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PwC Predictive Excellence Study

Data-driven forecasting methods sustain company value

2020, December

pwc

JUSTUS-LIEBIG-UNIVERSITÄT GIESSEN

A recent PwC Study conducted in partnership with academic experts shows that poor financial forecasting has a substantial negative impact on company value

The volatility of the market conditions demands thorough prediction models to evaluate future company value and reduce risks for shareholders and the wider stakeholder community.

But, dynamic market conditions make it difficult to accurately predict business performance; failing to do so causes dramatic market reactions that decrease company value.

However, stock market data from the last two decades show that downgraded expectations of business results led to an unpredictable loss in company value of € 158 m. We analyzed 8,000 ad-hoc notifications of this period and found that losses in company value even increased to an average of € 228 m when forecast quality and uncertainty are poorly managed.

Data-driven forecasts address associated uncertainty before warnings are issued.

Fact-based forecasting protects company value and strengthens investor confidence by applying best-in-class methods used in machine learning and artificial intelligence. Leading companies make good use of data and new technologies to drive their forecast. This establishes early warning indicators, improves forecast accuracy, and enables pro-active scenario-based company steering.

> “*Learning and innovation go hand in hand. The arrogance of success is to think that what you did yesterday will be sufficient for tomorrow.*

Content

About this analysis

Data

- Stock data and ad-hoc notifications from 3.1.2000 to 31.12.2018 derived on 27.5.2019 for all shares contained in the respective indices and for indices themselves (DAX, MDAX, SDAX,FTSE 100, CAC40 und S&P 500) with at least one notification during the period considered
- Database: Capital IQ
- 7,743 ad hoc notifications

Method

- Natural Language Processing (NLP) and machine learning regression techniques
- Latent Dirichlet Allocation (LDA) topic model & multivariate regression model of abnormal returns
- 10 top topic clusters were identified

“

A leading producer of semiconductors provided revised revenue guidance for the third quarter ended September 30, 2010.

Revenue to be $11.0 bn, plus or minus $200 mill, compared to the previous expectation of between $11.2 and $12.0 bn.

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PwC study quantifying the impact of inadequate forecasting

Data-driven forecasting enables businesses to capture and sustain value, however, only a reduced percentage of publicly-listed companies adopt comprehensive approaches.

Previous research shows clearly that profit warnings have significant impact on share price. However, the root causes of this impact, as well its' quantification have not yet been subject to exploratory studies.

We worked with academic experts from the Justus-Liebig-University in Giessen, Germany, and applied machine learning algorithms to identify the specific language and topics that generate this effect.

As such, we analyzed stock market data since January 2000 and investigated thousands of ad-hoc notification. Using Natural Language Processing (NLP), we were able to identify specific notifications clusters in these communications.

We found that profit warnings featuring keywords related to revising forecasts or lower-than-expected revenue had a particularly significant impact on share price. In fact, €228 m of company value is destroyed, on average, if uncertainty is poorly managed in financial forecasting and capital market communications. Negatively corrected expectations of business results – based on adjusted forecasts – lead to an average loss in company value of €158 m.

19

years of stock market data analyzed

7,743

ad-hoc notifications investigated

A word cloud diagram showing the keywords from profit warnings that were shown to have a negative impact on share price.

Data-driven forecasting enables businesses to capture and sustain value, however, only a reduced percentage of publicly-listed companies adopt comprehensive approaches.

Leading companies make good use of data and new technologies to drive their forecast.

Data-driven, Artificial Intelligence (AI)-based forecasting technologies offer companies a powerful solution to this challenge. By significantly improving accuracy in comparison with the manual forecasting approaches, these advanced tools are able to cut unexpected deviations and reduce the need for ad-hoc profit warnings. They also improve decision-making by identifying true value drivers and leading indicators which eliminate the natural bias involved in manual planning and forecasting processes.

In this way, they enable forward-looking businesses to increase investor confidence, protect their company value and adopt a fact-based approach to business steering using detailed scenario analysis – which gives companies a valuable competitive advantage, even in uncertain times.

92%

of CEOs consider financial forecasts as critical, but only

41%

of CEOs belive the data they have at hand is comprehensive.[1]

[1] Quelle: 23. PwC Global CEO Survey.

Companies that adopt data-driven approaches to forecasting can expect to reap a wide range of benefits.

Best in class tools for business forecasting and planning take advantage of artificial intelligence and machine learning to improve accuracy in comparison with manual forecasting processes. And that's not the only advantage.

Supporting fact-based decision-making in a volatile economic environment via scenario analysis along with rolling forecasts to enable businesses to re-evaluate past decisions effectively.

Replacing manual forecasting processes, which increases efficiency and frees up employees' time so they can focus on adding value as true business partners.

Strengthening investor confidence by significantly reducing the need for ad-hoc communications about adjusted business performance.

By using early warning indicators, companies can actively steer their business and anticipate changing conditions much faster.

An objective approach replacing inevitably biased manual processes, gut-feeling and internal and external political influences.

