



# Data and Analytics

## Credentials

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[KPMG.com](http://KPMG.com)

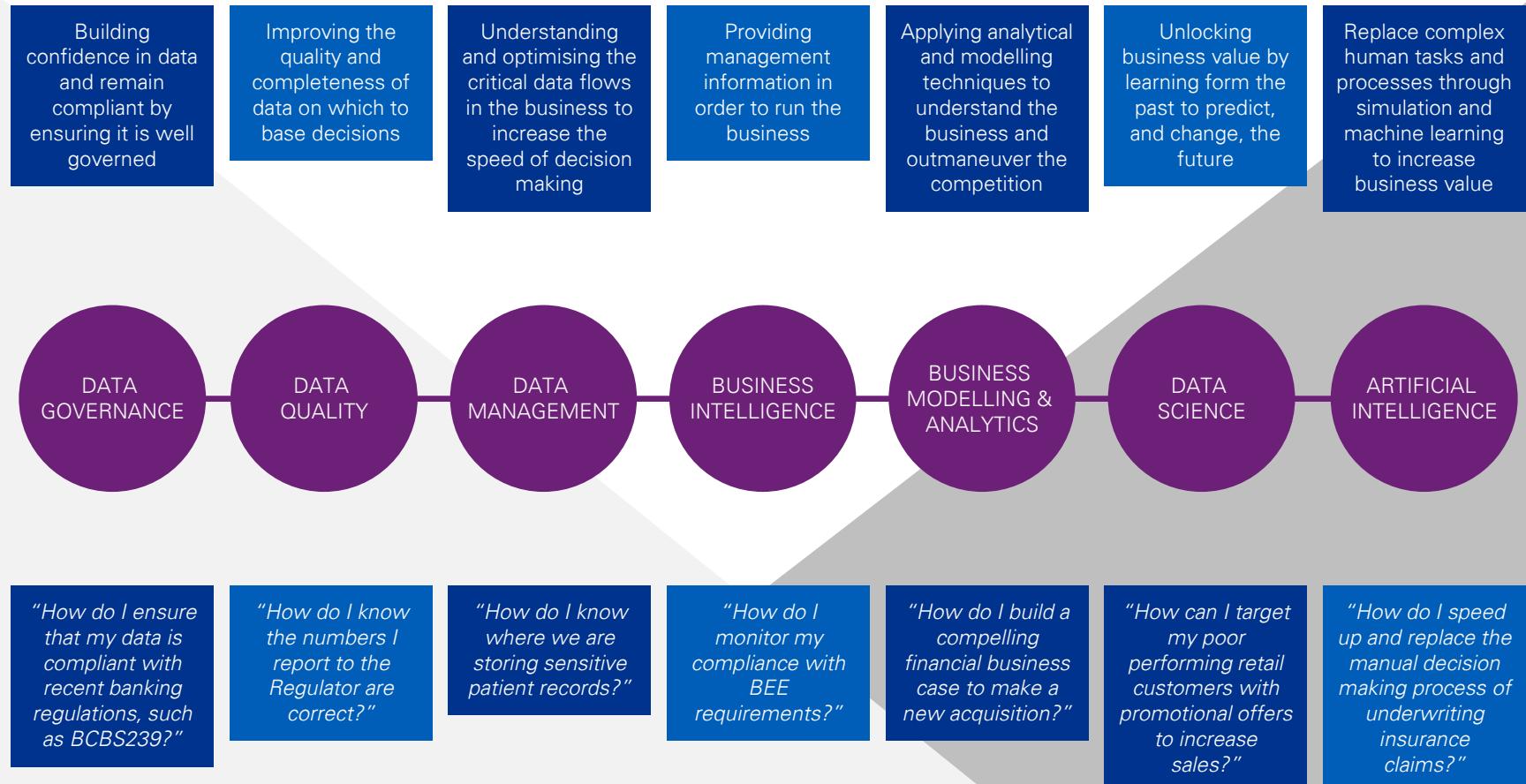


Go beyond the data

# Data & Analytics Continuum

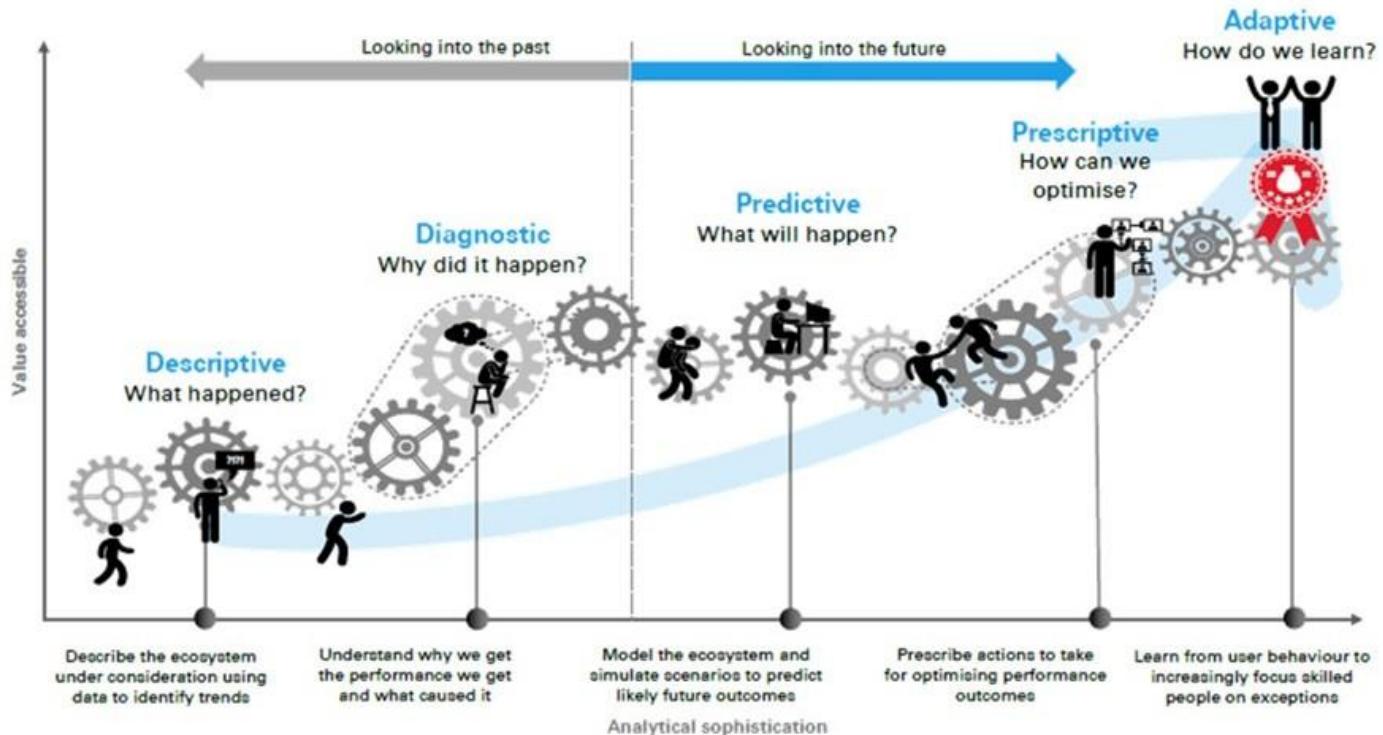
DATA FOUNDATIONS

ANALYTICS



# Current SA Vs Global Work

“Learning from the past to chase future performance”





It is easier to  
understand  
D&A when  
looking at case  
studies

A black and white photograph showing a close-up of a person's hands. The hands are holding a bundle of thin, light-colored fibers, likely fiber optics, which are fanning out. The background is blurred, showing more of the same fibers and possibly some equipment or cables.

Go beyond the data

# Data quality assessment



## Client Challenge

- Sudden and significant drop in the value of the debtor's book as per Impairment Model
- Significant difficulty sourcing the data used as input to the Impairment Model
- Inconsistencies and lack of clarity in underlying transaction and customer data used as input to the Impairment Model

## Approach and Activities

- Inspected underlying data to develop an understanding of the data model and underlying fields
- Developed a high-level understanding of how the variables used in the Impairment Model are generated or derived.
- Developed a high-level understanding of the data flow from source to reporting for customer processes around loan application, loan payment and charges.
- Interviewed key staff to obtain insight into the nature of data flows and business rules regarding data

## Key Insights

Better quality and understanding of data increases the credibility of:

- The Impairment Model allowing management to make more informed decisions around the management of the debtors book
- Customer statements and "dialling" resulting in an increase in recovery of delinquent accounts

## How it looks when its finished

- A view of the source systems producing data as input into the Impairment Model as well as the data flows between the various systems and the Impairment Model, including calculations performed on input variables.
- A high-level view of the access and change control process over the source system and the impact thereof on the quality of data and ultimately the credibility of the Impairment model.

