RESEARCH NOTE

Why the Integration of Planning and Analytics is Essential for Corporate Performance Management

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RESEARCH NOTE

Why the integration of planning and analytics matters

Markets today are complex, volatile and characterized by uncertainty. Due to these increasing dynamics as well as the growing time pressure to make fast and efficient decisions with foresight, holistic and integrated corporate planning and corporate management is the goal of many organizations. This not only affects individual sub-areas, but the entire company, from sales, production and logistics to resources, investments and finances.

Today's complex and volatile markets demand quick action to stay competitive

Comprehensive and integrated corporate planning and corporate management requires transparent, fast and forward-looking decisions at all levels – strategic, tactical and operational. It is essential to consider all factors influencing results as well as data from the past, current processes and the planned future. In an increasingly dynamic environment, it is vital for companies to quickly recognize changes and signals from the market to assess their impact and act effectively on the basis of sound information. Transparent and secure decisions within the required timeframe are crucial for the success of companies today.

Corporate management needs reliable information for sound decision-making at all levels

The integration of planning and analytics is a crucial success factor for the management of corporate performance and transparent, well-founded decisions. Companies that achieve the most benefits out of their planning solutions (best-in-class) have a different approach than laggards. Best-in-class companies pursue an holistic, integrated approach to planning and analytics because they are aware of the benefits that can be earned (see „Figure 1"). Integrated support has rightly been a stable trend in the market for years and many organizations are striving to

Planning and analytics must be tightly integrated to serve increasing information needs

improve their corporate planning and corporate management in a sustainable manner. This applies to all kinds of user types, company sizes, industries and global regions.

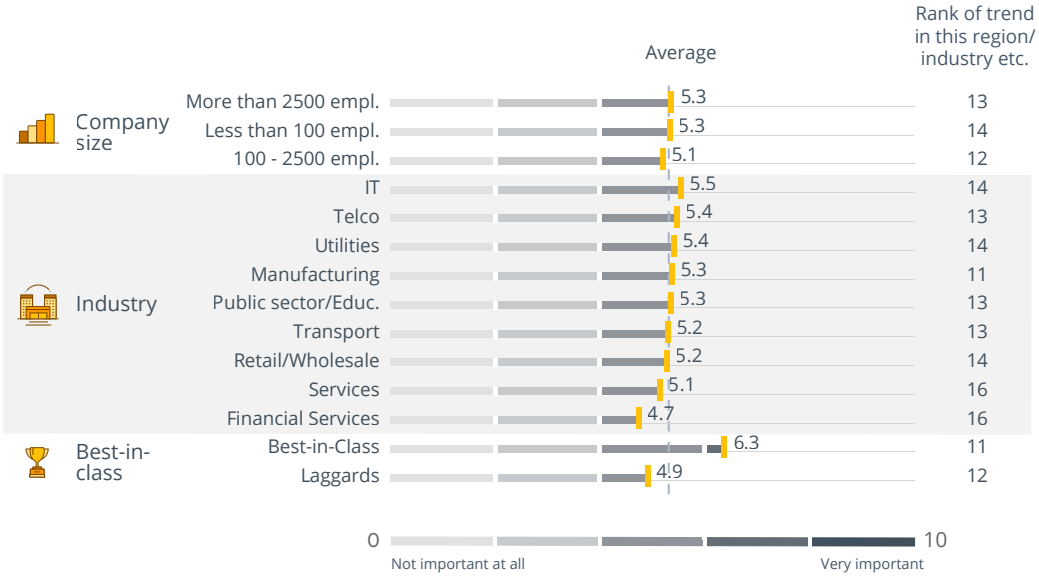

Figure 1: Importance of the trend "Integrated Platforms for BI and Performance Management" (Source: BARC "BI Trend Monitor 2020", n=2,865)

However, there are significant hurdles making the integration of planning and analytics difficult to achieve. These range from business consolidation to technical support and organizational implementation. In practice, reasons such as department-related information silos, inflexible software tools and process structures, functional differences and insufficient software support or a lack of management assertiveness sometimes present massive obstacles to merging planning and analytics.

