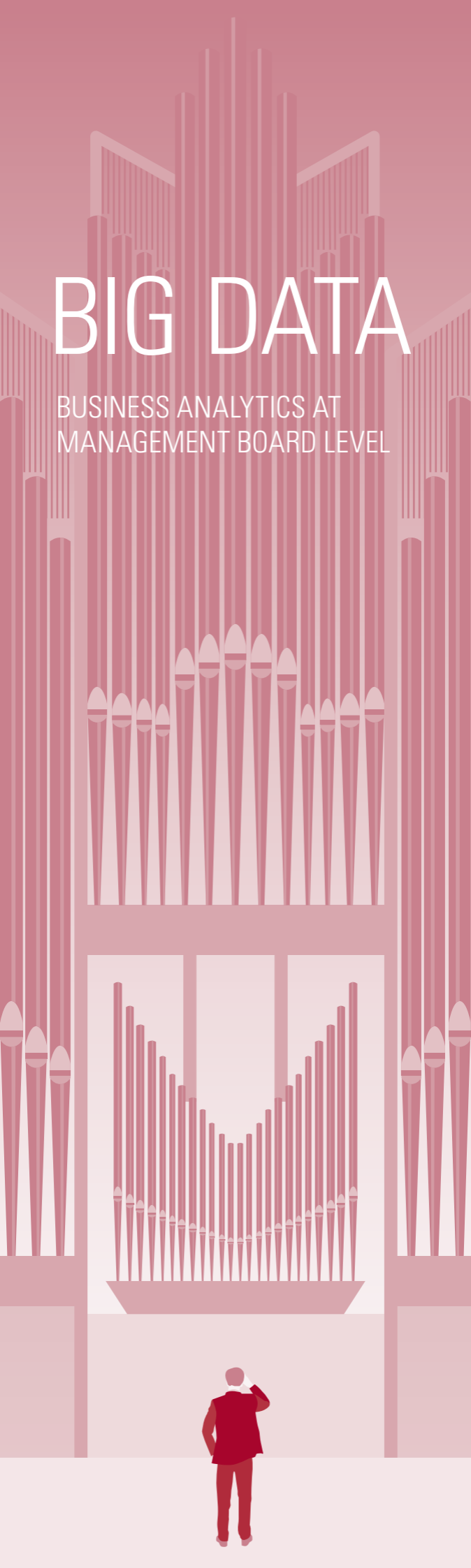


# BIG DATA

BUSINESS ANALYTICS AT  
MANAGEMENT BOARD LEVEL







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## BUSINESS ANALYTICS AT MANAGEMENT BOARD LEVEL

Stern Stewart Research // Volume 64

Stefan Heppelmann, Dimitri Belobokov, Peter Sprongl

### Management Summary

Technological developments have led to an explosive increase in the amount of data in companies in recent years. Fully integrated system landscapes and networked platforms mean that internal data volumes are now reaching previously unknown dimensions. What is more, corporate decisions and product ideas can be further improved through external data, especially coming from social media. And the pressure to use these data is great, with the competitive advantage lying in learning more quickly than others.

The management has to be able to absorb more knowledge and work with varying mindsets. Information – i.e. related, interpreted data – can be used to create new business models, which change one-off orders into continuous relationships. Product business becomes integrated service business. The innovative potential increases enormously when analytics takes over the role of the nervous system in the company.

From a management point of view, Big Data is the promise of introducing more precision into the way the company is led, with a culture of analysis and of generating new management stimuli. After all, changing the decision-making culture can improve a company's performance.

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### FOUR GUIDING PRINCIPLES WHEN DEALING WITH BIG DATA:

1. **“Connect the dots”**: Use Big Data for competitive advantage  
2. **Rational thinking instead of gut feeling**: Establish a data-oriented decision-making culture  
3. **Big Data from A to Z**: Identify fields of application for insight-oriented action  
4. **What matters is what insights you gain**: Find the right level of complexity through pragmatic model selection

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## 1. “Connect the dots”: Use Big Data for competitive advantage

The topics of “Big Data” and “Analytics” have forced themselves onto the agendas of companies in record time. Growing volumes and diversity of data are both a challenge and an obligation for companies. Big Data heightens the desire to be able to garner more relevant information from data and to establish intelligent, improved corporate processes. Companies have the opportunity to accelerate away from their competitors if they can manage to combine commercial skill with data know-how.

