

Opinion paper

MEGATREND
TECHNOLOGY

*Business Booster Data Analytics
Seven Theses – August 2015*



Business Booster Data Analytics

Seven Theses

Data is today's hot topic. People talk about it over lunch, you read about it in lifestyle journals, it is in the news. Start-ups promise huge benefits from new and innovative ways to process and analyse data. Established companies are under tremendous pressure to become more efficient and more effective to protect their business. Analytics is at the core of this change.

In this paper, PwC Switzerland presents 7 theses which highlight key topics and show senior decision-makers what needs to be considered to benefit from this important trend.



THESIS 7

Finding people with data-analytics skills will continue to be a significant challenge

THESIS 1

Companies that consistently use analytics to inform decision-making will beat their competitors



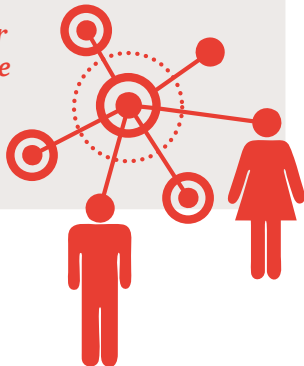
THESIS 2

About 50% of today's service jobs will be taken over by computers



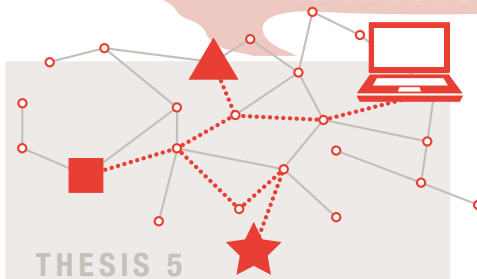
THESIS 6

Although technology is allowing centralisation of data, processing will further decentralise



THESIS 5

Data ecosystems will rapidly grow in importance



THESIS 4

While big data posits 'the more the better', effective management is based on reliability of controls and sound analysis



THESIS 3

Providing trustworthy data is a necessity and will become increasingly important in dealing with regulators or third parties



Companies that consistently use analytics to inform decision-making will beat their competitors

The pervasiveness of computing power and the availability of mathematical toolkits and simulation software offer great potential. They provide us with substantial benefits when using mathematical approaches for problem solving and forecasting. While we rely with relative ease on models in our private decision making, in business this potential is left largely untapped.

For example, take the weather forecast: you're planning a trip to destination X? Just enter the destination and 'weather' into Google search. While we know that the forecast is not perfect, we rely on it in our planning and decision making because we are far better off using it than not.

The ability to synthesise massive amounts of data into actionable advice doesn't stop with meteorology. Today, we have the capability to create relevant analyses to support all business decisions. To do so, we need people with deep business and market insights, experienced modellers and the appropriate tools.

For example, look at some results PwC has achieved for its clients:

- Subsequent to a take-over of a large competitor, we showed an airline how to optimise the joint customer experience, resulting in a market share increase of 3%.
- Fine-tuning the process parametrisation for a chemical company to improve quality close to perfection.
- Saving 500 million USD in working capital for a retail-chain by improving store replenishment.

OUR CONCLUSION

Applying an analytics-driven approach will become common, as its results beat those who use 'gut feel' or 'follow the herd'. It'll become like using weather forecasts – those who don't use them will get wet.



2

About 50% of today's service jobs will be taken over by computers

Contrast today's highly automated factories with bustling shop floors a century ago. There has been a revolution in industrial production, and we are now beginning to experience a similar revolution in services. Expect jobs like travel agents, telephone receptionists or call centre workers to be replaced by artificial assistants soon.

News stories on topics such as sport, corporate earnings or the weather report are increasingly being written by algorithms. More and more complex tasks can be taken over by computers. Robo-advisors are revolutionising the wealth management industry. Investment and portfolio management decisions are being made by emotionless algorithms that execute defined strategies or react to news and changes in the global financial markets.

'Watson', the IBM supercomputer that in 2011 famously beat all human contenders to win a 1 million USD jackpot in the TV trivia quiz show, 'Jeopardy', demonstrated to the general public just how smart an artificial brain can be.

Since its victory, Watson has begun far more serious work in cancer medicine. The machine has digested reams of textbooks, journals and research papers, just as it prepared for the game show, to become a thinking encyclopaedia. The result is a medical school professor on steroids, one that never sleeps and can be cloned to work in multiple places.

Watson can't wear scrubs and perform operations yet. What it can do is provide decision-support to doctors and nurses based on its massive knowledge. This saves time, money and, perhaps most importantly, avoids pursuing sub-optimal treatments.

The workspace will be changed significantly by the proliferation of artificial helpers. These will primarily take over tasks which are relatively well-structured and relate to a defined body of knowledge.

OUR CONCLUSION

We expect that companies will concentrate work back into countries with a better educated skill-base which will increase its productivity by integrating artificial helpers in the workflow.



