Data is the lifeblood for intelligent companies today. Organizations are leveraging data to make smarter, faster decisions, and drive greater business outcomes. The benefits from data are obvious: competitive advantage, reduced costs, new services, new revenue streams, and enhanced customer experience, to name just a few.

Companies are rushing to take advantage of data and maturing new technologies that move, mine, and consume increasingly diverse data from an ever-larger array of sources. AI, machine learning, and advanced algorithms are enabling organizations to unlock tremendous value from data and drive outcomes sooner, with greater impact than anyone ever imagined possible.
DATA, DATA EVERYWHERE

2.5 QUINTILLION bytes of data created each day*

40%
rate at which data is growing

90%
of all data in the world created in the last 2 years

DATA EXPLOSION TO GET BIGGER...

50 billion by 2020 connected devices and sensors expected

BUSINESS IS GETTING MORE DATA-DRIVEN THAN EVER

82%
Executives say their organizations are increasingly using data to drive critical and automated decision making, at an unprecedented scale.

89%
Companies believe big data will revolutionize business operations in the same way the Internet did.

79%
Companies that do not embrace big data will lose their competitive position and may even face extinction.


Companies at the forefront of these data and analytics trends are using their capabilities to tackle business problems with a whole new mindset—keeping the customer at the heart of it all. They are increasingly moving to more data-centric and customer-centric businesses. Think digital giants Amazon, Google, and Netflix. They have for long used data for personalization to improve engagement in experiences and drive growth. It’s no surprise that these companies have relatively high customer satisfaction scores.

**DELIGHTING THE CUSTOMER**

Just how well Netflix uses data for personalization can be gauged from the fact that more than 80 percent of the TV shows people watch on Netflix are discovered through the platform’s recommendation system.¹

It’s not just tech companies that are leveraging data. Across industries, companies are using data to enhance the customer experience and explore new business models, new revenue streams, new markets, and new ways to grow.
HOW DATA IS TRANSFORMING BUSINESSES

HEALTHCARE

TRAVEL AND TOURISM

HIGH TECH

FINANCIAL SERVICES

RESOURCES
Personalized medicine—tailored care and treatment based on the health data of individual patients—is expected to give more effective outcomes. Doctors can use data science to come up with a regimen that suits the patient’s genetic constitution instead of treating a patient with a drug that, for instance, works 80 percent of the time.

Data science is seen as a potential solution to fuel drug discovery, which at present is a painfully long, and costly process with a high degree of uncertainty—as many as 90 percent of drug candidates fail to make it to the market. Data science is already playing a key role in the drug discovery process. For instance, Amgen, a biotechnology company, uses advanced analytics to flag potential failures or dangerous drug interactions and prioritizes the ones with higher success rates.

Companies are using the long trail of data they have including reservations, enquiries and additional services purchased to create personalized offerings and boost growth. A case in point—smaller travel companies are leveraging data to target niche segments of customers (for example, solo travelers on a budget) instead of competing for all types of customers.

Another trend is dynamic pricing, which is increasingly adopted by airlines and hotels. Based on advanced predictive analytics tools, this allows airlines to propose unique fare structures for each market and each departure day. Similarly, hotels can adjust their pricing by decreasing mid-week rates, while increasing rates on weekends and holidays.
The data explosion, combined with the move from hardware to platform-based ecosystems the industry is going through, has led to As-a-Service business models. Subscription selling (users subscribe for access to access to a product or service) is one such model. Device-As-a-Service (DaaS) is another model, which is helping users mitigate the cost of managing a fleet of devices. They can procure a hardware product (mobile, laptop, desktop, or tablet) along with services and software that are maintained and managed by a single service provider on a subscription-based contract. This model does not impact the capital expenditure as it is managed more as an administrative and operational expense.

Algorithmic trading has become synonymous with big data. It uses vast historical data with complex mathematical models to maximize portfolio returns. That apart, the industry has widely adopted big data analytics to inform better investment decisions.

Big data and analytics are also playing a key role in improving fraud detection and strengthening risk management. For instance, Alibaba’s fraud risk monitoring and management system captures fraud signals directly from the huge amount of user behavior data and network, analyzes them in real-time using machine learning, and accurately predicts suspicious users and transactions.\(^3\)

Energy companies are using predictive analytics for improved maintenance. Companies can now analyze and predict outcomes that can turn out to be very expensive—such as plant interruptions or maintenance issues. For example, working with Accenture, oil and gas major Woodside is implementing predictive analytics for maintenance and process control in production operations across its liquefied natural gas (LNG) assets.\(^4\) This is expected to help the company bring operational costs down and maintain production.
SUCCESS FACTORS FOR DATA INITIATIVES

While companies realize data’s disruptive power and are investing in data-driven initiatives, not all data initiatives are successful. To gain useful insights from the massive amount of data they have access to, organizations need to focus on:

A clear business goal
Data initiatives must be aligned with strategic business imperatives.

