

Quantum Computing as an Uprising Topic for Business Students in Higher Educational Institutions

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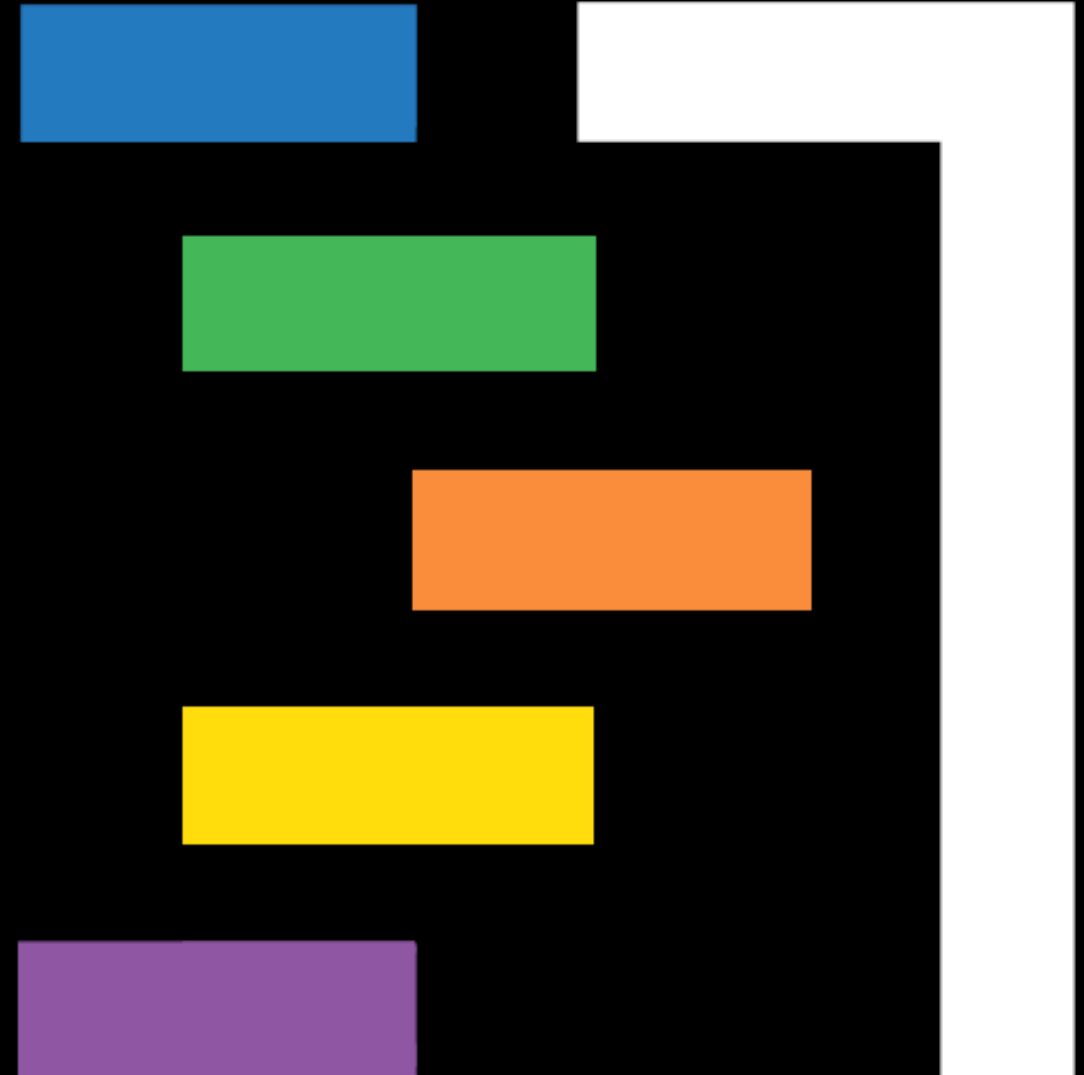


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BACKGROUND

Background



Quantum Computing (QC) refers to “a *new technology for computation, which leverages the laws of quantum mechanics*” (McKinsey & Company, 2024).

- May disrupt several business sectors and related industry value chains.
- Projected economic value of \$1.3 trillion by 2035.

The problem

- Talent shortage
- QC education is mainly tailored to students in technical fields.

