CRACKING
THE
DATA CODE

Unlock the hidden value of data for your organisation

MIKE BUGEMBE

Contents

Introduction

Data has become the most exciting and disruptive force in our world. Today's vast quantities of data, and unprecedented access to it, are being used to fundamentally improve every aspect of our lives. Data is effectively making us smarter, healthier and safer. It's used to improve our public and private lives as well as our environment. Companies are using it to produce new and innovative data-driven goods, services and business models. They're also developing new approaches to every internal business function, from operations to recruitment and employee engagement. Quite frankly, every aspect of our world has benefited from this, which shows that there is absolutely no reason data can't be a game changer for you and your organisation.

It would be irresponsible, though, not to acknowledge that these big, game-changing opportunities are also coupled with ethical challenges, arising primarily from the ever-increasing volume of personal and sometimes sensitive data to which companies have access. Fortunately, bodies like the Information Commission in the UK have been created to uphold the information rights of individuals and ensure consumer safety while simultaneously encouraging corporations to continue with data innovations in an ethical and transparent way. With these safeguards in place, corporations continue to use data to improve our lives in many ways, such as expanding the opportunities for charitable giving, predicting food shortages and preventing famine, and even identifying and addressing various forms of corruption.

Imagine a world in which you have an in-depth understanding of what's happening in your complex business environment – or better still, you're able to understand *why* it happened. You understand why sales suddenly dropped, why your users drastically changed their engagement, or why you are not growing as fast as you had forecast. Data helps answer these questions and much more. With data, companies can move from understanding not only *what* and *why* things happened, to *predicting* what is likely to happen, algorithmically *prescribing* the most effective action and even using artificial intelligence (AI) to take on the next action with no human intervention.

RETHINK PRESS

The opportunity that data presents is, quite frankly, undeniable.

WHO CAN BENEFIT FROM DATA?

Organisations that successfully use data typically experience exceptional growth and financial benefits, establishing themselves as market leaders in their respective industries. Naturally, when we consider organisations that use data, we think of the Googles, Amazons and Facebooks of this world, where time, effort and investment in extracting value through data mining has resulted in billion-dollar valuations and market dominance.

While these are great examples, I have also seen how using these companies as case studies creates the mistaken belief that to realise the game-changing benefits that data promises, your company must be a mega-organisation with an abundance of technical resources and origins in Silicon Valley. This is simply not true. It's a notion that must be debunked.

Today, the benefits derived from data have been democratised and every organisation – including yours – can ignore the barriers of size, budget and industry. We tend to think only of technical organisations when it comes to data success stories, but consider the following examples in non-technical – even somewhat traditional – industries:

- Leading sports teams predict and prevent the onset of injury, prolonging the life and efficiency of their players

- The world of health and medicine is using predictive data algorithms to identify the onset of certain conditions such as depression, which enables practitioners to address them preventatively, moving away from traditional expensive, resource-intensive, reactive approaches

- Intelligence agencies are preventing devastating terrorist activity by using data to determine where to deploy units before an attack takes place

As a leader in your organisation, you'll inevitably have to consider how you can get data to work for your organisation. How more specifically you can use data to increase market share, super charge growth, create competitive advantage, grow and find new sources of revenue or employ a more internal focus on identifying operational efficiencies, like increasing quality, productivity and employee retention. The list, simply goes on and on.

Even at its very basic level, data will give you invaluable insights into all the constituents that add value to your organisation, such as the employees, customers and suppliers. You can get never-before-seen insights into their behaviours and personal preferences

– which can be used to create new products, personalise services or streamline your operations to drive transformational business models, increase revenue, growth, innovation and productivity. When your organisation becomes more data savvy, your insights can move from an understanding of what is happening and why, to predicting what is going to happen and using machine learning and AI to prescribe the best solution and find winning strategies to achieve your organisation's key objectives.

To realise these benefits and more, all leaders in all departments or business units of any organisations, irrespective of industry, will have no choice but to invest in data.

THE COST OF IGNORING DATA

The cost of avoiding this investment in data can be severe. Organisations that fail to see the opportunity and delay the start of their data journey are at serious risk of being leapfrogged by more data-savvy competitors. It's a mistake to assume your competitors are not actively seeking ways to win with data. I would bet my house on the fact that at least one executive in every Fortune 500 company has recognised the need to harness value from data and establish it as a pillar of their strategy to grow and achieve market dominance.

