Data Analytics Pack

Leveraging data to drive better business decisions
Analytics as a Service
Enabling insight

Introduction
Being able to obtain actionable insight through data is the competitive edge that businesses need to win in the digital world. As the volume of information is increasing more rapidly than ever, businesses now face the challenge of finding methods to convert this, often untapped, potential into added value and increase competitiveness.

In recent years, data and analytics have advanced prominently – and consistently – towards the top of the agenda to meet business objectives. Rapid advancements in business growth and enhanced efficiency can be driven and measured by how well an organization embraces the latest advanced analytics capabilities. By using proven technologies and new sources of information as assets, institutions can leverage all functional areas of an organization, from risk management, compliance, marketing, customer servicing to product innovation.

Realizing this potential often provides challenges in terms of identifying opportunities or driving business adoption. Tapping into the potential of data can require new ideas, different competencies or simply an independent view.

Key benefits
- Multi-disciplined and diverse teams with market leading experience and competencies in relevant areas e.g. big data, business processes, systems integration and data science such as advanced analytics.
- Methodology and phased approach built for working in collaboration with our clients.
- Structured approach for identifying high-value opportunities.
- A transparent process of data mining and machine learning model selection and interpretation.
- Business driven solutions to help drive sustainable changes.
- Bridging the gap between business objectives and technical capabilities

Audience
Banking, Insurance, and Asset Management sectors
Methodology

EY has developed a standard methodology to expose the business potential of data and analytics in your business. The service consists of a four phased approach for rapidly providing analyses and tailored suggestions and opportunities. By using a multidisciplinary team, a wide range of areas can be considered during the various phases.

Phased approach

1. Understanding your business
   Analytics is driven by the information need from different business processes. During the first phase, the engagement team will spend time to understand your specific information needs.

2. Investigating your data
   Leveraging internal (big) data sources to apply advanced analytics techniques for identifying high-value opportunities.

3. Workshop
   During workshops, EY’s experts will take the input from the previous phases to develop tailored solutions together with the business.

4. Recommendations
   During the final phase EY will propose a number of key opportunities identified in line with furthering business objectives.

What EY can do for you

EY can help clients find and assess the business potential of their existing data resources quickly and transparently and translate these findings into practical relevant business opportunities to meet current and/or future objectives.

Visit our website for more information on FSO Advisory and the analytics services we offer in the financial services sector. Or contact:

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The analytics value chain

At EY, we define analytics as the extensive management and use of data, statistical and quantitative analysis, explanatory and predictive models and fact-based management to improve business performance, drive better business decisions and proactively manage risk.

The EY analytics value chain is different from that of our competitors in that it begins with first asking the right business questions and then leveraging leading tools and techniques to extract the answers from the relevant data.

With the analytics value chain, businesses are able to use analytics and improve the efficiency and effectiveness of every decision and/or action. Our approach is focused on your business and the decisions that could be informed by analytics. We share leading practices, lessons learned and specific ideas for how your organisation could leverage analytics to improve performance and manage risk.

- Leverage relevant data needed to drive better business decisions
  - Volume
  - Variety
  - Velocity
  - Veracity

- Adapt across a continuum of analytical techniques
  - Descriptive
  - Predictive
  - Prescriptive
  - Forensic

- Embed analytics in all of our services
  - Customer
  - Operations
  - Finance
  - Fraud & Forensics
  - Risk Management
  - Compliance (incl. audit & tax)
  - Capital & Transactions
  - Talent management
Introduction

Financial services institutions are commonly confronted on regulation and compliance topics to investigate large amounts of documents, ranging from simple text files to more complex PDF documents. Often a manual approach is taken without investigating automating parts of the process.

Information that is only stored as unstructured data provides challenges when larger scale analyses are required. Analyzing these documents, such as e-mails or presentations, in a manual fashion is often cumbersome, timely and prone to errors. This consequentially often results in costly and incorrect or delayed reporting.

The EY Magnet solution is a document search engine capable of skimming through thousands, or even millions, of documents quickly by inventorying, analyzing and extracting text that helps you understand your unstructured data faster, cheaper and better.

Investigating data using Magnet puts cutting edge machine learning and database technology to work and allows focus on asking the questions that really matter.

Key benefits

- Search large and scalable volumes of documents in various formats such as PDF, e-mails, text files and Microsoft Word- and Excel documents.
- Use match words and terms probabilistically using advanced string matching and entity resolution technology.
- Use advanced Optical Character recognition technology to extract text from scanned images.
- Leveraging market leading experience to implement and apply cutting edge technology.