Solving the right problem
Zero in on the real problems, focus on the right questions, and ensure they have the right data to work on.

The right talent
To unlock value from data for the business, companies need to tap the right people with the right skill sets to drive initiatives.

This is where business analysis (BA) comes in. BA professionals can play a key role in the companies’ journey to becoming data-driven, insight-powered enterprises. They can enable the transition by helping organizations define problems correctly, understand what data will give the best insights, ensure relevant data is used, and by communicating the insights from the data to stakeholders.
Think of BA professionals as a partner or advisor to data scientists. They help interpret business goals into a set of questions that can be analyzed through data along with decision makers. They play an important role in:

- Ensuring that data is verifiable, comes from the right source, and is relevant for the business area concerned.
- Making sense of data and simplifying the confusion and complexity that may result from information overload.
- Aligning the findings to key organization metrics so that executives understand the impact of decisions.
- Extracting meaningful insights from data, which the business can use to drive greater value.
- Providing business context. For instance, the business implication of missing data treatment.

To play a meaningful role in data-driven industry transformation, BA professionals need to transform themselves first.
NEW-AGE BUSINESS ANALYSIS

Traditionally, business analysis has focused on requirements management—eliciting information from stakeholders, analyzing requirements, and designing a solution. Today, BA professionals need to work together with the business and the data science team to extract value from data.

To be able to do so, they need to first move from a data-apathetic approach to a data-driven one (see figure 1).

Figure 1: From data apathetic to data driven

DATA APATHETIC

Your business decisions are rarely, if ever, driven by data.

DATA AWARE

You are capturing data but currently using it only for awareness purpose.

DATA CRITICAL

You are beginning to develop sophisticated data assets but only for mission-critical areas.

DATA DRIVEN

Your organization is thinking data first. Your systems, processes, and people are working together to use data efficiently and effectively.

Then, they need to familiarize themselves with data science tools and technologies, including machine learning, data virtualization, and predictive analytics. They should know the possibilities offered by technology; be able to evaluate its utility, applicability, and benefits in specific business situations; and elicit and communicate requirements in a very creative manner to implement a solution for a business problem.
What are the competencies required from a BA professional today?

- Understands the big picture and the context within which insights are needed
- Communicates findings of the analysis, which may be technical, to all stakeholders
- Is a business domain expert and is up to date with trends and evolving business models
- Is skilled at storytelling and builds narrative inclusive of data
- Draws insights from data and can intuitively understand the story behind the numbers
- Is adept at visualization
Let us look at some frameworks a BA professional can use while working with data.

**OSEMN: Solving problems like a data scientist**

BA professionals can benefit from a proven methodology called OSEMN, which data scientists use to solve data problems. This “awesome” technique—OSEMN rhymes with awesome—requires a BA professional to go through the following steps when working on a data problem (see Figure 2).

Figure 2: OSEMN way of working with data

- **Obtain**: Collect usable data
- **Scrub**: Clean the data to working format
- **Explore**: Visualize, cluster
- **Models**: Build models
- **Interpret**: Predict and interpret
**OBTAINING DATA:**

Identifying the right set of data for a specific business problem is extremely critical. If you are trying to determine customer churn that will feed into your organization’s campaign development, what kind of data would be required?

**SCRUBBING DATA:**

The data collected needs to be cleaned so that it provides an accurate picture of the business problem. What will you do if the data is not complete or sufficient? Taking forward the customer churn problem, what would be the approach if you do not have demographic data on some customers?

**EXPLORING DATA:**

This phase is about understanding the patterns in the data—the story behind the data. Several types of visualizations and statistical testing are used here. You need to understand the decision variables that will make the most impact on the prediction. For the customer churn problem, you need to understand the characteristics of a loyal customer.

**MODELLING DATA:**

Models are general rules in a statistical sense. Several algorithms are used to accomplish different business goals. Business analysis professionals need to be able to understand the basics of different models and see which model provides the best result. For the churn example, you need to see which model is the best—regression or probabilistic.

**INTERPRETING DATA:**

The most crucial step in the OSEMN life cycle is communicating the findings from the data to stakeholders. How effective are the predictions? What does the result mean from a business standpoint? For the churn example, say the prediction is 10 percent of the customers are going to switch, then what is the profile of the customers who will switch? What are the root causes for switching? The ability to translate the outcome of models into actionable items is what business expects from the solution.
Figure 3 summarizes the various activities a BA professional would be involved in while following the OSEMN framework. Understanding the organization’s goals and translating it to a data science problem through various analysis techniques and ensuring that the right problem is being addressed is crucial. Also, providing the necessary business context to discover the right data for insights needed by the decision makers, and communicating the trends and patterns uncovered through the algorithms in the form of a visual story that is easily understood by a broad set of stakeholders are critical elements.

