

# Could Quantum Computing be the Next Paradigm Shift for Industrial Applications Soon?

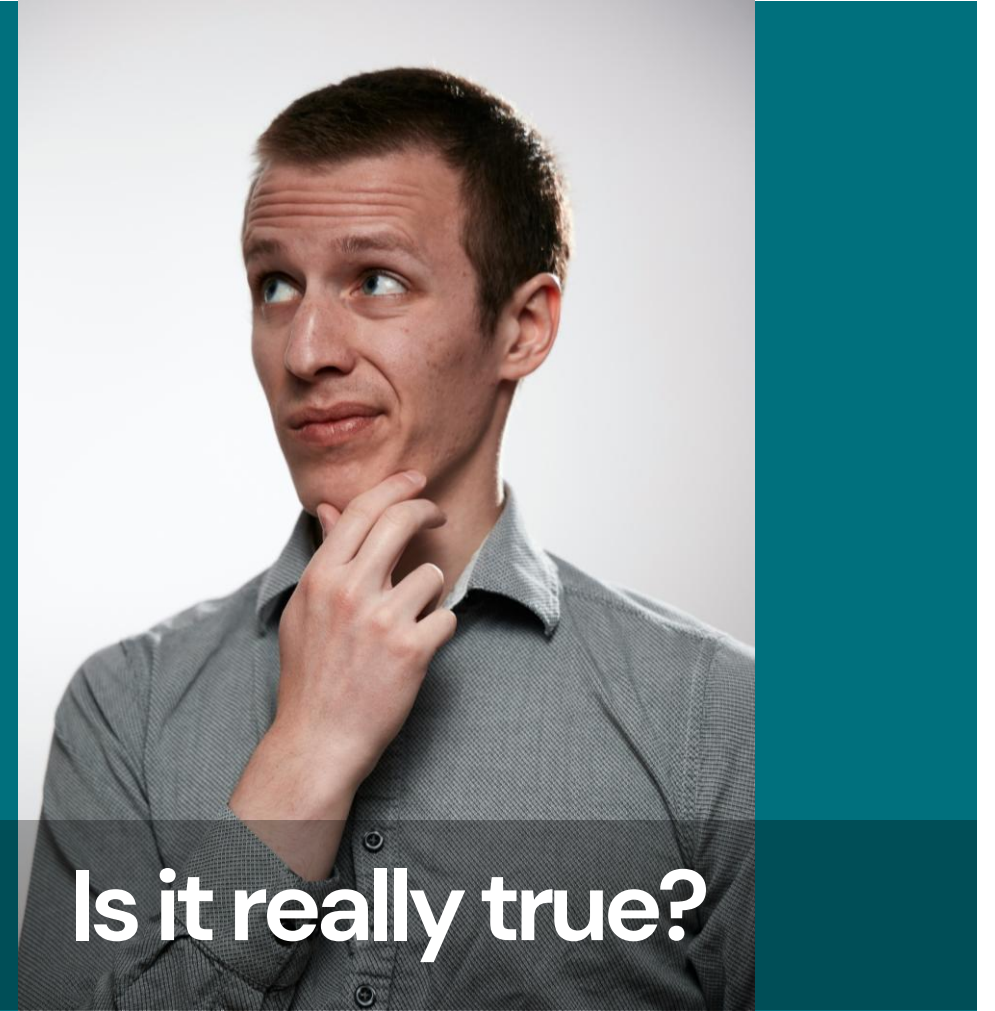
HyungHoon Kim, 20192208

# Expectation vs Reality

*Image credit: Tumisu / Pixabay (2022)*



*Image credit: Ludovic Migneault / Unsplash (2020)*



# Reason 1 – High Costs

**Require  
temperatures  
near absolute  
zero**

**Requires  
Helium-3**

**Helium-3  
is strictly  
limited**

**High Costs**

# Reason 2 – Restricted Practical Applicability

- 1 Not Superior than Classical Computer
- 2 Lack of Broad Utility
- 3 Unproven Performance Edge in Key Sectors