## Why its hard to do

- Overly complex data flow/interface architecture with data transformation at each interface
- Misalignment of the data dictionary to the current data model
- Lack of formal access and change control over the source systems

# Data migration



## Client Challenge

- Complexity and lack of support for functionality maintenance of the legacy ERP system
- Need to migrate from the legacy ERP system to new SAP ERP solution

## Approach and Activities

- Analysed the Data Migration Strategy and project plan against good practise and requirements of the SAP implementation project to ensure all relevant controls were considered
- Reviewed the business rules related to the cleansing, mapping and transformation of the data to be migrated
- Validated the integrity of the critical Master and Transactional data migrated from the legacy ERP to the new SAP ERP solution using data analytics
- Actively involved throughout the data migration process to provide input and advice on activities to ensure the process remains on track while adhering to good practise data migration principles

## Key Insights

- It is key to time spent on ensuring the integrity of migrated data and measuring the data quality
- Lack of adequately defined business rules for data cleansing, mapping and transformation severely impacts the integrity of migrated data and the data migration timelines

## How it looks when its finished

- An indication of the integrity of each of the data sets migrated before the final migration run
- A final report on the final outcomes of the data migration indicating all issues encountered and the resolution thereof as well as outstanding issues that needed to be resolved

## Why its hard to do

- Minimum criteria for data migration “go-live” often not formally defined
- Data migration business rules are often not adequately defined, documented and signed-off resulting in multiple iterations of data mapping and transformation due to changes in the business rules
- The migration of master data vs. transactional data not always in sequence

# Data warehousing and mobile analytics



## Client Challenge

- Extraction of SAP data.
- Integration with SAP BW
- Enable mobile analytics for online and offline users.
- Refinement of data integration and cleansing job streams.

## Approach and Activities

- Mobile data visualization and reporting tool to allow mobile data analytics.
- Development of active report technology to enable offline data analytics.
- Identify data integration process streams requiring improvements.
- Document a data conversion and retirement strategy for processes requiring improvements.
- Identify different ways to reuse invested SAP BW development and merge with the current BI platform.

## Key Insights

- Determined data integration process inaccuracies.
- Opportunity to reduce the overall data integration job stream runtime.
- Ability to integrate the current BI platform with SAP BW and thus leverage investment made on SAP development

## How it looks when its finished

- Enable the mobile workforce to hold discussions with dealers across their region.
- Extraction of SAP data enabling integration with other systems' data and thus providing the ability to track the company's and dealership performance through many facets.

## Why its hard to do

- SAP data extraction can be difficult without the correct extraction tool and prior knowledge.
- Mobile analytics through active reporting technology is specific and requires a strong knowledge in BI modeling and report design.

# Bi strategy framework



## Client Challenge

- A global automotive client identified the need to become a data driven organisation
- Build a trusted single version of the truth

## Approach and Activities

- Workshops with stakeholders to determine go-forward Business Analytics requirements, current environment, future expectations, pains, change management guidelines and a high level BA maturity assessment, which in turn provided a basis for assessing gaps to close, project focus areas and prioritisation.
- The proposed themes were agreed and scored based on a composite weighting approach using Impact vs. Effort, Strategic Alignment and Current Maturity as drivers.
- Aroadmap document was created that outlined the sequence of initiatives that included the critical path and ongoing activities such as Governance and Change Management.

## Key Insights

- Minimising risks through change management and success factor considerations
- Working smarter by gaining more business insight and driving a more effective and efficient decision making process across the organisation

## How it looks when its finished

- A BI Strategy and BI Governance target model and roadmap that was used to determine which new solutions should be implemented to ensure a coherent approach to BI
- A single, trusted, integrated data platform with an effective governance structure

## Why its hard to do

- The Client's environment had a very siloed approach to data management, reporting and subsequent decision making, which often meant that information outside of a functional area that could be relevant to a decision was not taken into account.

# Develop a D&A foundation for auditing



## Client Challenge

- Foreign Government External Audit (Government's Auditor General) and Internal Audit (Ministry of Finance) required support to embed a Data & Analytics (D&A) capability for use across all Government departments.

