Mesh-AI

Data Analytics:
Solving Complex Business
Challenges with Data

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Introduction

In today's business landscape, companies face complex challenges that are deeply intertwined with data. These range from gathering and accessing the right information to ensuring data quality. Though they may seem abstract, their impacts are very real.

Consider inaccurate forecasting or reporting, which can lead to financial losses or jeopardise funding. The risk of outdated technology interrupting critical business services. Deriving new products and services to meet market demands without a full understanding of the customer. These issues are prevalent and pressing for many enterprises. It's estimated that 'bad data' costs the US economy $3.1 trillion, while time spent looking for information costs UK businesses a combined £25 billion.

This is where data analytics comes in, transforming these challenges into opportunities by enabling informed decision-making. Accurate data analysis can enhance forecasting, protecting financial health and securing funding and revenue. It also helps in understanding customer behaviour, leading to better products and increased satisfaction.

The potential of data analytics to solve business challenges is immense. By embracing it as an approach and an integral skill set, companies can move from a reactive to a proactive stance, anticipating and addressing issues before they arise. This ebook will explore how data analytics plays a crucial role in business transformation, delving into practical applications and strategies that we've deployed to help enterprises overcome significant obstacles and turn them into opportunities.

These case studies across **Financial Services** and **Energy & Utilities** demonstrate how to turn raw data into actionable insights and will equip you with the knowledge to harness the full potential of data analytics in solving your enterprise's most complex challenges.

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Data Analytics 101: Why is it Important?

Data analytics is intrinsically tied to working with your data and gaining a better understanding of your 'data reality'. By understanding where your data lives and how it works and operates, you can bridge the gap between technology and the wider business.

Within an organisation or business domain, you will have commercially minded decision makers and subject matter experts, and you will also have data engineers and data scientists. Data analysts will allow you to connect the dots between these technical and commercial minds and allow them to speak in each others' language.

At its core, data analytics is about extracting meaningful insights from data to drive informed decision-making. It involves analysing data to uncover patterns, trends, and correlations that might not be immediately apparent. It's a process that requires critical thinking, statistical analysis, and a keen understanding of the business context.

Ultimately, data analytics empowers organisations to make data-driven decisions that lead to improved efficiency, innovation, and competitiveness in the digital landscape.

84% — 84%of business leaders think a lack of data skills limits agility in their organisation (*Experian*)

75% — 75% of business executives don't have a high level of trust in their data (*HFS Research*)

$3.1T — IBM estimated the annual cost of bad data to the US economy at **$3.1 trillion**

£25B — Inaccessible information within businesses costs the UK economy approximately **£25 billion** annually (*OBRIZUM*)

Data Analytics in the Age of AI

With so many adopting AI, what role does Data Analytics play? Has data analytics been forgotten in the hype of AI?

AI can be the shiny new toy, where rapid advancements and media coverage have often overshadowed the foundational role of data analytics.

For some problems you don't need AI or advanced ML - you may just need to create a visual to show a trend or pattern which provides actionable insight. That insight might help inform how you employ AI. With a focus on the most valuable problems and opportunities, it's likely you need to use both analytics and AI to tackle them, and they will complement each other.

Data is the Fuel

While AI is the engine, data is the fuel that powers it. Without accurate, clean, and insightful data, AI models are limited in their effectiveness.

Data analytics is a clear route to ensuring data quality. Exploratory data analysis is essential to mitigating that. Data analysts spend more time reporting "actual" numbers than data scientists, and those actuals are scrutinised very closely if they don't match exactly what stakeholders expect. This trains data analysts to be very good at finding nuances and exposing problems within the data. Fixing these then gives a better input to train AI.

What Role Can DA Perform That AI Can't?

Human interpretation: Bring human context, understanding, and critical thinking to data, which AI often lacks.

Enable ethical considerations: Identify potential biases and ethical implications in data and AI models using data analytics.

Measuring AI performance: Track AI model accuracy, efficiency, and impact on business outcomes over time.

Communicating AI value: Demonstrate the tangible benefits of AI to stakeholders via compelling visualisations.