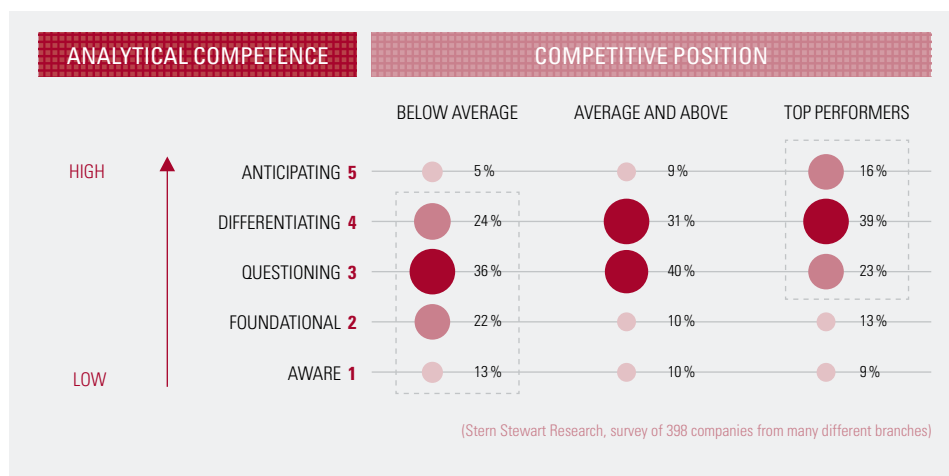


FIG. 1: SELF-ASSESSMENT OF THE COMPANY'S ANALYTICAL COMPETENCE AND COMPETITIVE POSITION

Many companies are cautious with investments in Big Data or think they are not ready for them. Others doubt that analyzing existing data can generate true added value. Or perhaps they have already injected money into business intelligence projects in the past. In view of the complicated initiatives out there that deliver few useful insights, their skepticism is understandable.

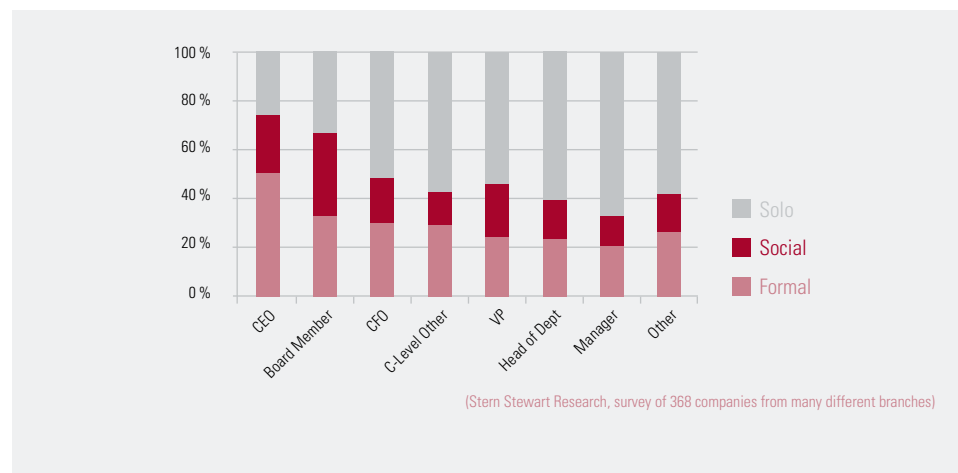
But before a company too rashly says “No!” to the question of whether an investment in Big Data is worth it, it makes sense to take a closer look and find out whether the potential knowledge gained perhaps does stand in a sensible relation to the (commercial) feasibility after all. A pragmatic concept for Big Data and advanced analytics has to be developed, with the aid of which the data can be used to reach better decisions.

## 2. Rational thinking instead of gut feeling: Establish a data-oriented decision-making culture

In the age of Big Data, companies are not successful because they have more or better data at their disposal, but because they ask the right questions and find ways to generate answers to those questions. The power of Big Data is no substitute for visions. However, the analytics that produce the Big Data give the manager the tools to recognize outstanding opportunities, to create new offerings and to make the right decisions. The most successful companies in the future will be those whose management is armed with strong intuition, knowledge and creativity, and who multiply the effect of these abilities with the aid of Big Data.

The evidence leaves no doubt: Data-oriented decision-makers tend to be the better decision-makers. Irrespective of the management level and the decision-making style that it brings with it, data can provide useful assistance in two ways: in verifying “resolutions” made on the basis of instinct, and in creating new ideas. A strong base of data should be generated both for CEOs with formal decision-making behaviors and for more “soloistic” or instructionally thinking CFOs. In particular when decisions are made in a more consensus-driven environment, Big Data helps gain the required amount of factual information. The first question that data-oriented organizations ask themselves is not “What do we believe?” but “What do we know?”