The risk of ignoring data while your competitors reap game-changing rewards before you do is too high to ignore. This means that all twenty-first-century organisations, regardless of industry, face the same challenge and are asking themselves these questions:

- How do we get data to work for our organisation?

- How do we create clear, tangible value for all constituents from unprecedented access to so much data?

- How do we use data to stimulate the new cutting edge of business innovation?

- Can we predict what the future of our industry will look like so that we can start planning and move first?

WHY MANY FAIL WITH DATA

The harsh reality is that many who start working on a data initiative invest a large amount of time, resources and effort – yet, sadly, are destined to fail. A survey from 2015 found that only 8% of leaders are fully satisfied with their big data and data science initiatives,[1] while another survey shows that 92% of organisations have failed to achieve lift-off or are

---

[1] www.datanami.com/2015/02/04/survey-finds-uneven-success-big-data-rollouts

stuck in neutral.[2] Unfortunately, the statistics are not in your favour, and if you follow in the footsteps of these organisations your investment will most likely fail to see a return.

Given that we are living in the information age, with vast quantities and varieties of data available, we must ask ourselves: Why is it that companies that can access much of this data still fail to benefit from it?

When investing in data and beginning to seek value from it, most organisations go no further than the recruitment of a what is commonly referred to as a data science (DS) team – a highly technical team packed with PhD-level analysts who have the ability to write complex data algorithms. Sadly, this is not enough.

Data delivers value to the business by working *with* the business, not in isolation. No executive would leave it to a purely technical team to negotiate the delicate balance between consumer needs and profitability, or profit per customer versus growth in market share. Since value can be realised from data across the *entire* organisation, and the decision on where to focus the data efforts is crucial, success calls for more than commitment from the executive leadership team: it needs full involvement!

---

2 www.informationweek.com/big-data/big-data-analytics/8-reasons-big-data-projects-fail/a/d-id/1297842

Sadly, this is where the key barriers to exploiting data successfully typically materialise. Many business users do not even understand what data really is and will struggle to articulate clearly what it is used for. If you were to pick several executives randomly from a range of companies and ask them to define data, what it is used for and what a data scientist (DS) is, you will get different answers. This issue is not restricted to non-technical executives; there is a lot of data jargon out there and even the so-called experts fail to agree on much of the existing terminology. This will have a direct impact on your game plan for data, hiring strategy and any initiatives designed to create a data-driven culture.

This means that most companies are unable to fully appreciate and use the data that they have access to effectively. Few have the technical ability, resources, time and tools to take apart, mine and analyse data to identify and realise its benefits. Fewer still have business executives with the right values, behaviours and disciplines to get data really working for them.

Put simply, organisations in general have a data competency issue in their executive leadership teams.

Generating value from data can be a complex journey, with many small and specific moving parts and dependent sequences that must be understood and mastered. As a result, many have found that using data successfully is not all about the statistics, or about

the number of PhDs you employ, or the amount of data that you have. Business value from data cannot be unlocked if the enterprise is limited to the efforts of the technical analytical team. Instead, as with any team sport, success from data will require the attention of most of the organisation and will impact the organisational, structural and behavioural aspects of the entire company.

UNRAVELLING THE DATA PUZZLE

With this myriad of complexity and test of ingenuity, the challenge of generating the game-changing value that data promises is best described as a puzzle in which missing pieces distort the picture such that, in effect, the puzzle remains unsolved.

When I started my journey with data, I found little documentation on this puzzle and how to solve it, so I set out to find a solution, get it to work, simplify it and document it. I spent eight years studying and working with organisations that seemed to have solved this puzzle: from the large tech data giants such as Facebook and Google to smaller ones that had found a way to get it to work. I also spent time with those that failed to realise the benefits that data promises. During this research period a clear set of ingredients, values and behaviours emerged among the successful organisations that were generally absent from those that were not successful.

I took time to model, develop and codify that pattern into an approach – an algorithm if you like – that can be used to substantially increase your chances of success with data. I was able to put the process to test with a range of clients and was fortunate enough to see them join the short list of companies that are experiencing the game-changing success that data promises.