Information silos, inflexible software tools and process structures are among the biggest obstacles to overcome for integrating planning and analytics

Investment in the integration of planning and analytics is worthwhile and generates many advantages as well as a good deal of benefit for organizations. Furthermore, the integration of planning and analytics is an essential prerequisite for using modern planning approaches such as predictive planning and forecasting. In particular, the use of predictive technologies based on artificial intelligence, statistical methods and machine learning in planning and forecasting is currently gaining massively in importance for many companies.

The integration of planning and analytics is essential for advanced and modern planning approaches

Integrating planning with analytics – no trivial task

Integration within planning and with analytics is not a trivial matter and must be executed carefully at various levels (see „Figure 2") in order to maximize its benefits. Only when all the four steps are addressed simultaneously can integrated corporate planning and corporate management contribute to high quality results and agility. Organizations should not underestimate the initial effort required to implement all four stages and

Four areas must be connected for seamlessly integrated planning and analytics

to maintain this integration in the long term. Integration within planning and with analytics means effort for companies in functional, technical and organizational terms. Only a parallel improvement of all three dimensions (functional, technical, and organizational) can lead to a high degree of maturity. The better the integration between planning and analytics, the more precise and meaningful the results are and the greater the benefits.

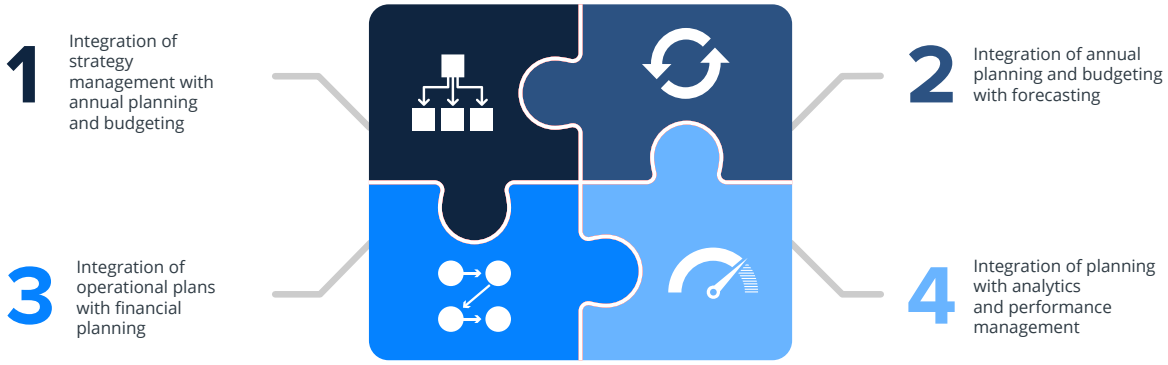

Figure 2: The four facets of tightly integrated corporate planning

Integration of strategy management with annual planning and budgeting

For medium to long-term strategies and corporate goals to be reflected in annual planning and budgeting, considerations, goals and assumptions from strategic planning must be incorporated into annual planning. This is the only way to ensure that a company's long-term goals are consistent with its medium and short-term objectives. Strategy management is a necessary basis for annual budgeting.

1) Integrate timeline: Derive short-term goals from strategic long-term plans

In many companies, planning is still mostly an annual process. Strategic planning with a medium to long-term planning horizon is not carried out in all organizations. However, thinking in annual slices is no longer state-of-the-art or simply sufficient to bolster a company's competitiveness. Medium to long-term strategic planning and strategy management must provide the framework for annual planning and budgeting to address strategic business objectives. Strategic planning typically refers to a period of several years and takes place at an abstract level for selected key figures. An integrated system of key figures consisting of performance indicators (for example, represented in a balanced scorecard) and their alignment with the goals of an enterprise is one of the core tasks of strategic planning and strategy management. For the purposes of integrated corporate planning and corporate management, it is important to connect

Strategic planning and strategy management provide the framework for annual planning to address strategic business objectives

these strategic key figures to the detailed data of annual planning to provide directions for tactical and operational control. A key effect of this is that companies move from a long-term to an integrated medium to short-term view.