## Approach and Activities

- Identified and interviewed relevant process owners and conducted a survey on D&A awareness.
- Conducted a D&A Maturity Assessment and held a workshop on the future state.
- Developed a Roadmap to advance and formed a Steering Committee and partnered on implementation.
- Provided D&A training, developed D&A methodology guidance, set-up off-site & on-line helpdesk.
- Conducted pilot reviews in conjunction with Government staff. Practical support to audit staff to practice and embed new skills.
- Training refresher and advanced training.
- Provided input on annual audit plans to leverage D&A.

## Key Insights

- The necessary data exists and can be mined for audit purposes.
- Audit staff can be trained to leverage D&A.
- Significant efficiency gains can be realized by leveraging D&A.
- D&A offers benchmarking opportunities across government departments.
- The pilot reviews revealed issues previously unknown.

## How it looks when its finished

- Audit functions without a D&A capability, risk becoming redundant.
- D&A can help an audit function simplify and improve the audit process to protect and create value.
- D&A is indispensable for world class audit functions helping to reduce risk, identify efficiencies and drive cost benefits.

## Why its hard to do

- Historically, there have been a number of challenges preventing audit functions from effectively incorporating D&A.
- Barriers include: Buy-in; Skilled Resources; Ability to translate data to insights; Funding; Data Quality and Availability.
- The barriers to D&A can be overcome by defining a business case for D&A and actions to advance enablement towards the desired end state. In addition, to partner with a service provider that has done it before.

# DAeIA Maturity Assessment



## Client Challenge

- Large diversified consumer and industrial logistics; vehicle import, distribution, dealerships, retail, rental and aftermarket parts; and vehicle-related financial services company.
- We were engaged to conduct a Data & Analytics (D&A) and Continuous Auditing & Continuous Monitoring (CA-CM) Gap Analysis and to develop a Roadmap of initiatives to consider for DA-CA-CM.

## Approach and Activities

- We interviewed Internal Audit, IT and Business staff. Active engagement with stakeholders on the benefits of D&A to drive awareness and buy-in.
- Completed a high-level Governance, Risk & Compliance (GRC) Maturity Assessment as a gap analysis.
- Complete a Data & Analytics-enabled Internal Audit Maturity (DAeIA) Assessment as a gap analysis.
- Developed a Roadmap to advance DAeIA maturity. .

## Key Insights

- Our team consisted both local and international expertise.
- We provided recommendations on tool considerations.
- We identified the processes best suited to DAeIA.
- Developed a roadmap with short and medium term actions across People, Process, Data, Tools and Techniques to advance maturity.

## How it looks when its finished

- Internal Audit functions without a D&A capability, risk becoming redundant.
- D&A can help an Internal Audit function simplify and improve the audit process to protect and create value.
- D&A is indispensable for world class Internal Audit functions helping to reduce risk, identify efficiencies and drive cost benefits.

## Why its hard to do

- Historically, there have been a number of challenges preventing internal audit functions from effectively incorporating D&A.
- Barriers include: Buy-in; Skilled Resources; Ability to translate data to insights; Funding; Data Quality and Availability.
- The barriers to D&A can be overcome by defining a business case for D&A and actions to advance enablement towards the desired end state. In addition, to partner with a service provider that has done it before.

# Data Enabled Audit



## Client Challenge

- Available system capabilities to produce data to meet expectations.
- Client understanding of their own systems capabilities.
- May require the client to design customised reports.
- Investment time with the client is required before the audit begins.
- Clients not always comfortable to share confidential data with KPMG.

## Approach and Activities

- The audit team and D&A specialists plan the audit approach together upfront, specific to the client's audit risks.
- Establish clear understanding of the client system so that we can make realistic and relevant requests, and the request can be coherently communicated to the client.
- Request readily available data, to reduce the likelihood of needing to inspect technical queries. Request the data early enough for investigation.
- Sharing the KPMG IT Security Policy principles with the client.
- Formatting the data for sensitive information before taking it from the client.

## Key Insights

- Using data and analytics to focus on audit risk, enhances the audit team's understanding of the clients operations in detail, allowing business risk focus areas to be highlighted to the client as part of this process.

