OCBC to develop quantum applications with NUS, NTU, SMU
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Research will focus on enhancing derivative pricing, fraud detection, data security

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OCBC will embark on research collaborations with three local universities to develop applications of quantum technology in derivative pricing, fraud detection and data security.

The bank announced this during a media briefing on Thursday (Jul 17), where it signed 12-month long collaboration agreements with the National University of Singapore (NUS), Singapore Management University (SMU) and Nanyang Technological University (NTU).

"The industry-academia exchange is deeply meaningful to us," said Praveen Raina, head of group operations and technology at OCBC. "It drives research and innovation by merging practical insights and real world use cases with domain expertise and knowledge."

The bank will support NUS' research on applying quantum computing to speed up Monte Carlo simulations, which are a common method used to calculate the value of financial derivatives.

Quantum technology could significantly boost the speed and accuracy of these calculations, making it easier to adjust investment portfolios in real time and run advanced risk models.

Associate Professor Patrick Rebentrost, principal investigator at NUS' Centre for Quantum Technologies, said that while his academic group has a deep understanding of the interface of quantum algorithms and mathematical finance, this project will give them "the opportunity to apply the theory in practice".

OCBC is also supporting SMU's research into using quantum machine learning (QML) to improve fraud detection. By analysing messy and complex data, QML can spot unusual patterns that may indicate fraudulent behaviour.

This could help banks identify suspicious transactions more quickly and accurately, making it possible to catch potential fraud in real time.

The goal of the SMU partnership is to "translate quantum machine learning innovations into practical tools that strengthen trust and resilience in the banking sector", said Associate Professor Paul Griffin, principal investigator at the university's School of Computing and Information Systems.

With NTU, meanwhile, OCBC's partnership will focus on deploying post-quantum cryptography – advanced encryption methods built to prevent hackers from stealing data, even if they have access to powerful quantum computers.

Findings from OCBC's research collaborations with the three universities will be published in technology-focused research papers and journals.

This will allow players in the banking industry to assess whether quantum technology is suitable for key operations, and could speed up its adoption.

Besides universities, OCBC is also partnering with other institutions to develop real-world applications of quantum technology.

It is working with both Singtel and the Monetary Authority of Singapore to explore the application of quantum key distribution, a secured method of transmitting information and data.

The bank said it has around 50 employees with at least an intermediate proficiency in quantum technology. Through ongoing training efforts, it aims to bring this figure to over 100 employees by 2026.

OCBC's initiatives come amid a broader national push to build up quantum capabilities.

Singapore aims to be a leading hub for development and deployment of the technology. The government will commit about S$300 million to advance research and talent training, with plans to build quantum computer processors locally and create quantum applications for industry usage.