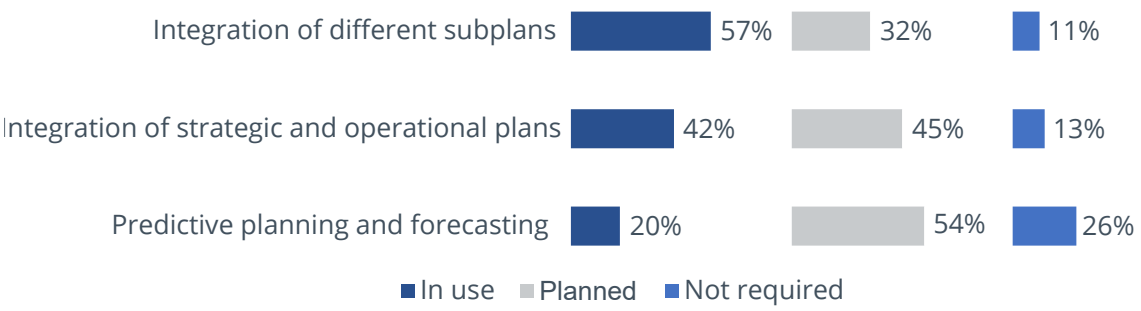

Figure 3: Current trends in planning and corporate performance management (Source: BARC "The Planning Survey 19", n=826)

Integration of annual planning and budgeting with forecasting

Planning and budgeting on an annual level as well as the continuous updating of these planning figures are standard in controlling today. In many organizations, planning processes still take too long and planning data may already be out of date once it is available to decision-makers. As a consequence, planning data must be updated during the year, often monthly, quarterly or increasingly ad hoc (forecasting). Especially in a dynamic and volatile environment, companies make forecasts or predictions at ever shorter intervals to ensure that management can steer based on the latest developments. However, neither for capacity reasons nor economically is it possible to carry out the same amount of work several times a year as is usual for classic budgeting. Consequently, it is necessary to make compromises and check exactly which planning steps need to be carried out and what level of detail is necessary to produce a forecast of acceptable quality. In this context, the use of predictive analytics and machine learning in planning and forecasting (predictive planning and forecasting) is currently gaining rapidly in importance (see „Figure 3").

2) Integrate versions: Connect annual planning to continuous updates and forecasts

The integration or interlinking of annual corporate planning with intra-year forecasting is essential for integrated and transparent management. Forecasts are made either in relation to the end of the year or on a rolling basis, whereby planning data is successively replaced by actual values and the planning values for open periods are adjusted in the light of new information and estimates. While forecasts and predictions are being made at ever shorter intervals in many companies today, modern approaches such as rolling forecasts have not yet become widely accepted (only 55 percent of companies already use rolling forecasts

Predictive analytics and machine learning to automate and streamline forecasting is rapidly gaining traction (predictive planning and forecasting)

today, and almost 30 percent plan to use them), although they offer many advantages over forecasting for specific periods. These include, for example, the fact that changed planning premises and parameters are not only considered until the end of the current fiscal year, but also well beyond that, which on the one hand increases the value of a forecast and on the other hand provides a good basis for the following annual planning.

Integration of operational plans and with financial planning

The core of integrated corporate planning is the technically and economically correct linking of all sub-plans (for example, sales with production and personnel up to the financial result). Since it is not enough to plan sub-areas in isolation, many companies strive to better integrate their planning overall. Only this integration can ensure that the planning model represents a suitable reflection of the company and its environment and is therefore suitable for reflecting the best possible alignment of this organization with its internal and external relationships. Many companies have recognized this fact beyond doubt and therefore build sub-plans logically on top of each other and integrate them consistently with each other (see „Figure 3“).

3) Integrate details: Connect all departmental sub-plans to financial results

To comprehensively present the financial view of a company, integrated sub-plans must be linked to profit planning. Profit planning (balance sheet, income statement, cash flow) is only meaningful if dependencies between the individual sub-plans are taken into account and consistent results from all sub-plans are included in profit planning. Manufacturing a given number of products requires human and material resources. In an integrated planning solution, the inputs required for production are reflected in their respective sub-plans, which in turn are directly linked to profitability. The effects of operational planning on the financial results of a company are only directly visible and conclusive when they are completely and automatically integrated. The sequence of detailed planning steps through to profit planning is largely determined by the enterprise's individual driver model.