Applications

Applications area’s include but are not limited to compliance and regulatory risk, due diligence, data quality, fraud and dispute analysis.
Magnet recognizing the file type which it is trying to index based on the metadata attached to the file structure and if necessary deploys machine learning algorithms to extract a vocabulary by recognizing words and characters in an image.

The technology then builds a so-called ‘inverted index’ on this vocabulary of key words, verbs and glyphs found in the document to allow fast scan querying through all of the documents.

The architecture is scalable to allow magnet to ‘shard’ the index and the documents across multiple server clusters allowing massive parallelized processing and horizontal scalability to accommodate flexible use of computing resources.

Why EY?
We have extensive experience and draw from knowledge from fields such as diverse as data analysis, machine learning, accounting, risk, regulatory compliance and process management. Together our professionals can help you develop tailor made solutions to the challenges you are facing under tight deadlines and offer unrivalled service execution quality.
Predictive Analytics
Enabling data-driven, fact-based decisions and actions

Background
Predictive analytics is a sub-area of data analytics that consists of a collection of analytical techniques, which focuses on identifying patterns and relationships in potentially large, complex data sets to determine causes and effects. This insight can then be utilized to predict outcomes based on certain assumptions.

Key features
The essence of predictive analytics is applying different statistical methods such as regression or machine learning techniques to make predictions about the future based on information in potentially large and diverse data sets.

Armed with this insight the financial services organization can leverage its data, using predictive models to drive fact-based business management decisions and actions.

In other words, predictive analytics supports making better, quicker and more cost efficient decisions thereby enabling the organization to detect patterns and trends in their data, anticipate events, spot anomalies or forecast outcomes.

This helps financial institutions to identify and mitigate risks as well as adapt to shifting customer behaviors. From charging prices closer to the market rate or ensuring more tailored marketing campaigns to detecting the most risky counterparties or bad payers, predictive analytics can be a game changer for the financial services organization in making qualified decisions based on potential future outcomes and using this knowledge to take appropriate action, in the end either increasing revenue or reducing costs.

Why EY?
EY is prepared to help our clients across all phases of an predictive analytics project. From project management and staff augmentation to functional and analytics expertise, our clients will benefit from our deep industry knowledge as we apply predictive modeling capabilities to solve their business problems.
Predictive Analytics
Enabling data-driven, fact-based decisions and actions

**Deriving business value**

Predictive analytics help leverage performance by enabling the business to make informed decisions across a wide range of business functions and operations and helps the organization gain insights on both business and customer.

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<th>Area</th>
<th>Applications</th>
<th>Example business case</th>
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| Customer and marketing analytics | ▶ Client segmentation  
▶ Cross/up sell  
▶ Client targeting/acquisition (opportunity management)  
▶ Client retention/loyalty and win backs  
▶ Client profitability  
▶ Pricing optimization  
▶ Sales force effectiveness  
▶ Marketing spend optimization | ▶ **Objective**: Determine which product(s) has/have a higher potential to convert into a sale to new customers and which products to bundle together to offer to existing clients to increase revenue  
▶ **Solution**: Build engine, identify KPIs incorporate dynamic rules  
▶ **Benefit**: Improved profit margins and boost of revenue through the right product positioning to the right customer |

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| Finance and risk management analytics | ▶ Budgeting  
▶ Forecasting  
▶ Planning  
▶ Liquidity planning  
▶ Scorecard/metrics  
▶ Consolidation and reporting  
▶ Strategic cost management  
▶ Credit risk management | ▶ **Objective**: Collections department wants to identify mortgage loan borrowers that will be delinquent at least once over the next 3 months  
▶ **Solution**: Develop model to predict mortgage delinquency  
▶ **Benefit**: Address high-risk borrowers and improve recoveries on non-performing loans |

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| Operations analytics        | ▶ Fraud identification  
▶ Anti Money Laundering  
▶ Call center analytics  
▶ Trade surveillance  
▶ Claims (Insurance) analysis  
▶ Account transaction management  
▶ Procurement management | ▶ **Objective**: Compliance department wants to better identify high risk alerts and minimize false-positives alerts  
▶ **Solution**: Develop best AML alert model, KPIs and model governance program  
▶ **Benefit**: Increase the effectiveness of the AML program, ensure the best use of investigators’ time, and lower overall AML monitoring costs |

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| Human capital analytics     | ▶ Employee retention  
▶ Compensation management  
▶ Training and growth | ▶ **Objective**: Segmenting employees by identifying employees at risk for leaving and targeting those at risk with appropriate incentives  
▶ **Solution**: Develop model to predict employee churn and a list of factors that are significantly different for those at risk than for those not at risk  
▶ **Benefit**: Save time and money associated with high employee turnover and boost employee satisfaction |
Introduction
Traditionally, the monitoring of a loan portfolio has relied on its aggregated historical performance which allows portfolio and credit risk managers to take corrective action or for investors to identify the performance parameters.

