PILOT TEST OF QUANTUM ALGORITHMS FOR MARKET SEGMENTATION AND CONSUMER BEHAVIOUR PREDICTION

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Led by

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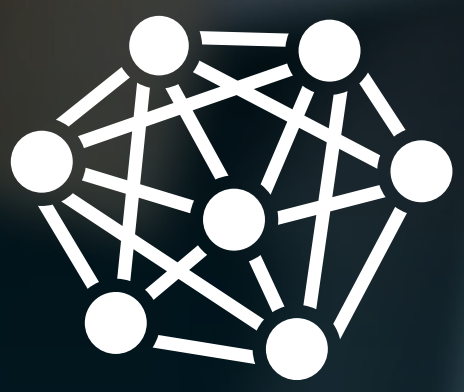
1 WHY DOES ANALYTICAL MARKETING MATTER?

Bussinesses have access to **complex user interaction patterns** and massive volumes of data

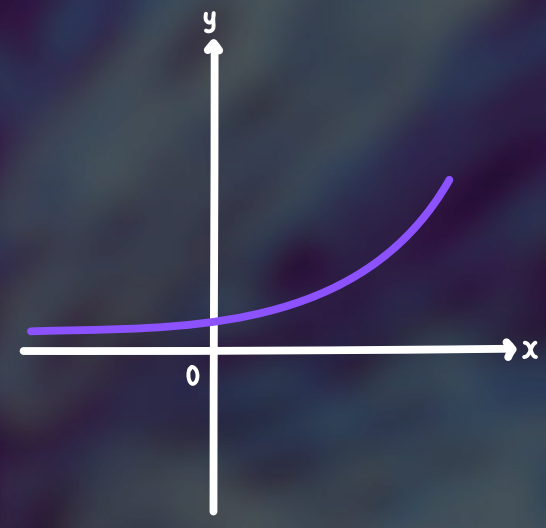
However, predicting **how customers will react** to a marketing campaign is still difficult



Classical methods are reaching computational limits, and **can no longer capture the full complexity** of real-world customer behaviour

WHY USING QUANTUM COMPUTING? 2

Quantum computers project data into **exponentially larger spaces**, so a model with just 10 qubits can operate across 1024 dimensions



The circuits the team used are **shallow and compatible with current quantum devices**: it's currently functional, not a promise

In marketing, missing a relevant customer is costly, and quantum models have the potential to **identify more relevant customers** than classical methods

3 QUANTUM COMPUTING MEETS MARKETING

The quantum model has identified **86% of relevant customers** (recall), up to 18% more than classical equivalents

It separated relevant from non-relevant customers with **83% of global accuracy** (AUC), not overfitting too much in this large space

The model was tested on **real consumer data** and **outperformed classical models** consistently in different metrics