Figure 3: Activities a BA professional conducts while applying OSEMN in a data science context.

01
- Plan stakeholder engagement
- Plan elicitation
- Elicitation and collaboration
- Elicitation/workshops
- Confirm elicitation results
- Communicate with stakeholders

02
- Selecting appropriate chart/object
- Proper and complete documentation
- Reporting at various levels with appropriate metrics
- Result validation
- Identify key results
- Create a story
- Communicate with stakeholders

03
- Identify relevant data
- Identify data sources
- Evaluate paid and unpaid data sets
- Finalize data sets
- Define data storage requirements
- Feature engineering
- Communicate with stakeholders

04
- Identify and store all project artifacts
- Document process using Markdown
- Facilitate detailed process documentation
- Change management

05
- Select suitable statistical techniques (statistical modelling or regression)
- Build, test, fix
UNDERSTANDING CORE CONCEPTS THROUGH DATA

Business analysis plays a big part in the discovery of analytical problems that can be answered through data science engagements. Frameworks such as OSEMN help BA professionals bring such engagements to closure, fruitfully. At a more strategic level, a BA professional needs to translate business objectives into a chain of evidence-based decisions that organizations will be most interested in. To contribute effectively to this task, a BA professional must apply six core concepts explained through the Business Analysis Core Concept Model™ (BACCM™) and understand their interrelationship through data and evidence.

The BACCM™ is a common conceptual framework introduced for BA professionals. BA professionals are expected to have a holistic view of the six pillars or concepts of the model—change, need, solution, stakeholder, value, and context—and understand the relationship between them while working on a business problem (see Figure 4). With the advent of data science, BA professionals have to view almost everything with a “data” angle. They need to have a paradigm shift in the way they approach requirements management. They will need to understand technologies, such as machine learning, deep learning and natural language processing, and how they can be applied to solve specific problems.

Figure 4: Looking at core concepts through the lens of data
Let us explore the relationship between data and the core concepts through an example. Take the business analysis of how a brick and mortar store can compete with e-commerce companies. Applying the BACCM™ framework, we can look at the core concepts with a data mindset as follows:

**CHANGE** – Attracting customers who prefer shopping online is the objective. To gain insights into how to do that, point of sale data needs to be correlated with online customer data to first understand the attributes of a typical online shopper.

**NEED** – The need is to gain market share from existing e-commerce competitors. BA professionals can use data to understand the unmet needs and behaviour of customers. For example, some customers may choose to browse online but buy products offline such as consumer appliances, apparels, furniture, jewellery, etc.

**SOLUTION** – Partnering with existing e-commerce sites could be a solution. BA professionals may choose prompts for store pick-up options as a solution. Similarly, multiple solutions can be compared based on simulations of how customers and competitors will react.

**STAKEHOLDERS** – Requirements of stakeholders from across functions (IT, HR and Operations) of the brick and mortar company, e-commerce partners, and customers need to be considered. Through data-driven analysis, requirements can be validated better versus individual stakeholder needs.

**VALUE** – Sales and revenue growth or better customer experience could be the objective. Through data-driven predictive analysis, a BA professional would be able to forecast in a more scientific method and measure some of the intangibles like customer experience better.

**CONTEXT** – Understanding the impact of the omni-channel digital infrastructure and the entry of new market players is key. The BA professional will be in a position to understand the impact of different market conditions better through data-driven decisions to formulate recommendations.

As seen in the example above, multiple data science projects will be initiated when a BA professional evaluates the strategic decision-making process and analyzes business objectives of such a brick and mortar retailer. The BACCM™ framework, fueled by data-driven analysis, will help a BA professional to translate business objectives better into relevant data science problems, and frameworks such as OSEMN can be used to gain insights to solve such business problems.
THE ROAD AHEAD

Organizations today have a huge amount of data they can mine to enhance customer experience, to create business value, and to grow profitably. As pointed out earlier, not all organizations are able to realize the true potential from their data initiatives. One reason is that they rely heavily on data scientists who may be proficient at data preparation, cleaning, and modelling, but lack the domain knowledge and business context. BA professionals can bridge that gap between the business and IT teams. To do this, they need to have a deep understanding of data and working knowledge of data science tools and technology. Combined with their industry and functional expertise, this will enable them to understand the business context, identify the use case of data, and help organizations in their data-driven journey. Companies already have the data they need to tackle business problems. The key is in unlocking the value of data, and business analysis can be crucial in that.
INTRODUCING OUR DATA SCIENCE SERIES

Accenture, in collaboration with International Institute of Business Analysis™ (IIBA®), is soon launching a Data Science Series. Through this series, we look at how data science can be leveraged to address complex business problems and how it is shaping the future of organizations across industries. We take a fresh new look into the roles, tasks, and techniques of BA professionals in this evolving business landscape. Most importantly, we look at how BA professionals can be the catalyst for this change sweeping industries.