My biggest personal success was during my time as the chief analytics officer at JustGiving.com, a small British-based company that serves the online needs of charity fundraisers. The innovative, data-driven, smart products that my team built were among the key reasons for the $100,000,000 acquisition of the company – the biggest acquisition of a tech company operating in the non-profit space – creating a few millionaires in the process. We built intelligent algorithms that could understand and learn what givers were passionate about, when they preferred to give, how much they were willing to donate, and how best to engage with them to maximise the chance of follow-through with a generous act. These machine-learning algorithms generated millions of pounds for the charities and causes that people are passionate about and was a key component of the acquisition and strategy, going forward.

This process of working with data to generate innovative, market-dominating value from the vast

quantities of data available is what this book is about. It's a relatively complex process, but my mission has been to simplify it and, in doing so, I've rolled up all the key components, actions, values and behaviours into five distinct keys to cracking the data code:

1. An organisational understanding of what data is and how it delivers value

2. A qualified data leader

3. A strategic game plan

4. A competent, diverse team

5. A data-driven organisational culture

Each of the following chapters explores these components in detail, providing practical examples and guidance for how to embed them in your organisation.

WHY YOU NEED THIS BOOK

Every organisation, regardless of industry or size, has a data puzzle that they can solve. Each puzzle has a unique picture, a unique end game and a unique vision each as distinctive as a fingerprint. Among this sea of eccentric idiosyncrasies lies a common cross-industry approach to solving the puzzle. These five keys may seem simple enough, but there is a high degree of complexity when you dive into each one.

For example, can the leaders of your organisation explain what data is? Do they understand the difference between the popular cousins of data science – machine learning and AI – as well as what data is actually used for? Can *you* provide a robust response to these issues? What are the characteristics of the data leader that you should appoint? Should that person sit with the leadership team or report to IT? Can you succeed by recruiting only DSs? What are the visible behaviours and attitudes that make you a data-driven company poised to find that perfect use case for data?

When looking at the recruitment of your data leader, do you know what he or she is supposed to do, and what deliverables you should expect? Is this person going to recruit a team to execute the mission? Are you on the same page with the plan, going forward?

These questions represent only the tip of the iceberg of unknowns that must be understood and answered at a leadership level. While the five main keys for success may seem simple, there are indeed deep layers of complexity to each that must be understood.

Many organisations believe that they have these five keys to success in place, yet they fail to see results. This is because data closely resembles the algorithms that use it: two companies can produce an algorithm to identify which customers to promote a new offer

to, but the details of the algorithm and the data used to train and test it are where the differences lie.

To make data work for you, there is no choice but to understand the nuances in each of these five components, irrespective of the size or nature of your organisation. Doing this has allowed me to demonstrate that organisations that take time to invest correctly in the process of generating value from data will achieve their goals and objectives, experience revenue growth and profitability and increase their chances of dominating their industry verticals.

Who this book is for

With media buzz around data success stories like JustGiving.com, data-related terms are now popular buzzwords in the business world. But how many C-suite executives and line managers (except for those with advanced degrees in computer science or mathematics) know what data or its close cousins of data science – AI and analytics – truly are? More importantly, how many know exactly what they need to do to extract true value from data? As a leader in your organisation, do you?

As my friend and fellow author Graham Hogg describes it, 'data is a team sport' and, in this case, the team consists of most people in the organisation, from C-level executives to the developer writing code

or the customer service rep assisting users with their queries. Therefore, the ultimate key to solving data lies not only with an understanding of the ingredients, nor is it a case of simply having each ingredient in place. It boils down to leadership and can't be delegated to IT professionals or programmers alone.

With data as the fuel for business innovation, disrupting every industry and creating new opportunities in all parts of the business, each leader around the table essentially has an opportunity for data to work specifically for them and their respective areas. Thomas H Davenport, co-author of *Competing on Analytics: The New Science of Winning*, says, 'The entry barrier is no longer technology, but whether you have executives who understand this.'

When you consider the five key ingredients, you'll notice that the leadership team has an active role to play in each of them. They must understand the definitions to be part of the solution. They will need to work with and ensure that the appointed data leader has the tools required to succeed. Unless the leadership team understands what's required, the wrong leader will be appointed and/or will be positioned incorrectly within the organisation, resulting in an inability to deliver.