Sub-plans are based on business drivers and linked to each other to calculate a comprehensive view on profitability

The implementation of a complete, systematically integrated deployment of all relevant sub-plans based on identical structures (unified master data), ideally in an integrated software tool, is one of the greatest challenges in integrated corporate planning for many organizations (only about 25 percent of the companies we surveyed have implemented all relevant sub-plans systematically based on each other with identical structures in the same software tool). In practice, cost or cost center as well as sales planning are often fully integrated into profit planning in companies, while topics such as personnel, investments, financing, production and procurement are less intensively integrated.

All planning in one system offers significant benefits – unified master data is key to connect all sub-plans

Integration of planning and forecasting with analytics and performance management

The integration of planning with analytics and other performance management processes is an essential prerequisite for holistic corporate planning and corporate management. Without automatically combining planning data with actuals in reports, analyses and dashboards to identify and understand deviations, the effect of measures taken cannot be tracked and planning is only an isolated process with little value add. Corporate management therefore requires a seamless integration of analytics and planning functionality in all business areas and at all levels of granularity to support steering processes. Only this integration allows comprehensive and at the same time efficient monitoring of goal attainment and is therefore the fourth central pillar of integrated corporate planning and corporate management.

4) Integrate processes: Link planning and forecasting to actuals-based performance management processes (e.g., analytics, reporting, consolidation)

The integration and close linking of planning with reporting, analysis and dashboards is essential and a prerequisite for efficient planning processes. Only in this way can planners benefit from a transparent view of the current situation and extensive analysis options, for example, for forecasts or the simulation of various scenarios. Today, reporting and analysis are already wired into corporate planning in most companies (integration exists in about 50 percent of companies) but often with room for improvement in terms of automation, latency and availability of detailed data for analysis.

Monitoring success and deviations to steer a company is only possible by integrating planning with reporting, analysis and dashboards

In contrast, the integration of planning with other performance management processes such as consolidation and risk management is less intensive in many companies. Nevertheless, these topics are also related, so that dependencies inevitably arise. Especially profit planning at group level (consolidated balance sheet, income statement, cash flow) requires consolidation of the plans of the individual companies and subgroups. Not least because of this, functionality for consolidation is often required in planning as well. Especially organizations that place a high value on the correct representation of group relationships often aim for an intensive integration of planning and consolidation with a focus on profit planning.

Profits at group level can only be determined by consolidating plans from all group entities

The growing need to make decisions based on reliable real-time data is a new focus in corporate planning and corporate management. In addition to historical information from reporting and analysis as well as future related plans, there is an increasing demand for up-to-date information on current process execution (for example from production processes or the supply chain). The ability to react quickly to current developments by monitoring process quality, time or costs is therefore becoming increasingly important, especially in operational scenarios. This creates new requirements for the integration of planning and

Comparing real-time data to targets set in planning and forecasting is increasingly being implemented by leading companies

analytics, especially where target values for relevant process key figures are to be monitored and analyzed in real time.

Leverage machine learning to take corporate planning to the next level

A major challenge in corporate planning is to generate meaningful and high-quality planning figures with the least possible effort and a fast throughput time. This applies to classic annual planning and budgeting, but increasingly also to short-term forecasting and forecasting processes. Many companies are therefore looking for support and relief. Predictive planning and forecasting using advanced analytics, statistical methods and machine learning is an important current trend in corporate planning. The use of predictive technologies based on machine learning is therefore a goal for many organizations to improve corporate planning. They aim to shift effort from human planners to the computer without losing, but rather gaining, accuracy (see „Figure 3“). This is especially true for organizations that have a high maturity in planning with integrated planning and analytics. Without the advanced integration of planning and analytics, automated predictions using machine learning or other algorithms are cumbersome and error-prone.