FIG. 2: DECISION-MAKING STYLE BY MANAGEMENT LEVEL



Standard and routine reports usually only have an indirect influence on decisions in the corporate world. One concern with regard to Big Data is that the models are not understandable or the data not trustworthy. Or put another way, that data are used ex post facto to justify decisions using numbers. Many companies struggle with problems of this kind. Furthermore, they often have an insufficient breadth of the technological expertise and analytical skill required to truly understand a data base and its strategic implications.

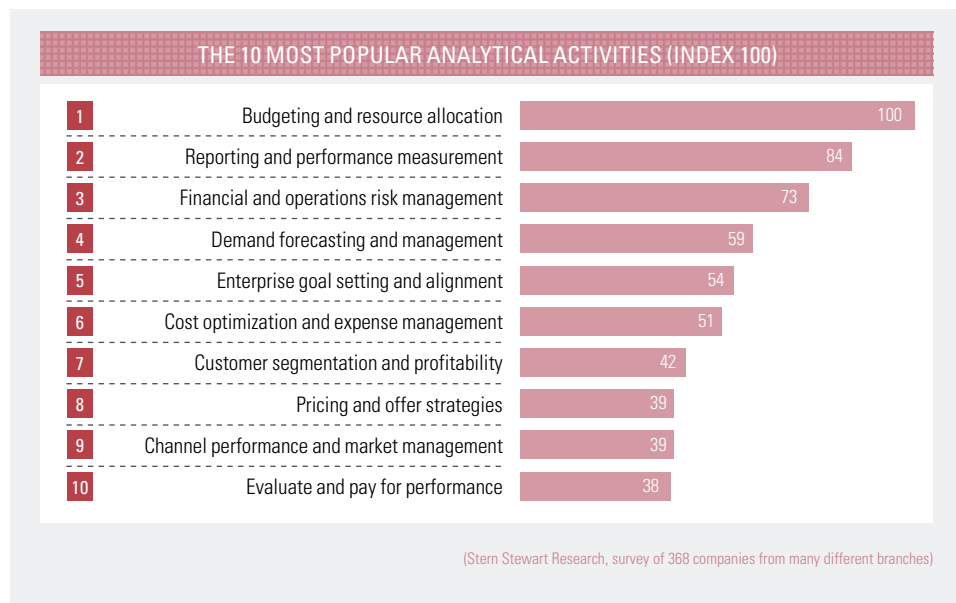
It is essential to have a clear strategy for dealing with Big Data. The management must vigorously ensure that the right questions are asked and that models are used that lead to better decisions.

### 3. Big Data from A to Z: Identify fields of application for insight-oriented action

Big Data concepts should offer a plan for how to achieve business goals. In this context, analytical initiatives are most important that support the company's differentiation from the competition along the range of corporate goals, from securing earnings through to growth. The result is that those Big Data projects are of importance that promote innovative thinking and more profound understanding within the company. The market leaders use Big Data as an opportunity to kick off ambitious changes in their companies and in particular to make their processes "smarter".

It is noteworthy here that the list of the most important fields of analysis in a company right now contains topics such as resource allocation, performance measurement and demand management. Furthermore, it is becoming apparent that market-oriented initiatives such as price strategies, reputation management and market selection are growing in importance.

FIG. 3: BIG DATA BY  
THEMATIC RELEVANCE FOR  
COMPANIES



Managers have to be encouraged to use new ways of collecting and evaluating data, because data are the stepladder to a new level of understanding, for example, for putting together a granular mosaic of known facts and behaviors to form a greater understanding of the client value.

Regardless of which form the analysis takes, managers have to take changes in their industry into account and advance the basic concept of networking functions and departments to develop fitting business models for the enterprise. An important prerequisite for this is that insights gained from information and decision-making competence are held in the same place.