Providing trustworthy data is a necessity and will become increasingly important in dealing with regulators or third parties

Reporting just any data won't do, especially not when it comes to being in accordance with regulations or financial reporting standards. Operating in markets like financial services, health, and telecoms implies compliance with many regulations. These regulations require data of high accuracy, quality and transparency (e.g. BCBS239, Solvency II, IFRS, BEPS/CbCR). Trusted data is also required when it comes to investigations, such as those launched by the US tax authorities.

However, in most enterprises, system integration has not yet advanced enough to support these requirements: business segments or entities often have their own system landscapes and their own data languages and are not compatible with each other. Take for example an insurance company, where consistency in underwriting, reserving, and pricing plays a key role. An inadequate data foundation to support these processes can have a substantial impact on financial performance and even reputation.

Whilst in the past years the main focus has been on the methodology used to compute the corresponding reports, data integration has

lagged behind. Typical issues that we observe in the market are:

- There is no common data language amongst teams and systems. Many assumptions have to be made to make the data sources compatible and non-trivial conversions are necessary to aggregate items of different granularity.
- Some of the data is not available at central data sources, but only in end-user applications such as Excel files.
- Assumptions made by data experts and decisions taken by decentralised teams (e.g. on specific parameters) are often kept separately from the data. However, precisely this information is key to understanding data content and quality, especially in areas where expert judgement is crucial.

In order to reach a level of trusted data, these problems have to be addressed with smart technology, by forming a common data language and establishing systems and business processes to enable a smooth communication of data across the organisation.

OUR CONCLUSION

The focus of regulators and other third parties will shift from pure reporting methodology to the full transparency of the data integration process. Robust data integration often takes several years to complete, and companies will have to start investing soon in order to be able to trust their data and comply with these requirements.



While big data posits the more the better, effective management is based on reliability of controls and sound analysis

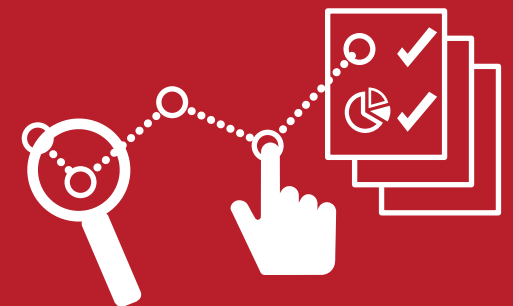
The catchy name 'big data' points to a fundamental change of recent years. Data is available in unprecedented volumes. In a big data environment, the focus is on velocity, variety and volume – people feel the need to analyse any new data, in whatever format, in a very short time frame, to get new insights that might benefit their company. However, big data does not necessarily focus on quality, completeness, accuracy, and transaction security.

At the same time, companies like Google or Microsoft have made tools for the end-user available which can be used without much prior statistical knowledge. Unfortunately, the process of identifying the right approach has not been simplified. Spurious correlations are a well-known problem: correlation does not equal causation. Making false assumptions about a method, thus selecting the wrong approach or using it improperly, surely leads to suboptimal results. And there is another problem that arises when dealing long enough with large volumes of data: something of interest, but not necessarily of value, will almost always be found.

Easy-to-use solutions make it easy to avoid the more tedious approach of carefully analysing the problem and identifying the best-suited analytical tool. Especially dynamic problems that play out over time cannot be reliably understood with standard approaches. The behaviour of complex social systems is driven by a few key causal dependencies. Identifying and understanding these is much more valuable than generating results through ill-informed searches of huge parameter spheres. This is worsened by the current trend of concentrating data into 'data lakes', which can exacerbate quality problems and inconsistent definitions.

OUR CONCLUSION

Going forward, we expect negative surprises caused by inadequate analysis. Senior management must understand how the analysis supporting big decisions has been made and if tools and analytic techniques have been chosen properly. In addition senior management should – when it comes to big decisions – question the quality, accuracy, transparency and completeness of the underlying data. Big decisions they make rely on these.



Data ecosystems will grow rapidly in importance

Consumers are leaving tracks of transactions with their smart phone, credit cards, or when they use the internet. Companies are combining these traces to generate a picture of a consumer. The marketer's dream is to tailor offerings at the micro-level: on a hot evening, to offer a passing customer on his way home a personalized version of the cold drink that he or she prefers: at just the right time, place – and price.

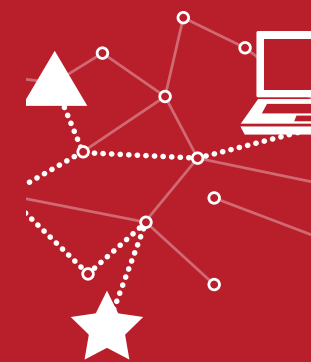
Making this dream a reality involves manipulation of big data and requires considerable cooperation. No single player has all the necessary data. Sharing is essential.