The first article sets the tone by focusing on how with the advent of data science, several unexplored avenues could be experimented with to fuel drug discovery, prevent hospital readmission rates, and drive better patient outcomes.

The second paper looks at how companies in the travel and tourism industry can make the most of data. We examine how they can achieve sharper targeting, reduce customer acquisition costs, and increase customer lifetime value. The article shows how OSEMN can be leveraged to develop advanced service delivery.

In the subsequent article, we look at how the shift from hardware to the cloud-based platform economy has given rise to new business models such as Device-as-a-Service in high tech. This change will require BA professionals to take on more of a consulting role as data handling capacity—not just maintaining the data but analyzing it for the impact on the business—becomes key in business analysis.

Then we will examine BA professionals in the financial world as data will be the key driver for banks to incentivize their target customers. We will also delve into how real-time intelligence on of customers enables targeted selling of financial products.

Finally, we discuss how the energy industry is transforming from a regulatory-driven marketplace to a data-driven one. The paper provides insights into how BA professionals are bridging the gap between humans and machines, and how data science is being leveraged for customer service applications, call center support and digital marketing platforms.

Stay tuned!
SUGGESTED READING FOR BA PROFESSIONALS

Thinking, Fast and Slow by Daniel Kahneman

Data Science for Business: What You Need to Know about Data Mining and Data-Analytic Thinking by Foster Provost and Tom Fawcett,

Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie, or Die by Eric S. Siegel

Storytelling With Data: A Data Visualization Guide for Business Professionals by Cole Nussbaumer Knaflic

RECOMMENDED

For intermediate practitioner: Online courses on data science (for example, on Udemy)

For expert practitioner: The Elements of Statistical Learning: Data Mining, Inference, and Prediction by Trevor Hastie, Robert Tibshirani and Jerome Friedman. Kaggle.com for practice on real data sets.

The intermediate and expert knowledge is purely intended for BA professionals who want to build end-to-end competencies with data. IIBA intends to launch certifications around data and handbooks especially curated for BA professionals.

REFERENCES


7. 2.1 section from A Guide to the Business Analysis Body of Knowledge® (BABOK Guide®) V3
ABOUT ACCENTURE

Accenture is a leading global professional services company, providing a broad range of services and solutions in strategy, consulting, digital, technology and operations. Combining unmatched experience and specialized skills across more than 40 industries and all business functions—underpinned by the world’s largest delivery network—Accenture works at the intersection of business and technology to help clients improve their performance and create sustainable value for their stakeholders. With 459,000 people serving clients in more than 120 countries, Accenture drives innovation to improve the way the world works and lives. Visit us at www.accenture.com.

Disclaimer: This white paper has been published for information and illustrative purposes only and is not intended to serve as advice of any nature whatsoever. The information contained and the references made in this white paper is in good faith and neither Accenture nor IIBA nor any of its directors, agents or employees give any warranty of accuracy (whether expressed or implied), nor accepts any liability as a result of reliance upon the content including (but not limited) information, advice, statement or opinion contained in this white paper. This white paper also contains certain information available in the public domain, created and maintained by private and public organizations. Accenture and IIBA do not control or guarantee the accuracy, relevance, timelines or completeness of such information. Accenture does not warrant or solicit any kind of act or omission based on this white paper. The white paper is the property of Accenture, IIBA and their affiliates and Accenture and IIBA jointly be the holder of the copyright or any intellectual property over the white paper. No part of this white paper may be reproduced in any manner without the written permission of Accenture and IIBA. Opinions expressed herein are subject to change without notice.
COMING UP

BUSINESS ANALYSIS IN THE DATA SCIENCE AGE
Accelerating Healthcare Innovation

BUSINESS ANALYSIS IN THE DATA SCIENCE AGE
Powering the Future in Energy

BUSINESS ANALYSIS IN THE DATA SCIENCE AGE
Hyper-personalizing the Travel Experience

BUSINESS ANALYSIS IN THE DATA SCIENCE AGE
Pivoting to the Now in Financial Services

BUSINESS ANALYSIS IN THE DATA SCIENCE AGE
Driving Differentiation in High Tech