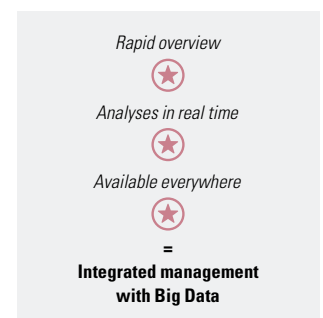
FUNCTION	EXEMPLARY BENEFITS
General Management	<ul style="list-style-type: none"> <li>· Reduced repository footprints and data model objects</li> <li>· Enhanced trust level of data and broadened access</li> <li>· Increased capability through cross-functional correlations</li> <li>· Increased data accuracy</li> </ul>
Finance	<ul style="list-style-type: none"> <li>· Lower Finance costs as a % of revenue</li> <li>· Transactional activity cost reduction</li> <li>· Higher productivity of finance FTEs via IT enablement</li> <li>· Maximize ROI – tactical and strategic cash improvement opportunities</li> </ul>
Sales/Marketing	<ul style="list-style-type: none"> <li>· Reduced non-productive customer contacts resulting in increased sales</li> <li>· Eliminated unproductive marketing expenditure</li> <li>· Increased customer lifetime value</li> <li>· Improved advertising reach and effectiveness</li> </ul>
SCM	<ul style="list-style-type: none"> <li>· Improved demand visibility and management</li> <li>· More accurate supply chain management</li> <li>· Better customer channel management</li> <li>· Increased global operations alignment</li> </ul>
Production	<ul style="list-style-type: none"> <li>· Reduced capex mid to long-term</li> <li>· Improved production flexibility and time to market</li> <li>· Optimized input/output levels</li> <li>· New service models</li> </ul>
HR	<ul style="list-style-type: none"> <li>· More effective deployment of headcount</li> <li>· Improved productivity in sales and field force</li> <li>· Optimized sales activities</li> <li>· More effective service agents</li> </ul>

FIG. 4: EXAMPLES OF BENEFITS BY FUNCTION

Appropriate models for prediction help gain a more comprehensive impression of the company: finding out what the clients want, maximizing operational efficiency, detecting trends and exposing growth opportunities. Forward-looking models use the past to understand the future. Management reports should contain key drivers, because trend identification and pattern recognition help reach better decisions.

The following examples provide a small taste of what is meant . . .

**E.g. General management with Big Data:** *Integrated management with Big Data does not mean a flood of data, it is much more a feel-good factor for the management. Available data condensed down to the key performance indicators enable the company to be managed in real time. Where required, it should be made possible to access data at deeper levels, across the entire range of specialist silos (e.g. financial figures, marketing campaigns, production factors, delivered products). This gives the company management the ability to understand its company's processes, irrespective of time zone or place, of whether aggregated or in detail, right down to the smallest adjusting screw.*



**E.g. Business finance:** A company finds itself confronted with highly complex and time-consuming budgeting and reporting processes. With the appropriate Big Data tools, financial auditing activities can be reduced and the productivity in accounting almost doubled. This means the company enjoys considerable efficiency gains measured in terms of ROI.



- **Enriched reporting:** Most reports work retrospectively, with statements such as “The sales team sold well in this quarter” or “Our costs correspond to those of the previous year”. The reasons behind these facts is not looked into. Terabytes of data enable to see not only that something has happened, but also why. Far more insights and information can be integrated into the reports, for those who need them. Instead of arduously trying out and observing various improvements, companies benefit from direct feedback coming from cause-effect analyses.



- **Investment decisions:** Investment decisions have to be made on a solid foundation. So, in order to “be what they appear”, investments have to be described in detail. The key to being able to make the right decisions for investments lies in the depth of the data available. With Big Data, companies can dig deeper and gain a holistic view of all aspects of an investment. From the way they are discussed on social media through to the greater precision of a forecast, data can be integrated that enable better investments to be made with less risk.

**E.g. Marketing:** Marketers have many options for gathering and analyzing data and evaluating marketing efficiency with hard data. This enables fact-based investment decisions to be made and campaigns to be launched that result in profitable customer relationships and contribute to sales growth.



- **Product pricing and channel management:** In highly competitive markets, price strategies depend on a complex set of factors. The right pricing is not only a question of margins, it also helps determine a product’s image on the market and the segment that will buy it, and even the right sales channels. With Big Data, the drivers such as revenues, products, prices, advertising activities and customer relationships on the demand side can be comprehensively optimized.



- **Customer analytics (i.e. customer attrition / customer lifetime value):** In this context, Big Data provides a real-time 360-degree client view, with an inside view of the past, present and future of the marketing performance. By analyzing structured, unstructured and static data, marketers can make the right offer at the right time at the moment of the con-

tact. In addition, Marketing then also has the opportunity to react more quickly to new clients, to strengthen the customer relationship and to improve the quality of all marketing investment decisions. Viewed holistically, marketing analyses guarantee better, more successful marketing by completing the loop of marketing efforts. This can lead to a better understanding of the clients, which in turn improves customer-acquisition rates, the customer lifetime value and the profitability, and hence significant value added.