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RESEARCH OBJECTIVES

Research Objectives

Objective 1

To underline QC's relevance
for business

→ **Show QC applications
in selected sectors**

Objective 2

To identify the gap in QC
educational offerings for
business students

→ **Show the state of QC in
education**

Objective 3

To highlight the barriers to
QC adoption in business
and education

03

METHODOLOGY

Methodology

- We adopted a structured review approach.
- Keywords: “quantum computing”, “quantum computing course”, “quantum computing for business”, etc
- Platforms used: Google Scholar, ScienceDirect; IEEE Xplore
- Analysis of a survey conducted at FHNW School of Business

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RESULTS & DISCUSSION

Relevance of QC in Business

QC applications in selected sectors

Financial Services	Agriculture	Ecology
<p>Orús et al. (2019); Deloitte (2023)</p> <ul style="list-style-type: none"> • Solution to supply chain management issues • Enhance credit score • A risk to cybersecurity 	<p>Maraveas et al. (2024); Mukhamedieva (2024)</p> <ul style="list-style-type: none"> • Influence on farm practices • High crop yields • Need for hardware and expertise 	<p>Woolnough et al. (2023); PWC (n.d.); Deloitte(2023)</p> <ul style="list-style-type: none"> • Enhancement of ecological modelling • Readiness of fundamental approaches to quantitative ecology

QC in Education

Salehi et al (2022):

- Eliminating complex numbers when teaching QC increases understanding.

Saad et al . (2023):

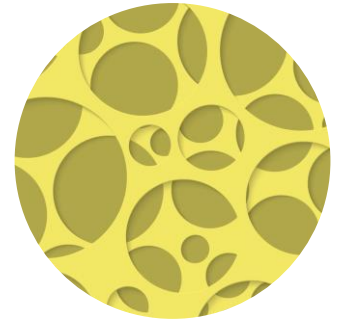
- Need for an appropriate manner when teaching QC to retain students.

Tucker (2023):

- Self-directed learning could be challenging to non-tech students.

Angara et al. (2023)

- QC workshop requires diverse participants and activities.

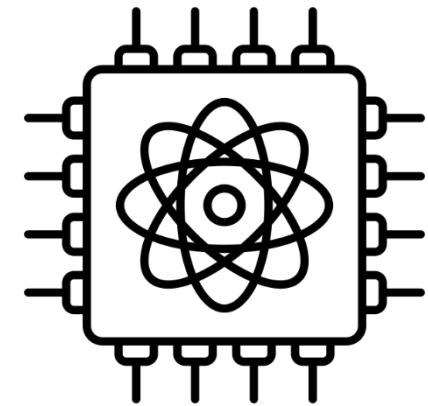


Student Interest in QC – Survey Results

- 78 participants at the FHNW School of Business completed the survey
- Background of participants: Business Administration program; Business Information Technology, and International Business Management

Main Findings:

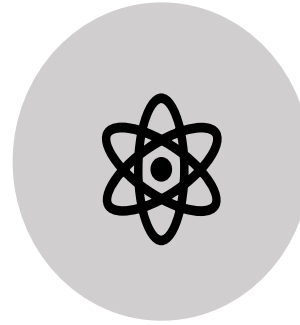
- 68% of participants indicated a lack of prior knowledge in QC
- 60% of participants didn't recognise the relevance of QC
- 67% of participants expressed interest in learning QC



QC Offerings to Business Students



Missing QC offerings for business students.



Current focus is on physics and engineering students (Plunkett et al., 2020).



Beginner-level courses on LinkedIn Learning, Udemy Coursera, CERN, and IBM.

Barriers to QC Adoption in Business & Education

In Business

Bhasin et al. (2023); Awan et al. (2022);
How et al. (2023):

- Lack of technical expertise
- Lack of an ecosystem for co-creation
- Limited understanding of market demands

In Education

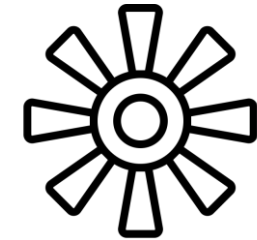
Jumde et al. (2023); Koczka et al. (2023);
Carberry et al. (2021):

- Mastery of quantum physics and chemistry
- Lack of existing use cases and skills
- Time constraints
- Budget constraints

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RECOMMENDATIONS

Recommendations



- QC should be introduced to Business students.
- Educators should promote online foundation-level QC courses.
- Offer the course as short-term workshops.
- Teaching models: practical cases and link to everyday events.

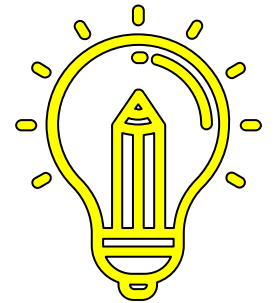


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CONCLUSION & AREAS FOR FURTHER RESEARCH

Conclusion & Areas for Further Research

- Investment in QC reflects investors' optimism.
- Barriers to QC adoption in business relate to those in education.
- Incorporating QC in business studies is vital for informed investment decisions.



Areas for Further Research:

- Extensive investigations into the integration of QC in business studies.
- Interview QC Experts.