A NEW FRAMEWORK BEYOND MARKETING

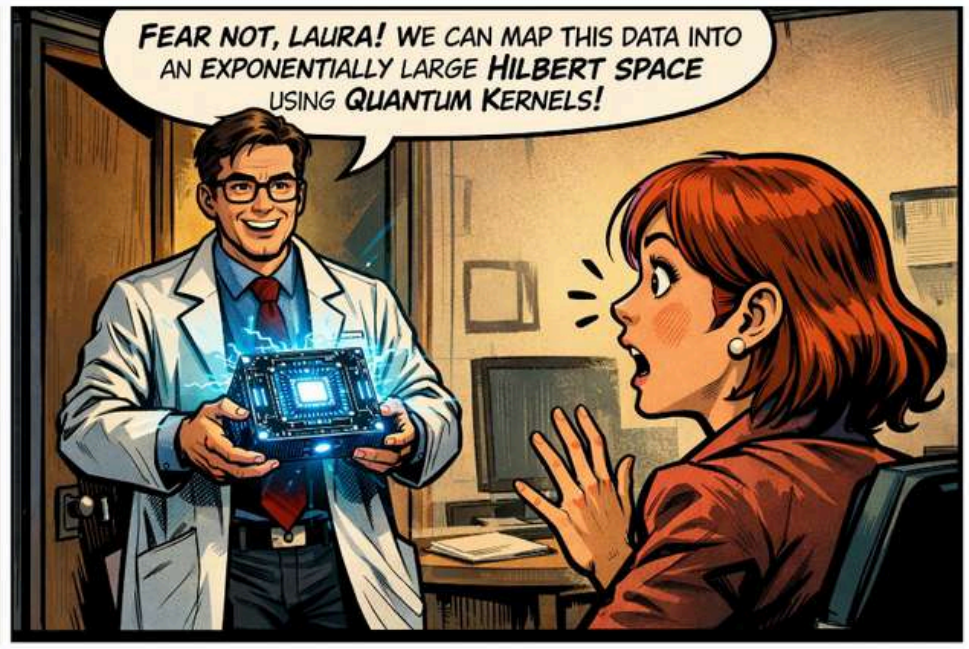
4

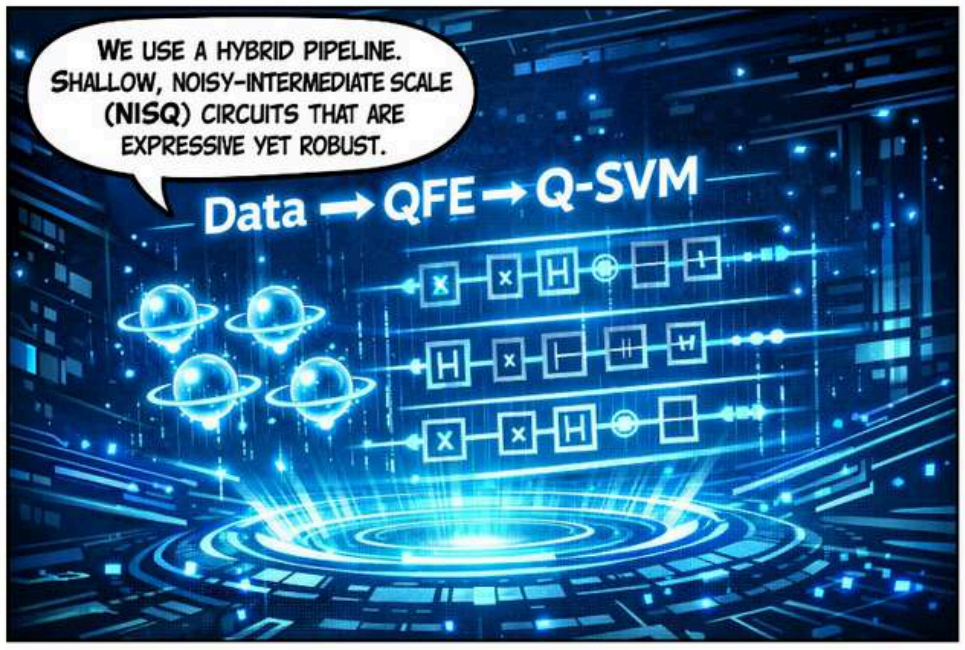
The model is particularly suited for marketing campaigns **focused on maximising reach**, like retention and priority segment identification

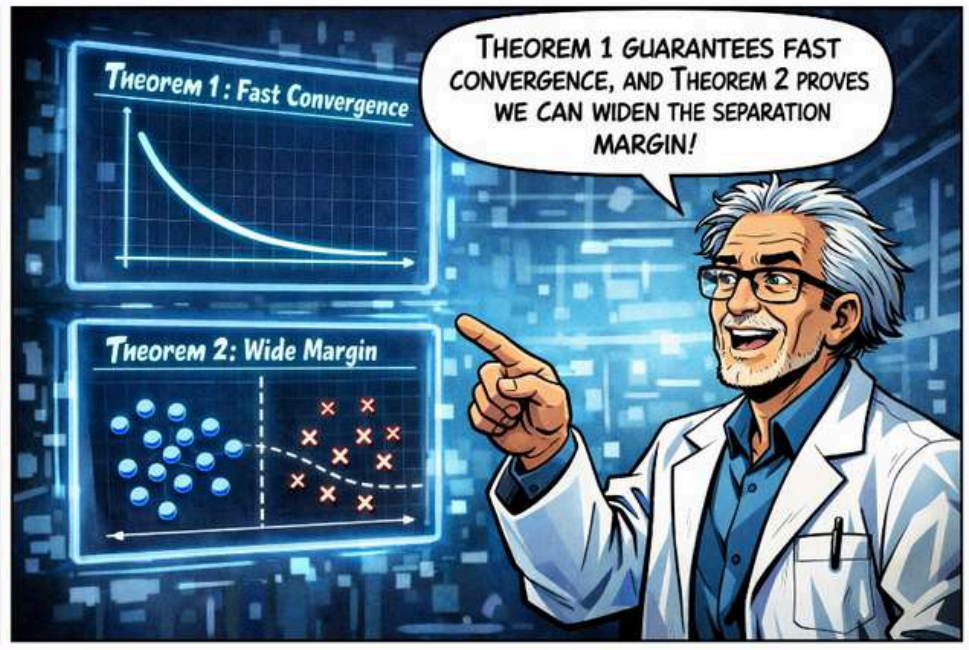
The model's performance (recall, AUC and other metrics) allows decision thresholds to **be adjusted for different campaigns** without having to retrain the model