**E.g. Logistics / SCM:** *Successful management of inventories is one of the key factors for the commercial success of a manufacturer, wholesaler or retailer. For most of these companies, the current assets determine the monetary flows in the same way that the company's business activities determine the flow of materials and products.*

- **Smart inventory management:** Forward-looking inventory management ensures that the companies accommodate the constantly changing needs of a diverse customer base, while at the same time keeping an eye on the costs, transcripts and maximizing profitability. Optimized inventories enable companies to free up working capital and regain their flexibility, so that they can seize upon capital-intensive opportunities. Smart inventory-management solutions help companies determine the right inventories for products and materials at virtually all stages of the supply chain.
- **Balanced logistics:** These solutions can help companies find the balance between delivery costs and customer service, and between production volume and capital reserves. By analyzing data from ERP and CRM systems and logistics information from factories, sales centers, etc., organizations can gain the insights they need to make better and smarter decisions and remain competitive.



**E.g. Production management:** *Already today, analyzing large volumes of data leads to constant improvements in the production process. With the advancing digitization of machines in factories ("Industry 4.0") new improvement potential is released. Flexibility, productivity and the company's competitive position can be significantly improved at little expense.*

- **Smart production management:** Collecting, analyzing and evaluating the performance data of all machines involved in production enables flexible and forward-looking planning and management of production. An efficient forecast of a machine's working life cycle enables better maintenance and replacement planning, reduces downtimes and improves productivity. The increased flexibility of the machine and production planning can signifi-



cantly reduce the time to market, speed up reactions to trends (e.g. individualization) and strengthen the relationship with the customers. As a direct consequence of this, companies can reduce their running costs while at the same time increasing their sales and output.



- **Service-oriented industry:** Digitizing the production factors enables companies to significantly lengthen the life-cycles of their machines, as the biggest productivity increases in future will be obtained with the aid of software updates. This gives rise to new challenges for plant manufacturers. In addition to the current core competencies, services are becoming ever more important, with the dovetailing of software, hardware, data analysis and customer-friendly preparation of the data playing a key role. Viewed holistically, digitization will considerably shorten the innovation cycles in the field of mechanical engineering and in industry, increase flexibility and make new business models possible.

**E.g. HR:** *HR analytics is being used increasingly in companies, for everything from optimizing workflows to tracking employee satisfaction. Many enterprises have fallen behind the competition in knowing how the data that they gather from their personnel can make a big difference in the overall performance of the company.*



- **Employee satisfaction:** HR analytics is stigmatized to a degree as seeing employees as numbers rather than as human beings. This is far from the truth, because Big Data tools enable practices that are designed to evidence staff satisfaction with data rather than to judge it by gut feeling. Big Data can even be a driving force. Surveying enables feelings among the staff to be ascertained that they would never personally communicate to their management. This can range from the general conviction of the staff with regard to company initiatives through to anonymized polls. It enables those responsible, who cannot be expected to know what the entire staff is feeling, to gain a comprehensive understanding of staff members rather than merely having to act on a general hunch.



- **Employer branding and talent acquisition:** Whereas simple cost/benefit analyses in the past sufficed to gain an overview of individual branding and recruiting channels, a large range of media and platforms today determine how a company is perceived on the market and how it acquires talent. Alongside the directly analyzable channels such as the own website, press clippings, etc., online activities, blogs and social media also provide many points of contact. With the aid of Big Data, these pieces of the employer branding jigsaw puzzle can be gathered, analyzed and put together to form a big picture, all in real time. This gives enterprises the ability to react quickly to trends and take the right measures early on, in order to be sustainably successful in the competition for human capital.