The Role of Data Analytics in Digital Transformation

Reports

Dashboards

Data Wrangling

Data Strategy

Data Modelling

Data Storytelling

Deeper, unseen but foundational capabilities that enable AI Reporting

Data Quality &Accuracy

What are the Key Benefits Data Analytics Delivers?

- **Reduce cost and time to access valuable insights:** Data analytics can directly help businesses improve performance (cost reduction/efficiency, revenue opportunities, managing risk) using tried and tested techniques & visualisations.

- **Drive impact:** Data analysts can help product insights in the context of the real world, helping to drive action and inform decision-making (not just pretty charts to amuse!)

- **Accurate forecasting and reporting:** By finding and presenting the right measures of performance, we can help businesses identify when things are going wrong, and help them steer their teams towards common goals. This means more accurate forecasting and reporting, which improves compliance, unlocks funding and reduces the risk of fines.

- **De-risk data initiatives:** Analysing the nuances in data can help uncover issues that may traditionally only be spotted at the end of data initiatives. Applying data analytics here can de-risk any use case, so resources are better spent and teams can be more effective. This removes the dreaded need to start projects all over again with new data sources.

Reimagining Regulatory Reporting in the Energy Industry with Data Analytics

In regulatory reporting, accuracy is paramount. Many energy firms struggle with meeting deadlines and avoiding fines. For one such firm, facing a critical deadline, we used data analytics to ensure precision and enable long-term improvements.

A Complex Web of Challenges

Our energy client faced a £20m shortfall in funding from the regulator, with requests being denied due to a lack of clarity. Poor data quality was undermining how the organisation delivered essential maintenance to assets.

Our task was to support regulatory reporting on surveying assets and fault resolution within two months. The client faced poor data quality, siloed systems, and regional process disparities. Reliance on error-prone Excel further complicated matters.

Our strategy aimed at transforming data usage. By understanding technical details, processes, and cultural dynamics, we adopted a holistic approach. Workshops helped map surveying and fault resolution processes across regions. We consolidated data into a relational database and conducted initial cleansing. This groundwork revealed that over half of the surveys deemed assets out of scope.

An Iterative Approach with Data Analytics

Challenges included inconsistent data formats and unexpected test data prevalence. An iterative discovery process refined the data and deepened our understanding of the client's operations.

Data analytics was crucial. Exploratory data analysis uncovered nuances, enabling us to propose a solid methodology for the report. We interrogated assumptions, uncovering trends and patterns, and established transparent, repeatable transformations.

Unlocking Long-Term Value

With a robust methodology and documented reporting, stakeholder confidence grew. Individual figures were explained with clear lineage, helping the client navigate inquiries. We recommended long-term data quality enhancements.

Practical Solutions

Workshops mapped processes across regions. Data consolidation into a relational database made querying easier. Initial cleansing addressed issues like inconsistent date formats. Profiling important columns revealed test data, focusing our analysis on relevant data and avoiding rework.

We used a playbook approach to data quality, checking for duplicate keys, valid foreign keys, and null values. Hypothesis-driven analysis tested assumptions, prompting further investigation and de-duplication.

We reconciled data across systems, identifying regional adoption variances and ensuring one work order could represent multiple faults.

Exploratory data analysis was key. Workshops with SMEs provided insights, but data analysis revealed much more. The blend of technical skills and domain understanding was crucial. Curiosity allowed us to understand the data deeply and inform our report methodology.

Enhanced Data Quality to Feed Accurate Reporting

With a reimagined approach to reporting, using data analytics at its core, we were able to bring much needed clarity to funding requests and safeguard critical funding.

The client received a report with increased confidence. Each number was explainable with a clear methodology. We provided a detailed breakdown of figures and recommendations for long-term data quality improvements.

This has laid foundations for a new data platform and approach using simpler tools, allowing the client to meet organisational objectives with less effort and in less time.

Value Outcome for the Client

- Greatly enhanced forecast modelling for sustainable funding in the long term.