Short-term forecasts can often be automated by predictive technologies based on machine learning

Predictive planning and forecasting using advanced analytics is rapidly gaining relevance for many companies. Organizations expect to use predictive models to improve the results of planning as well as the planning processes themselves in order to achieve more meaningful results more quickly. Predictive planning and forecasting is intended to provide better technical support for existing processes, shorten them and reduce the workload of planners. The aim is to achieve greater automation of projections and forecasts. At the same time, the quality – accuracy and meaningfulness – of planning and forecasting is increased by analyzing and identifying cause-and-effect relationships (the drivers) and integrating them into the planning models. Planning thereby concentrates on essential, control-relevant drivers. A stronger focus and more automation make it possible to carry out planning and forecasting more quickly and to take uncertainty and dynamics into account with the help of simulations.

Use of predictive planning and forecasting using advanced analytics is increasing

The approaches and use cases for the use of predictive planning and forecasting in organizations are manifold. „Figure 4“ shows the main areas of application that users see in their companies. Many companies want to achieve greater efficiency and effectiveness primarily through default values for planners. With meaningful default values, planners can plan faster and more accurately based on uniform assumptions without losing control over „their“ planning figures. To calculate these default values, patterns and correlations in data are used to predict future

Increase efficiency and effectiveness by providing default values to planners and automating forecasts through predictive planning

trends and developments. High-quality forecasts and consistent plans need conclusive driver models to capture dependencies within the company. With advanced analytics, correlations can be identified that would remain concealed by classic analyses and the results can be incorporated in the driver models used.

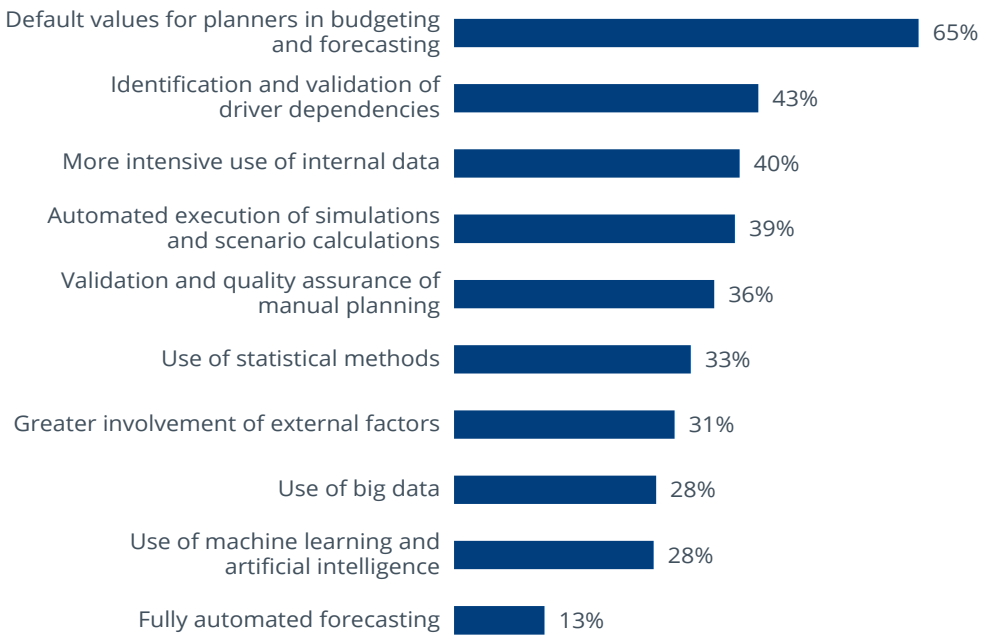

Figure 4: Key approaches to the use of predictive planning and forecasting (Source: BARC "Predictive planning and forecasting takes corporate planning to the next level", n=308)