 Portfolio Analytics is an analytics platform that enables smarter ways of insight through dynamic and forward-looking modelling and visualization of loan portfolios.

The solution provides an intuitive interface through which users can interact with the data underlying their portfolio and create projections into the future given various adjustable factors. The structure of the predictive model allows for various components to be taken into consideration such as foreclosure modelling and the prepayment- and recovery approach.

By combining advanced analytics with flexible and dynamic stratifications, the Portfolio Analytics solution provides profound insights into the characteristics and development of the portfolio and allows experimentation with different forward looking strategies.

By leveraging millions of datapoints we are able to tap into the hidden potential of data, ask better questions and deliver exceptional client service.

Key features
- Use advanced analytics techniques to enable a higher level of insight into the portfolio, leveraging datapoints already available for various regulatory requirements.
- Use predictive analytics on a loan level to model the MtM development of the portfolio.
- Gain insight into the value of the portfolio given different (economic) scenarios.
- Provide insight into portfolio characteristics and ways to optimize the portfolio composition to reflect return requirements and risk appetite.

Applications
- Valuations- and risk management of credit portfolios

Audience
- Banking- and Asset Management sectors
Credentials

EY has extensive experience in the analytics area as well as specific to loan portfolios, e.g. EY supported a large Dutch bank in the sales of a SME mortgage loan portfolio. This included the portfolio stratifications, scenario analyses (ie. sales- and runoff scenarios) and guidance in the sales process. The flexible reporting structure was subsequently implemented into the business processes.

EY has supported a large asset manager in The Netherlands, implementing a real estate portfolio analysis solution using applied statistical methods to analyze value deviations and portfolio quality measurements.

EY supported a large Dutch bank in a quality assessment of the integration of a mortgage portfolio into the banking system.

What EY can do for you

EY has a team of dedicated data specialists ready to support your organization in leveraging your data into predictive models that support decision-making across Operation, Risk and Finance.
Open Data Analytics
Leveraging open source data

Introduction
The collection and utilization of data has been a competitive advantage for financial institutions. These institutions implemented data repositories to maintain their business data and perform analytics and reporting that enables decision-making. EY has observed the application of business data to enable insight and concluded that the data appetite is increasing more than ever. EY has discovered an untapped potential in the use of open data sources.

There are companies, NGO’s and government bodies that publicly release valuable data for different purposes. These data sources are often scattered and unstructured, but applied correctly they can be leveraged to gain significant more insight into your business. Combining open data with business data can be used for benchmarking, perform advanced analytics and ultimately provide valuable insight that leads to better business decisions and opportunities in the market.

EY can help your business in identifying the relevant open data, cleansing the data, integrating the open data in your systems and business processes. EY can also provide training, in the use of Open Data Analytics.

Key features
- A large number of datasets are available free or at low cost
- The open data initiative from the Dutch government contains more than 500 valuable datasets
- There is no coherent format of the dataset offerings. EY can help with both structured and unstructured sources.

Applications
- Benchmark and increase data quality
- Perform analytics to get better insight in client segmentation and client behavior
- Use open datasets to get insight and reduce risk
- Customer sentiment analysis using social media data

Company Information
Public Information
Open Data
Enabling Insight

Why EY?
- EY has a history of delivering quality services and is well experienced with connecting multiple complex datasets
- EY offers a multidisciplinary team, market leading experts can help identifying the right datasets for your business, and help incorporate them in the business processes.

Applications
Data quality and management, valuations- and risk management, customer analytics, fraud detection, competitor analysis, product development, innovation, scenario testing, and many more.

Audience

A retail bank wants to assess and increase the data quality of their mortgage administration to enable insight.
- EY has a history of delivering quality services and is well experienced with connecting multiple complex datasets
- EY offers a multidisciplinary team, market leading experts can help identifying the right datasets for your business, and help incorporate them in the business processes.

An insurance company wants to on-board a new client.
- Open Data can help in your KYC process by analysing the digital footprint of your clients.
- Open data can provide significant detailed information for the Product Approval and Review Process (PARP)
About EY

EY is a global leader in assurance, tax, transaction and advisory services. The insights and quality services we deliver help build trust and confidence in the capital markets and in economies the world over. We develop outstanding leaders who team to deliver on our promises to all of our stakeholders. In so doing, we play a critical role in building a better working world for our people, for our clients and for our communities.

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