Innovative forecasting tools making sense of huge volume of data and can process it efficiently to arrive at accurate forecasts than manual approaches.

> *Ad-hoc notifications about business performance can lead to dramatic losses in company value and weaken confidence in the capital markets.*
>
> *Roland Werner, Finance Transformation Leader at PwC Germany*

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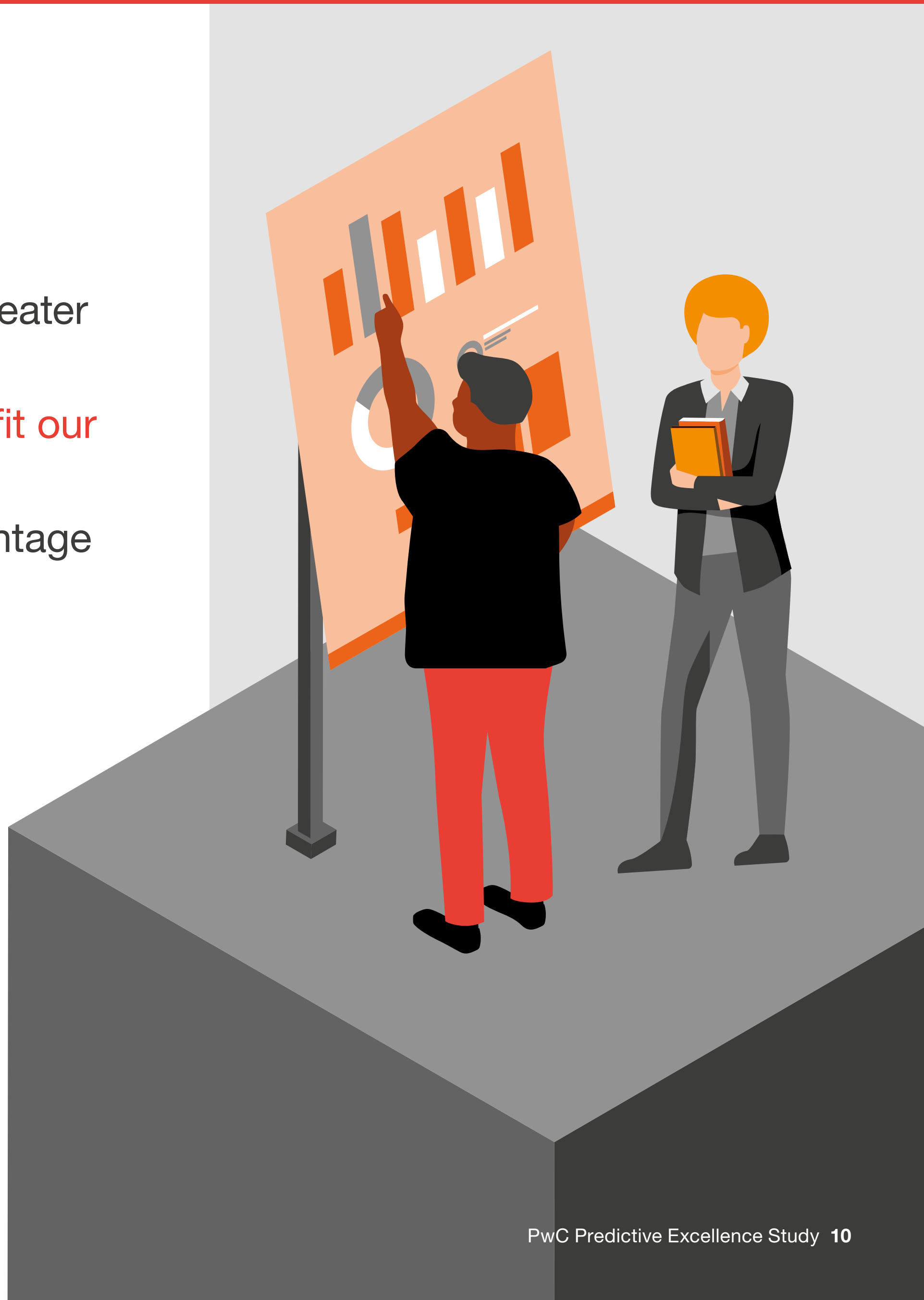
Switching to data-driven forecasting

More than often, we find companies stumbling on their way towards data-driven forecasting and puzzled with answering introductory questions:

- What data do we need to access in order to forecast with greater accuracy?
- How can we identify and select machine-learning tools that fit our company's specific needs?
- What skills do our employees need in order to take full advantage of these tools?
- How should we adjust our current planning, forecasting, and reporting processes and activities to leverage data-driven approaches?
- Why and how should we include explainable AI approaches?
- How do we ensure trust in our data-driven, AI-based solutions?



Join us in taking these five steps towards the adoption of data-driven forecasting.