However, there is no silver bullet for predictive planning and advanced analytics in and corporate management as there are significant challenges to overcome for successful implementation. Organizations must establish essential conditions, which primarily include the development of appropriate know-how and the provision of the necessary monetary and human resources. Furthermore, a lack of data quality and availability is a major challenge for valid forecasts. Only the right data of the right quality, with the necessary granularity and enough history, allow solid predictions of probable future developments. Precise forecasts require a sufficiently large and well-maintained data volume for training of algorithms. A deep understanding of cause-and-effect relationships as well as a high degree of integration and maturity of planning and analytics are essential prerequisites for this. Information gaps in historical data have to be closed and the possibility of unprecedented events has to be considered. Moreover, precise forecasts require perfectly chosen and continuously trained algorithms. Finally, business decision-makers have to trust in algorithms, which is especially challenging when using potentially intransparent or "black box" algorithms. If these prerequisites are met, predictive planning and advanced analytics can take corporate planning and corporate management to the next level.

Establishing predictive planning and forecasting requires commitment, resources and relevant data

Platforms – the ideal technological foundation for integrated planning and analytics

The functional and technical integration of planning and analytics in uniform, flexible software platforms is a decisive success factor for optimal support of holistic and integrated corporate planning and corporate management. Especially best-in-class companies in planning and analytics attach great importance to this integrated software support. For the best possible support, software platforms must have certain characteristics as well as technical and functional capabilities:

Uniform, flexible planning and analytics platforms build the foundation for successful, state-of-the-art performance management

Central database and data processing in a consistent data model

The central and solid basis of integrated software platforms for planning and analytics must be integrated, scalable data storage for both actual and planned figures, represented in a consistent data model. In this way, time and maintenance-intensive data transfer processes between software systems and area-specific data silos can be avoided. Centrally managed and harmonized master and transaction data provide a uniform and common data basis for planning and analytics as well as other performance management processes ("single point of truth"). High-performance options for data processing and evaluation (e.g., in-memory) are a decisive success factor in enabling rapid ad hoc analyses and creating acceptance among users due to increasing dynamics and time pressure.

Actual and planning data must be stored in a common, highly performant and scalable database

Based on a central, integrated data store, a consistent data model has to be developed that supports the driver-based modeling of company-wide and department-specific data views, supplemented by flexible time horizons for short-term operational, medium-term tactical and long-term strategic considerations. This data model can then be filled with data from (operational) source systems via defined data integration processes (ETL). The option to connect additional source systems as new data sources or expanding data models must be part of the standard scope of a software platform if it is to be a single point of truth for planning and analytics.

Integration in all four areas must be reflected in the data models

Integrated planning and analytics functionality with a high degree of business user-friendliness

For comprehensive support of integrated corporate planning and corporate management, both analytics functionality and comprehensive planning and forecasting functions must be available in an integrated software platform. Key functions that should be user-friendly, programming-free, web-based and cloud-ready include:

Core features of uniform planning and analytics platforms

- ☑ Standard analytics functionality (e.g., periodic standard reporting, short-term ad hoc analyses or individual dashboards).

- ☑ Advanced analytics functionality (e.g., predictive planning and forecasting or support for big data).
- ☑ Comprehensive functions for top-down and bottom-up planning, for centralized and decentralized planning approaches, and for operational and financial planning processes.
- ☑ Functionality for the simulation and analysis of scenarios as well as the flexible creation of (automated, rolling) forecasts and predictive driver models.
- ☑ Possibilities for tabular and graphical communication of results (e.g., data storytelling) and process-supported collaboration (e.g., via workflows).
- ☑ Possibilities for regulating data access and usable software functions (security and governance).

Uniform planning and analytics platforms support a huge variety of use cases in performance management

The overarching goal for appropriate software support must be, in addition to efficient and effective coverage of existing business requirements, broad, integrated and flexible support for a wide range of usage scenarios (platform), instead of creating problem-specific individual solutions (silos). Device-independent access to the solution (for example, via web, mobile or Microsoft Office) ensures the flexibility of users to work with the tool and thus contributes to its acceptance.

Increased usability for self-service through new interfaces and enhanced user guidance

Since many business departments are striving for increased flexibility in handling data and independence from central IT (self-service), software platforms must allow for simple, business-user-friendly operation (for example, control via natural language queries) without a great deal of training effort in order to achieve quick results and address individual requirements.