The game plan may indeed involve each leader's own personal areas of responsibility. Often, the most exciting and impactful use cases for data do not come

from the data leader, but from those who understand the requisite key strategic and corporate-level decisions. A lack of understanding of these things can result in the wrong team appointments and, probably most importantly, a non-supportive (although well-meaning) culture.

Remembering that data is a team sport, the appointed data leader can't change the culture of the organisation if the leadership does not exhibit the values and responsibilities that they wish the rest of the organisation to employ. Do you as a leader have a firm grasp of the values, beliefs and behaviours that are required from each of your employees and team members?

Today, organisations need analytically savvy managers capable of discovering patterns and finding relationships in complex data. They also need senior leaders who 'get it' –who have taken time to understand how to play their part in success. This especially includes the data leader appointed to execute this initiative – the one who is solely responsible for the delivery of game-changing value to your organisation.

This book will serve as an actionable handbook for you and the rest of your leadership team so that you are all on the same page with what data can do for your organisation. The five keys to success described here are what separates successful organisations from those that fail. I've learned this from my years of

intense study and nearly two decades of experience in this realm.

The main audiences for this guide (executive leadership team, savvy managers and the data initiative lead) are not overly technical, so this is not a technical book. There are plenty of books on the market that cover the wide array of technical details on algorithm building, harnessing data and cloud mechanics, written for the mathematicians or DSs who create the equations or the technical teams that productionise those algorithms through code.

Instead, this is a *strategic* guide that brings to life the key requirements of a successful strategy for the management audience: business leaders who are excited about the possibility of cracking the data code and who are keen to realise the benefits at a corporate level – business leaders who ultimately will sponsor this work and make many of the key corporate-level decisions required for success.

If you are running a business, this book is for you. If you are the chief financial officer (CFO), the chief information officer (CIO) or even the chief marketing officer (CMO), then this book is for you as well, since all of you will play a part in either making data succeed or fail in your organisation. If you are a manager wishing to understand what to share with your leadership about data, this book is for you. If you have

been blessed with the honour of leading this initiative, this will be your playbook.

An army of brilliant DSs with an absence of data-savvy organisational managers and leaders is a recipe for failure.

The next generation of industry leaders is inevitably going to need a combination of data science and management skills. I have written this book to show those leaders why they should care, and how they can prepare and execute a winning strategy to realise the extraordinary benefits that data promises.

I sincerely hope that you enjoy reading this book as much as I enjoyed writing it. Cracking the data code will help you and your organisation better serve your customers, become more efficient operationally, innovate more effectively, increase revenues and so much more.

In other words, the approach outlined in this book can help you and your organisation to achieve your strategic goals.

The Author

Mike is an entrepreneur, author and international speaker. His experience and passion for working with data and analytics began at university in the late 1990s when he discovered the predictive power of signal processing and regression. Combining this with his childhood passion for computer programming he quickly found himself in a career that required him to work with databases, software engineering and mathematical algorithms to solve business problems.

As a consultant in the data space, Mike has worked with organisations across a range of industries from fintech and health to non-profits and government agencies. He has primarily advised leaders on how

to create optimised data science teams, created data cultures, written data strategies and assessed how organisations can generate real business value with data.

Mike cites his time at JustGiving as one of his big recent achievements, where he built a team that worked with data to build AI algorithms to unlock generosity and raise millions for charities in the process. His work quickly got him recognition as one of the UK's top digital masters, resulting in regular invites to give keynotes for large organisations like Microsoft and a host of other conferences around the world. He has won several awards and has been named as one of the most influential people in a data-driven business in the UK over the last few years.

Mike has also spearheaded some work on the interplay between data and behavioural economics, essentially researching the role data plays in human behaviours and choices. This has proven to be very interesting to researchers and companies that work with large consumer audiences, resulting in guest lectures and speaking invitations to a range of well-known institutions including Harvard University.

Much of his work can be found in technical magazines, press articles and a couple of recent bestselling big data books.

Find out more about Mike, or contact him, via:

www.thedatacode.com

www.mikebugembe.com

www.twitter.com/mikebugembe

www.linkedin.com/in/mikebugembe

www.instagram.com/mikebugembe