Companies need to assess the role they want to play in a data ecosystem. As a user, a company takes in external data like geo-localisation or social media activity to augment its customer understanding and to improve customer support/service. As a provider of data to an ecosystem, telecom companies or credit card companies, for example, make their data available to third parties. Many companies are currently in the process of evaluating the position they should take and the prices they should charge or pay for data.

Monetising data is a skill where Google excels and others still have to learn. Adding complexity to this process is the evolving legal environment. For instance, should a telecom company be allowed to sell its anonymised customer data to a third party? In Switzerland, the discussion is ongoing.

OUR CONCLUSION

Substantial gains can be achieved by enriching internal data with external sources – for instance, understanding what your customers do when they are not interacting with your company. Understanding other players in your ecosystem, and how



you position yourself in the value chain, are becoming important strategic tasks for management. Companies need

to develop an understanding of the value-flows in their digital ecosystems to position themselves in an attractive manner.

Although technology is allowing centralisation of data, processing will further decentralise

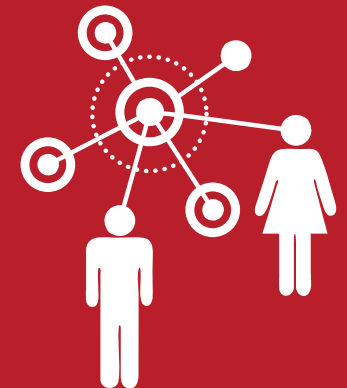
Companies today are introducing solutions to make data centrally available. So called 'data lakes' combine the content of corporate data warehouses; many supply data to only a subset of users. However, data analytics and processing are often decentralised within departments and lines of business. This has two reasons:

- New technologies support late-binding that shifts the data modelling task from central data warehousing teams and database administrators, who are often remote from data sources and overburdened with change requests, to localised teams of business analysts and data scientists. They can create their own flexible views from their domain-specific context. For those accustomed to traditional data warehouses, this shift opens up a whole new world.
- Local know-how within the departments, lines of business or entities is deeper, much more granular and more specific than at the centre.

A threat and a huge opportunity follow from this development: the threat is that with all data in one place and access rights for many users across the organisation, employees gain insights that might violate the 'need to know' principle. Sensitive data might be leaked. The opportunity is that users can access data in a transparent, seamless way to conduct their own analyses. This is a significant increase in the analytical capabilities of the whole organisation, laying the foundation for innovation and insight.

OUR CONCLUSION

Senior management are challenged with the task of installing in their organisations a mind-set that actively explores new capabilities offered by technology. Our experience shows again and again that not technology but culture is the limiting factor. Once a company embraces this approach which enables and accelerates innovation and insights, management's task is to consider how results can be integrated across the organisation in a coherent manner.



Finding people with data-analytics skills will continue to be a significant challenge

Companies need data skills to stay ahead of the competition. This calls for investment in analytics capabilities. Technology alone does not win the day, smart people make the difference. The war for talent has already begun. It is especially intense in Switzerland, with its big banks, big insurers and big pharma companies all vying for the best people in analytics and modelling. In addition there is a growing fintech industry, plus development centres from large software companies such as Google and IBM, who are actively hiring.

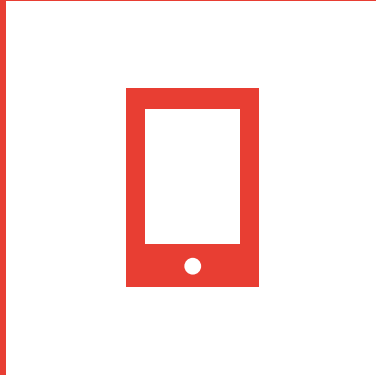
Data analytics is a very broad topic. Even the most talented individual cannot cover the full knowledge and skills needed, which makes it even more difficult for companies already struggling to attract the right people as they need to build teams with matching skills.

Another, more subtle twist is that local teams have the tendency to develop solutions which satisfy their immediate needs. Given the speed with which the field advances, chances are that even very good solutions will fall behind the curve and regular reviews are required. Central teams of specialists are better at keeping their skills up to-date with the market. A model with a central analytics hub and spokes with power-users in the business units delivers the best results for large organisations. In addition, processes need to be put in place to monitor the performance of implemented solutions. Sharing of insights and best practice is the foundation to support a learning organisation.

OUR CONCLUSION

Currently, management does underestimate the importance of analytics capabilities and the time it takes to develop and implement them effectively in the organisation. Attention should be focused on how to improve the overall analytical capabilities of the organisation and how to involve the most capable resources when creating solutions.





WHAT THIS MEANS FOR BUSINESS

Advanced analytics will bring unprecedented change to businesses. Management needs to embrace change to reap benefits. Companies as a whole need to get better at identifying opportunities which make the tremendous potential analytics offer come to life.

To discuss these topics further, please contact us.

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