Advantages of integrated software platforms for planning and analytics

Heterogeneous source systems and silos are major obstacles to integrated planning

The reality in many companies is that the integration of planning and analytics is often demanded, but by no means always achieved. Possible reasons for this could be internal company policy, difficulties in integrating historically grown system landscapes or the limited number of integrated solutions available on the software market.

User satisfaction is higher and costs are lower when using planning and analytics platforms

However, the advantages of integrated software platforms for planning and analytics are clear. For example, higher levels of user satisfaction are achieved when planning and analytics are integrated (see BARC study "The Planning Survey"). Furthermore, susceptibility to errors is lower and data consistency is higher. The entire solution is easier to maintain, administer and train when planning and analytics are performed on a uniform basis. In addition, higher quality results for planning and analytics, increased decision transparency, more precise planning and

control options, and shorter planning and decision cycles are achieved.

When selecting suitable software platforms, companies should – like best-in-class companies – pay close attention to the integration of planning and analytics to avoid significant problems. These challenges include in particular:

Common pitfalls when selecting planning and analytics software

- ☑ A lack of speed, due to the latency between data generation and data evaluation in different software systems, as these have to be integrated first.
- ☑ Lower flexibility to adapt to new requirements when changing multiple connected systems compared to altering a single integrated suite.
- ☑ Data quality problems and inconsistencies due to multiple, redundant data storage in different environments.
- ☑ Additional effort for necessary data transfer processes between solutions and environments.
- ☑ Different user interfaces and user experience for planning and analytics.
- ☑ Higher maintenance, hardware and licensing costs for operating different software systems.

Summary and recommendations

Modern, holistic and integrated corporate planning and corporate management requires the integration of planning and analytics. Integration increases the speed, transparency and quality of results for decision-making. Uniform software platforms should form the basis of functional and technical integration, which is a decisive factor for sustainable success. Companies benefit from the integration of planning and analytics, since the ability to react quickly, transparently and therefore efficiently is an essential prerequisite for modern management support.

Integrate planning and analytics for higher speed, transparency and quality of results

Predictive technologies are currently driving the market for planning and analytics. Faster simulations, more accurate forecasts and increased automation of corporate planning and corporate management are supported by the use of statistical methods and machine learning. The progress and maturity of the technology makes predictive planning and advanced analytics affordable and relevant for more and more companies. The backbone for the use of statistical methods and machine learning in planning is integrated corporate planning and corporate management, which ensures not only the integration of strategic, tactical and operational plans, but also the integration of all sub-plans with each other and with profit planning, as well as the integration of planning and analytics.

Use predictive analytics to enable more accurate, efficient and quicker forecasts

Best-in-class companies in planning and analytics invest massively in the integration of these two areas. The resulting benefits are obvious and should convince any organization to take the necessary steps to achieve them as well. Companies should look for support from market-proven and leading technologies. This not only secures investments, but usually ensures that technological consulting know-how is widely available. Flexible software platforms are very well suited to ensure the best possible support for the individual business requirements of organizations and to be open for future requirements. This is especially important if companies only want to start with a part of the overall task in a first step.

Invest in integrating all your sub-plans with financial results

BARC makes the following concrete recommendations:

- The degree of maturity of integration within corporate planning can still be enhanced in many organizations. Improve all four aspects in parallel to increase the quality of your plans sustainably (see „Figure 2“). The use of integrated software platforms is a decisive factor for success.
- Use advanced analytics, statistical methods and machine learning for your corporate planning and corporate management to reduce planning effort, derive forecasts and identify drivers. Advanced integration of planning with analytics is a basic prerequisite for this.
- When making your software decision, make sure you have comprehensive support to address all your requirements. Flexible and business-user-friendly software platforms with a wide range of functions promise high user acceptance and agility for the most diverse application scenarios.

Taking these recommendations and the points highlighted in this research note into account, there is nothing standing in the way of successfully integrating planning as well as analytics with planning. The overall goal must be to optimally support and integrate corporate planning and corporate management in order to become a best-in-class company in planning and analytics.

Enhance support for corporate management by becoming a leader in planning and analytics

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