- Resources associated with forecasting were reduced from **months to minutes.**

- Unlocked regulator **funding of more than £20m**, thereby improving ROI and reputation within the industry.

Reimagining Energy Forecasting Through Increased Visibility

The forecasting unit of a global energy company responsible for a large share of the UK's electricity generation needed to reimagine its approach to data. It wanted to shift from a cost centre to a profitable one, and modernise its solution to reduce human intervention and provide better insights.

To do this, it needed to greatly improve the visibility of high-quality data. Its current approach was resource intensive and relied mostly on spreadsheets, severely reducing manoeuvrability in a competitive environment.

Identifying Complex Data Challenges

1. Data Granularity: The existing data lacked the necessary granularity. A solution is needed to provide insights and visualisations at the right level of detail to enable data-driven decisions in energy trading.

2. Data Volume and Complexity: Energy trading involves complex data, with trades occurring between a few years and one hour in advance. This requires a solution with sub-daily granularity, several business segmentations, and a horizon of several years plus additional years of historical records.

3. Confidentiality of Data: There is a strong need to maintain the confidentiality of sensitive trading data.

4. Reliance on spreadsheet: The current processes are highly dependent on spreadsheets, which may not be the most efficient or scalable solution.

5. Centralised Data Ownership: Data is centralised and owned by a single entity without end-to-end ownership, which may hinder efficiency and accountability.

6. Mixed Time and Calendar Definitions: Data on different energy types was delivered according to different time and calendar standards, resulting in further complexity in understanding actual usage and making delivery forecasts within a certain timeframe.

Harnessing Data Analytics with a Phased Approach

The first step focused on the unclear time and date definitions. To overcome these, multiple solutions had been adopted without a centralised approach. Through an inquisitive approach to data discovery and assessing data quality, we identified incorrect mapping of time data and adopted a more agile approach to enable more accurate modelling. This involved providing a universally accepted definition for date and time.

Our second phase focused on bringing this data to life via reporting and visuals. Reporting on this data traditionally took a few weeks. The forecasting team needed to analyse certain KPIs within the reporting framework, but the existing data product was not suitable due to software limitations and the volume of data that needed to be ingested.

By developing a slimmer model to separate the desired data, we optimised how the report was produced. This reduced the time to report on key energy information for forecasting to just minutes along with renewed visualisations. The reimagined report allowed traders to identify any errors at a moment's notice and correct them.

Reimagined Insights for More Confident Forecasting

With a robust data platform capable of supporting granular analysis of a large volume of data and high-level insights, our clients team could make more accurate forecasts and prevent future losses.

Higher quality data, with standardised definitions and made more visible, fed into streamlined models. These powered the reporting and visualisations necessary to making informed decisions in a shorter time frame, thereby improving the agility of the whole division.

Value Powered by Data Analytics

- Reducing the risk of human error, mitigating the frequency of incidents and reducing their financial impact.

- Saving **millions of pounds** by improving the accuracy of cost forecasting.

- Reducing the validation time of energy trades from **150 minutes to under 30 minutes**.

- Cut document generation time from months to minutes.

Reimagining Customer Engagement with a Data-Driven Approach

A leading financial services brand made a strategic shift that has deepened customer engagement and increased customer value by up to 8x.

Our client faced a difficult landscape, with changing consumer behaviours, new and more agile players in the market, and a cost-of-living crisis affecting customers.

They understood that leveraging data to more deeply understand its business and customers was integral, helping them address unmet or underserved customer needs, and provide insights that could inspire new products and services.

Disparate Data Sources Hindering Innovation

This financial services enterprise needed to shift from transactional interactions with customers, to a lifetime value-generating business.

The organisation needed to utilise the wealth of customer, transactional, and behavioural data available to drive new insights, revenue growth, and operational efficiency. With 90% of transactions currently occuring offline, the change was needed fast.

We were asked to help build a Single Customer View (SCV) in their data warehouse that would bring together UK customer and transaction data.

The SCV needed to be replicated on a global scale and required harmonising all of this data onto a data platform to provide the right level of insight.