## How it looks when its finished

- 100% of the full year's population is analysed for the audit team (using various tools and tailored audit solutions) before the investigative audit work begins, allowing the audit team to audit by exception and focus on anomalies identified, increasing efficiency and audit quality by using a fully risk-based audit approach.

## Why its hard to do

- The first year of a data enabled audit requires investment time from the audit client, audit team and data IT audit specialists.
- The increase of using data driven results as audit evidence creates challenging questions from the regulators in order to still ensure compliance with the auditing standards..

# Payroll Analytics and Review



## Client Challenge

- A Freight Logistics company with over 90 000 employees working in various geographies.
- KPMG was requested to conduct an end-to-end review of the Payroll process, encompassing controls around Hiring, Processing, Statutory deductions, Leave, IT general & application controls, Master data, End-user computing, General Ledger, Key Performance Indicators, Incentives, Payments and Terminations.

## Approach and Activities

- Fielded a multi-disciplinary team encompassing Process, IT and Tax specialists.
- Conducted a design effectiveness review of existing controls against best practice.
- Assessed the operating effectiveness of design effective controls through 200 analytical procedures performed on over 40 million records.
- Detailed Risk & Control Matrices per division per sub-process was developed.

## Key Insights

- Recommended actions to remediate, rationalise and optimise the control framework.
- Deficiencies in the design and operating effectiveness of controls.

## How it looks when its finished

- A clear view (top-down and bottom-up) of the overall design and operating effectiveness of the Payroll process across all geographies covering the full population.

## Why its hard to do

- Auditing multiple entities in parallel
- Processes may not be standardized across geographies.
- Data Availability and Quality may hamper efforts to test associated Payroll risks.

# Credit Risk: Portfolio Analysis



## Client Challenge

- Difficulty sourcing and reconciling data
- Inconsistencies and lack of clarity in underlying transaction and customer data used as input to the Impairment Model
- Data inefficiencies in monthly risk reporting

## Approach and Activities

- Mapping the Data processes to ensure all relevant data were understood and considered before building a new Data mart
- Reviewed the business rules related to the cleansing, mapping and transformation of the data
- Investigating various sources and building of an initial Exploratory Data Analysis (EDA) tool to show current trend and shortages in the data
- Actively involved throughout the Data Mart creation process to provide input and advice on activities to ensure the process remains on track while focus still remains on data quality
- Data dictionaries were also created for the mart and recon analysis was performed from source to final solution

## Key Insights

- Inadequate time spent on ensuring the integrity of current reporting and data quality
- Lack of a data dictionary result in different numbers on the same measure, thus data not reconciling.
- Lack of adequately defined business rules for data cleansing, mapping and transformation severely impacts the integrity and efficiency of data and reporting

## How it looks when its finished

- Credit risk data mart which includes all relevant information.
- Data dictionaries were also created for the mart and recon analysis was performed from source to final solution.
- Qlikview reporting layer where the users can dynamically select any dimension and any metric with options of different graphs that a user can select to view.

## Why its hard to do

- Unrealistic and immovable “go-live” deadlines for data projects
- Due to “big data” and different data sources, the mapping of the data process is a much bigger part of projects than expected
- Data migration business rules not adequately defined, documented and signed-off result in multiple iterations of data mapping and transformation due to changes in the business rules

# Regulatory Analytics



## Client Challenge

- Multiple Regulatory issues affecting products across the Bank.
- Key challenges in approach to solve issues, based on multi faceted complexity.
- Difficulty in identifying and sourcing relevant data
- Inconsistencies and lack of clarity in underlying transactional and customer data used as input to the Remediation Model

## Approach and Activities

- Obtain an understanding of the position and requirements with regard to specific regulatory issues.
- Advise on or define remediation approaches, key remediation analytic requirements, tactical and sustainable solution activities
- Leverage technology to enable efficient remediation, focused on data accessibility and quality, regulatory remediation data sourcing and validation, analyzing the respective key business rules for products and model design, and remediation model run, classification, and remediation risk profiles.

## Key Insights

- Providing insights throughout the risk assessment stages and assisted the client in driving key decisions.
- Remediation highlighted shortcomings in key control processes and key opportunity areas
- Comfort around remediation project approaches, activities and key project results.