A significant number of companies across industries have already taken the first steps towards adopting modern, digital forecasting tools. Here is how you can do this too:

These are the first 5 steps on your journey to data-driven forecasting:

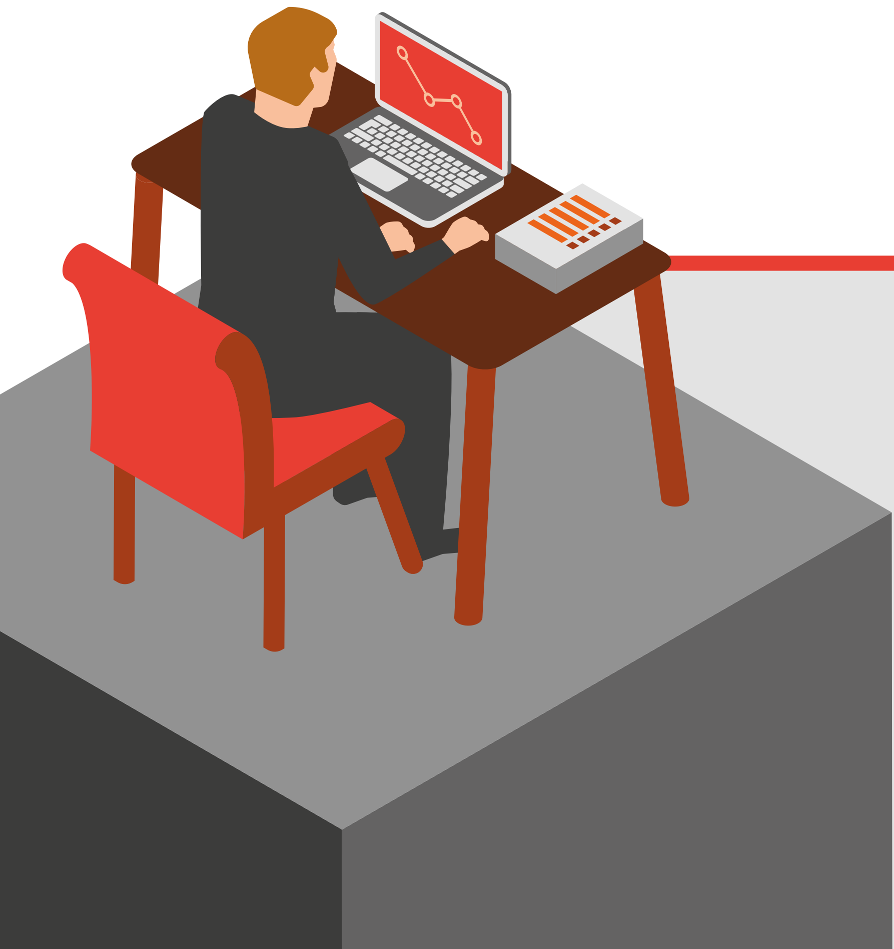
1. **Launching** an initial pilot project to explore the potential for advanced tools to improve the quality and accuracy of your forecasts.
2. **Discussing** the results of the explorative pilot phase with business specialists from across disciplines.
3. **Investing** in training and upskilling of your team to prepare them for change and get full value from data-driven forecasting.
4. **Aligning** your activities with colleagues from your company's Data Science team to ensure access to all internal data and generate maximum efficiency benefits.
5. **Identifying** ways to leverage actionable information from forecasting processes that can enable finance employees and act as true business partners using cutting-edge data-based analysis.

> *"Data-driven tools make an important contribution to improving forecast quality and process efficiency. This enables companies to avoid ad-hoc profit warnings and protect their corporate value.*
>
> *Dr Frauke Schleer-van Gellecom, Finance Transformation – Predictive Excellence at PwC Germany*

Predictive Excellence – A digital future for forecasting (1/2)

We use data-driven tools – the PwC Forecast Engine – to make your forecasting processes more efficient and increase accuracy compared to manual processes – which prevents ad-hoc profit warnings and protects company value.

As pioneers in the digitization of the Finance function, we are a trusted partner for businesses as they seek answers to key strategic questions.



Time Consumption

40%

On average, controllers spend approximately 40 percent of their time related to forecasting.

Savings

€70–85M.

Introducing a data-driven forecasting tool would generate a net benefit of €70–85 million aggregated across five years for the average stock market-listed company in Germany.

Predictive Excellence – A digital future for forecasting (2/2)

We would be delighted to discuss how your company can benefit from Predictive Excellence. Our deep expertise and substantial experience of projects in this field put us in a unique position to support you clients in making the switch to modern forecasting methods.

Tangible results for our clients company:

- # of clients: >20 (DAX 30 & medium-sized companies)
- Better than manual forecast
- 97–99% forecast accuracy
- Leading business drivers identified

Take your first step today:

- http://pwc.de/profit-warnings
- https://www.pwc.de/de/im-fokus/finance-transformation/future-of-steering.html
- https://www.pwc.de/de/im-fokus/finance-transformation/interview-zu-fruehwarnsystemen.html
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