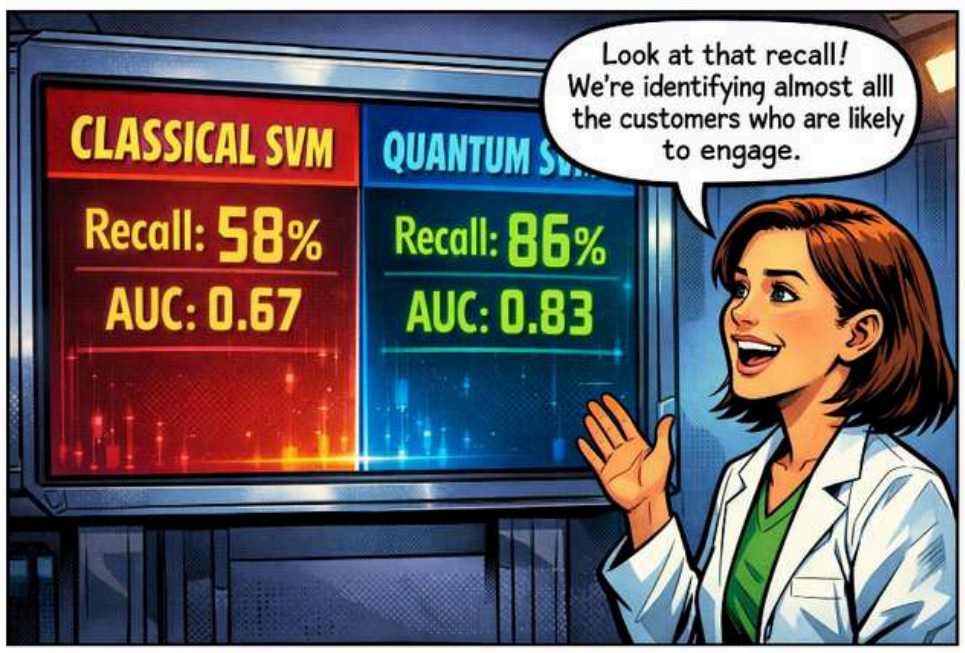
The same quantum approach can be applied in many areas **where detecting complex patterns is critical**: finance, healthcare, operations...

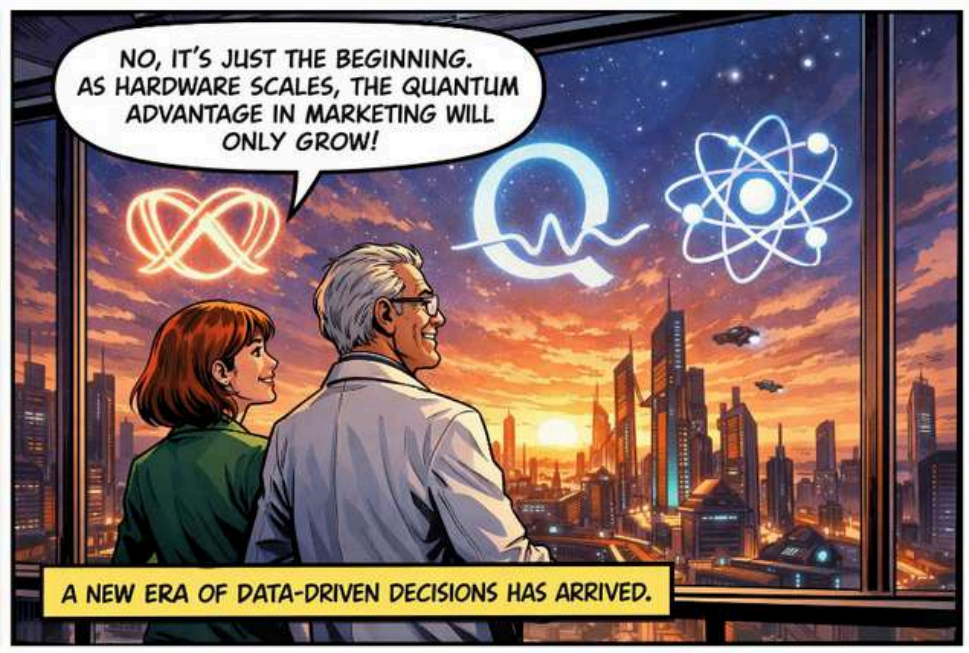
This work is a feasibility study and the results should be interpreted as a preliminary exploration, not as a definitive benchmark.











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