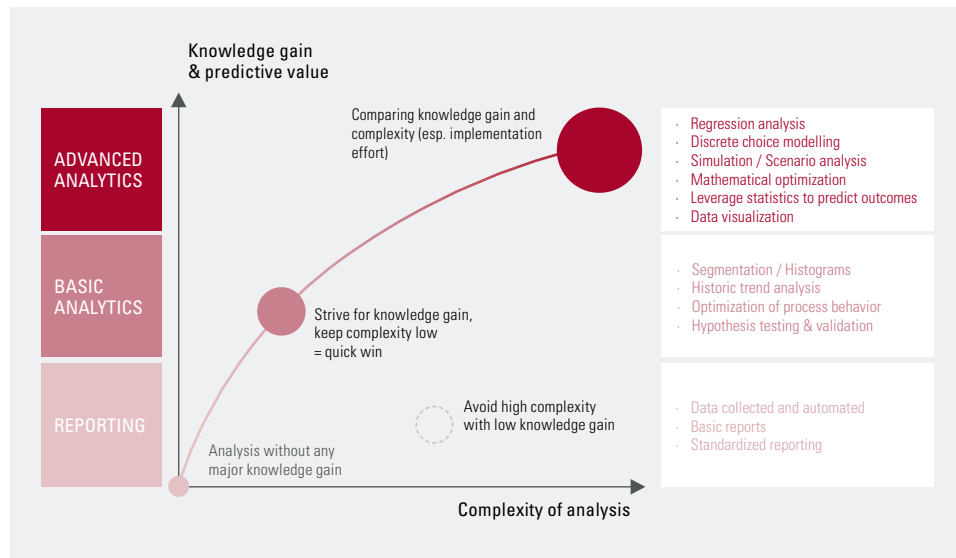
## 4. What matters is what insights you gain: Find the right level of complexity through pragmatic model selection

Large collections of data open up a broad and deep insight into the business environment. To accomplish this, a wide range of data sources have to be identified, linked up with each other and managed. Old IT structures can, however, stand in the way of new Big Data concepts, even to the extent of making it impossible to integrate individual sets of information. Often, data are processed stack-wise, which is why they cannot provide continuous information flows for decisions of the moment. Short-term Big Data needs can be covered by setting focuses. Also, analysis services, new kinds of software and computing capacity can be leased if required. Innovation is promoted by an infrastructure that facilitates collaboration and fast analyses.

It is rarely most effective to begin designing analytic models with the data. Instead, the actual opportunity should be identified and thoughts undertaken as to what insights the model can lead to, in order to improve the corporate decision or company performance. So relevant questions have to be asked, otherwise analyses lead to an endless discussion on the significance of data.

When then searching for a model that provides useful findings for decisions, it is always a question of balancing complexity and what can possibly be learned. For this reason, the first step should be to focus on simple models that provide the biggest possible benefit for improving decision-making behavior. The goal is to pursue an economic degree for the use of analytic tools that is applied on a broad base.

FIG. 5: CORRELATION  
BETWEEN KNOWLEDGE  
GAIN AND COMPLEXITY



The key to the success of Big Data lies in the holistic consideration of the data flows across all fields of activity and in reducing insular solutions. A successful integration of Big Data into the DNA of the company requires the full commitment of the company management. Change processes in the Big Data context do not begin in the data, but in co-operations across functional borders. Clever top managers will align their companies to that over the long term, and allow analytics to permeate the entire organization.

Essentially, three success factors emerge for anchoring analytics in a company and making it available as a set of tools:

1. Development and communication of a long-term and holistic strategy for integrating the internal and external data flows into the company's core business
2. Establishing an integrative approach to reducing insular solutions and generating a data base that is the same throughout the enterprise, reliable and consistent
3. Further developing the analytics-relevant areas from their status as a support function into a proactive sparring partner in all fields of the company-wide value chain

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### Die Autoren

Stefan Heppelmann, sheppelmann@sternstewart.com  
Dimitri Belobokov, dbelobokov@sternstewart.com  
Peter Sprongl, psprongl@sternstewart.com

Stern Stewart & Co.

### München

Salvatorplatz 4  
D-80333 München  
T +49.89.242071.0  
F +49.89.242071.11

### Dubai

Emirates Towers, L 41  
Sheikh Zayed Road  
PO Box 31303, Dubai  
United Arab Emirates  
T +971.4.319.9963  
F +971.4.319.9964

### Kopenhagen

Ryesgade 3A  
DK-2200 Kopenhagen N  
Denmark  
T +45 33 17 00 00

### London

2nd Floor,  
Berkeley Square House  
Berkeley Square  
London W1J 6BD  
United Kingdom  
T +44.20.7887.6265  
F +44.20.7887.6001

### New York

1330 Avenue of the Americas  
23rd Floor  
New York City NY 10019  
United States  
T +1.212.653.0636  
F +1.212.653.0635

### Shanghai

Office 1206, 12/F Shui On Plaza  
333 Huai Hai Zhong Road  
Lu Wan District  
Shanghai 200021  
P. R. China  
T +86.21.5116.0564  
F +86.21.5116.0555

I [www.sternstewart.com](http://www.sternstewart.com)  
E [info@sternstewart.com](mailto:info@sternstewart.com)