Causality®

Predictive Machine Learning & Quantum Optimisation

01/ Predictive Machine Learning

Causality harnesses **Microsoft Azure Machine Learning** to forecast future states with remarkable precision, whether modelling macroeconomic conditions or forecasting product demand at scale. The solution integrates with your existing data sources, using **Microsoft Fabric** to streamline storage and data flow, while **Azure Machine Learning** automates model selection and optimisation. Results are delivered through clear, intuitive **Power BI** visualisations.

Causality also enables interactive what-if analysis, allowing teams to simulate different scenarios and explore the impact of key variables before making critical decisions. Built on our evidence-based five-step data science methodology, **Causality** transforms uncertainty into quantifiable and actionable insights. Subsequent processes can then be automatically optimised in real-time using quantum annealing, e.g. portfolio optimisation, vehicle routing, production planning, or staff scheduling.

Available now on the Microsoft Marketplace, **Causality** offers a scalable solution to elevate your planning. Contact us today to discover how **Causality** can help you **Predict, Plan, and Act with Confidence**—whatever your business needs.

> *Most executives will tell you that when shaping business plans and strategy, forecasts can serve as a great counterweight to gut feelings and biases. Most will also admit, however, that their forecasts are still notoriously inaccurate.*
>
> *- McKinsey & Co.*

02 / Predict, Plan & Act with Confidence

FOR YOUR EXECUTIVES

STRATEGIC PLANNING
Generate data-driven scenarios for strategic planning sessions
Benefit: Make informed decisions based on predictive insights

RISK MANAGEMENT
Identify potential risks before they impact operations
Benefit: Proactively mitigate risks and protect business value

RESOURCE OPTIMISATION
Forecast resource requirements across different scenarios
Benefit: Optimise allocation of capital and resources
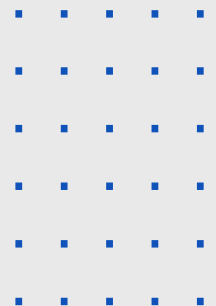
FOR YOUR FINANCE TEAM

CASH FLOW FORECASTING
Apply machine learning to anticipate future cash flow demands
Benefit: Ensure adequate funding and optimise working capital

BUDGET PLANNING
Generate accurate revenue and cost predictions
Benefit: Create more reliable budgets and financial plans

PERFORMANCE TRACKING
Monitor actual versus predicted performance in real-time
Benefit: Quickly identify and respond to deviations from forecasts
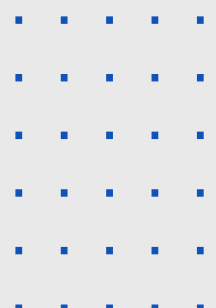
**FOR YOUR OPERATIONS TEAM**

DEMAND FORECASTING
Predict future demand patterns across products and services
Benefit: Maximise sales, optimise inventory and resource allocation

PROCESS OPTIMISATION
Scenario: Model and predict operational bottlenecks
Benefit: Proactively address efficiency challenges

CAPACITY PLANNING
Forecast resource requirements across different scenarios
Benefit: Ensure optimal staffing and resource levels
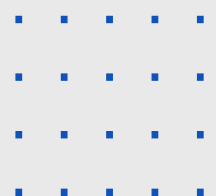
03 / Our Predictive Modelling Methodology

Insights to Action in **Five** Steps: Our proven data science methodology delivers predictive modelling solutions through a systematic five-step process, typically implemented over six weeks from initial discovery workshops through to production model deployment on Microsoft Azure.

Discovery & Problem Definition	• Clarify the commercial question and agree the value of accurate forecasts. • Confirm executive sponsors, data owners and end-users. • Set success metrics and the required forecasting horizon.
Data Preparation and Analysis	• Consolidate all relevant internal and external data sources. • Validate quality, address gaps and ensure compliance. • Verify that the variables can reliably predict the target outcome.
Feature Engineering and Model Development	• Engineer meaningful features, including macro-economic signals. • Use Azure Machine Learning to benchmark multiple algorithms in parallel. • Select the model (or ensemble) with the strongest business performance.
Model Evaluation and Refinement	• Test accuracy against the agreed metrics and a naïve baseline. • Examine feature importance to provide transparent explanations. • Refine data and model parameters until performance is robust.
Implementation and Ongoing Optimisation	• Deploy the model via automated data pipelines. • Surface live forecasts in Power BI dashboards to inform decisions. • Monitor, retrain and audit regularly to safeguard accuracy and trust.

04 / Proven Results & ROI

Causality's advanced machine learning ensemble forecasting delivers measurable business impact across industries. Independent research by McKinsey & Co. demonstrates the significant advantages of sophisticated predictive modelling over traditional forecasting methods.

50% Reduced Forecast Error
Machine learning ensemble forecasting dramatically improves accuracy compared to conventional approaches, enabling more confident decision-making across your organisation.
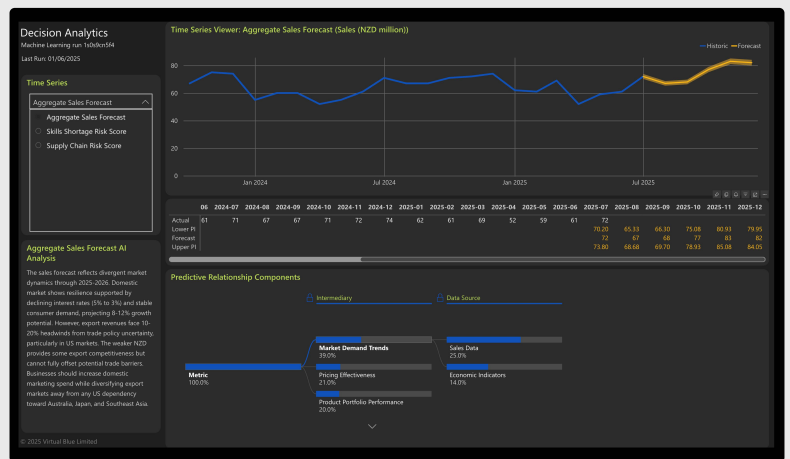
7.5% Increased Sales
More accurate demand forecasting helps businesses better meet customer needs, reducing stockouts and missed opportunities whilst optimising market timing.

75% Optimised Inventory
Enhanced prediction precision significantly reduces excess inventories and product obsolescence, freeing up working capital and reducing storage costs.

65% Lower Lost Sales
Superior forecasting accuracy minimises lost sales due to product shortages, ensuring customer satisfaction and protecting revenue streams.

Microsoft

IBM Quantum

VIRTUAL BLUE