Analysing New Data on Customers

Through exploratory data analysis of primary sources to understand the availability and quality of customer data, we identified customers according to their email and transaction data. The analysis streamlined the data modelling approach by providing a ready-made list of the most useful fields to pull through and discounting those with poor quality.

Data analysis helped us prioritise, validate and de-risk our approach to building the SCV using email address as the key link between source systems, helping to assure key stakeholders that what we produce will deliver the desired value.

This customer data was added to the data warehouse model to power new ways of reaching customers. Through 10,0000s of service emails and marketing communications, this reimagined customer data is increasing engagement, building greater brand awareness and boosting revenue.

Value Powered by Data Analytics

- Driving **higher customer transactions**, with customer spend increasing 2x to 4x, and unlocking 6-8x greater lifetime customer value from card customers, unleashing **millions of pounds in revenue**.

- Enabling **long-term transformation** for the business from a traditional cash exchange to a customer-centric model for sustainable growth.

- The business is forecasting over **£350k profitability** from all CRM emails in the next 12 months, including from Marketing and Service Emails supported by the SCV.

Reimagining Regulatory Compliance to Mitigate Fines with Quality Data

Our client is one of the world's largest and most highly regulated financial services organisations, handling billions of sensitive financial transactions on a daily basis. As with any major financial house, keeping up with an evolving regulatory landscape to avoid multi-million pound fines is integral.

In order to mitigate that risk, the global organisation needed to strengthen operational resilience and its ability to model risk when it comes to its complex technology estate.

Technology Obsolescence Controls Lacking Nuance

Technology obsolescence was a major risk with far-reaching impact. Our client needed to have both a detailed understanding of how their different technology assets are linked and a set of control metrics in place to help flag up and remediate issues.

Data quality issues around server information - particularly around missing End of Life dates - hinder a complete understanding of server obsolescence and its impact on the applications and services these servers support. While this blind spot increases our customer's technology obsolescence risk, it also greatly heightens the chances of incurring massive fines from regulators and interruptions to critical business services.

We were asked to develop a more robust methodology for assessing the risk of technology obsolescence that formally accounts for these data quality issues.

Rapid Prototyping Highlights New Approach to Data Quality

We recognised the need to rapidly model typical technology obsolescence scenarios and prototype alternative control methodologies.

Our data analysis approach included developing a Microsoft Excel tool that simulated a business service with all its underlying technology assets and their associated obsolescence RAG (red, amber, green) status.

We also proposed introducing an additional Grey status to flag servers with insufficient data quality to determine their obsolescence status.

By allowing users to modify the proportions of servers that were obsolete or had poor data quality, we demonstrated the limitations of the existing control framework. The potential introduction of a Grey status for servers would lead to a service's risk status gradually degrading as data quality worsened.

Value Powered by Data Analytics

- Reduces the time needed for the client to understand its compliance position, from months of work to just minutes.

- Armed with this information, this consequently helped to reduce the risk of regulatory fines in the millions of pounds.

With a reimagined understanding of their technology estate set across multiple countries, this greatly reduced the chances of interruptions to critical services and incurring seven-figure fines from regulators.

The model provided our customer with a control mechanism that includes poor data quality as a fundamental risk, setting them up to better understand its impact on technology obsolescence and meeting the wider organisational objectives.

Deploying Data Analytics to Meet Organisational Objectives

In the age of AI, Data Analytics can often be forgotten. But without the ability to probe and interrogate data, enterprises will struggle to improve data quality. The absence of such strong data foundations will, in turn, limit the output of any AI.

Our work implementing this approach at multiple enterprises across the financial services and energy industries demonstrates the art of the possible when data analytics is deployed within transformation. By harnessing data analytics effectively, we're building capabilities for organisations who want to become more data driven, opening doors to increase efficiency, understand their customers better, and uncover the hidden power in their own data.

Mesh-AI is a transformation consultancy that exists to reimagine how enterprises operate, making data and AI their competitive advantage.

We turn enterprises into data-driven and AI enabled organisations, unleashing business growth and accelerating outcomes.

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