## How it looks when its finished

- A detailed view of how the remediation is stratified, the spread of remediation impact analyses across product and business areas, and by predefined risk categories.
- A view of the key risk exposure customers or accounts, sufficient information to identify potential root causes, intelligent analytics to inform changes to processes for increased optimisation

## Why its hard to do

- Overly complex data flow and multiple data sources.
- Data quality challenges and inconsistencies in data located in warehouse.
- Limitations of data availability from vendors, third parties and other external sources.
- Misalignment / lack of a complete data dictionary for key data elements

# Tax Intelligence



## Client Challenge

- How to mitigate VAT risks as it relates to the supply of goods and services to connected parties as well as external customers.
- How to enhancement of processes and controls to manage and monitor the VAT risks.
- How to improve the VAT process in order to ensure that the returns are supported with accurate data.

## Approach and Activities

- Standardized tools to extract all tax relevant data from all major ERP systems.
- Sophisticated data cubing technology, hosted in the TIS platform to analyse transactional data and identify risks, opportunities and areas for process improvement.
- The ability to 'enrich' finance and tax data with other key information, including authorization data, customs and logistics data, corporate credit card expense data and ERP master data.
- Over 100 standardized indirect tax analytical routines to interrogate the information gathered.
- Data visualization and reporting tools to allow easy manipulation and refinement of outputs.

## Key Insights

- Identify tax which has been incorrectly expensed and enhance working capital
- Detect tax determination errors earlier and reduce the risk of penalties
- Reduce time to settle tax audits and queries
- Avoid financial, reputational, strategic and operational risks.

## How it looks when its finished

- Gain control and visibility over tax compliance and processes
- Accelerated input tax credits and improved working capital
- Recognise business gaps and system deficiencies to support optimisation efforts.

## Why its hard to do

- ERP systems are generally not designed for tax purposes but are the main source of tax information
- Generally limited resources are allocated to the effective management of tax cash flows, and that technology is available to actively manage the risks as well as the opportunities that arise.

# Customer Experience Analytics



## Client Challenge

- Increased pressure to improve customer experience – to truly understand the root causes for customer dissatisfaction
- Improve the customer experience across multiple touch points across multiple channels.

## Approach and Activities

KPMG Customer Compass™ is a next generation software solution for high velocity analytics of customer event, touchpoint, and profile data. The end-to-end solution includes:

- Software: Customer Compass™ Customer Journey Analytics software.
- Data Modelling: Collecting and modelling of customer touch-point, operational, and profile data
- Managed Data Services: Configuration of Customer Compass™ servers and software. Development of automated data feeds (ETL). 24x7 help desk.
- Analysts: Embedded onsite KPMG data miners and customer experience consultants providing continuous, year-round root cause analytics and actionable recommendations (with built-in business cases).

## Key Insights

- Reducing customer service costs 10% to 25%
- Increase customer satisfaction/NPS 5% to 10%
- Reducing churn 10-25 bps; increasing upsell-cross-sell 10% to 20%.

## How it looks when its finished

- Actionable insights and recommendations to improve customer experience and customer satisfaction
- Continuous, visualised root causes analysis

## Why its hard to do

- Thanks to NPS customer satisfaction surveys, knowing when customers are dissatisfied is not difficult – but knowing the root cause, and what to do about it, is.
- There is a lot of data– call center data, web data, retail data, etc. – that can potentially help, but this data is difficult to work with.

# Cost Escalation Modelling



## Client Challenge

- When preparing budgets for projects requiring large capital investments, or when analysing feasibility, rising input costs are certain to play a role in the overall project cost.
- Unexpected large changes in input costs, including commodities, have a significant impact on project feasibility.

## Approach and Activities

- Cost escalation modelling can be tailored to each specific client and set of circumstances.
- The model consists of a set of equations describing how common project input costs, such as steel and cement, are influenced by external macro-economic factors. The equations are used to generate forecasts for each type of input cost.
- The forecasts are combined with the budgeted cost of each input in each period, to derive the expected total cost of the project when allowing for price escalation.

## Key Insights

- Three scenarios are prepared: a base case, super cycle and an economic trough cycle. The use of multiple scenarios provides a distribution of possible escalation values to suit different risk appetites.

## How it looks when its finished

- Our cost escalation model provides clients with predictability in cost estimates in a rapidly changing macroeconomic environment.

## Why its hard to do

- It requires advance econometric and forecasting competencies.
- It requires in-depth knowledge of economic theoretical relationships among variables.



# Thank you

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