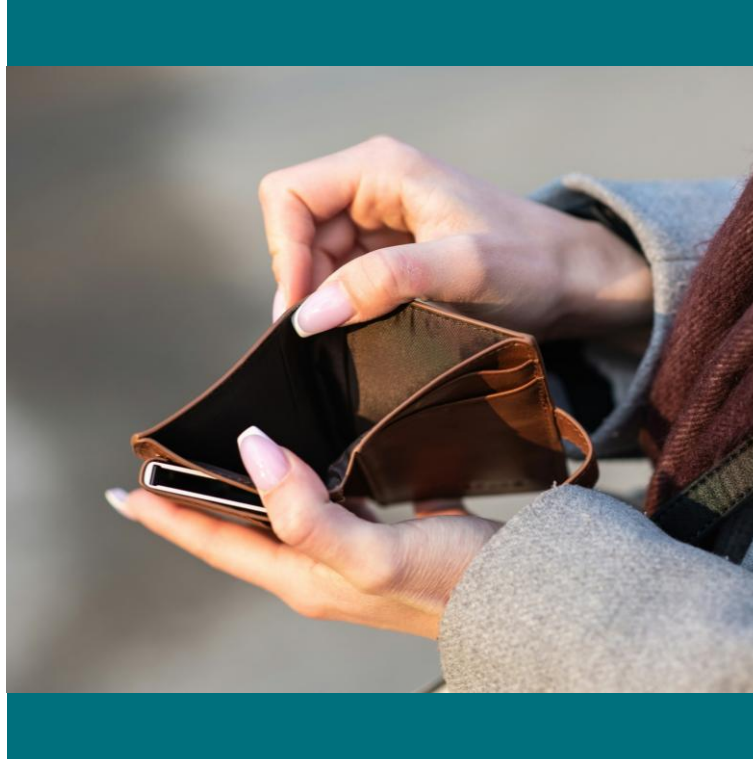
# Reason 3 – Shortage of Qualified Talent

*Image credit: Hunters Race / Unsplash (2017)*



**Over-reliance on  
Experts**

*Image credit: Emil Kalibradov / Unsplash (2021)*



**Lack of Investment**

*Image credit: AI-generated using Gemini (2025)*



**Inflexible Hiring**

**Instead of chasing prematurely  
hyped technology, industries  
should prioritize proven and  
practical solutions.**

# References

- Tumisu (2022). *Breaking news journalism press* [Photograph]. <https://pixabay.com/photos/breaking-news-journalism-press-7613045/>
- Migneault, L. (2020). *Man in gray button up shirt* [Photograph]. <https://unsplash.com/photos/man-in-gray-button-up-shirt-B9YbNbaemMI>
- Race, H. (2017). *Person standing near the stairs* [Photograph]. <https://unsplash.com/photos/person-standing-near-the-stairs-MYbhN8KaaEc>
- Emil, K. (2021). *Person holding black android smartphone* [Photograph]. <https://unsplash.com/photos/person-holding-black-android-smartphone-KO5Udh2LhFA>
- Google. (2025). *Shape toy* [AI-generated image]. Created using Gemini (Nano Banana). <https://gemini.google.com/>
- Jones, R. (2025, November 21). *All the hottest tech needs to be so, so cold*. Semafor.com. <https://www.semafor.com/article/11/21/2025/all-the-hottest-tech-needs-to-be-so-so-cold>
- Marr, B. (2025, July 23). *Quantum Computing Faces 3 Major Barriers Before Going Mainstream*. Forbes. <https://www.forbes.com/sites/bernardmarr/2025/07/23/quantum-computing-faces-3-major-barriers-before-going-mainstream/>
- Narang, P., & Levine, J. (2025, October 20). *The Supply Chain Chokepoints in Quantum*. War on the Rocks. <https://warontherocks.com/2025/10/the-supply-chain-chokepoints-in-quantum/>
- Nellis, S. (2025, March 20). *Nvidia to open quantum computing lab, CEO says*. Reuters. <https://www.reuters.com/technology/nvidia-open-quantum-computing-lab-ceo-says-2025-03-20/>
- Swayne, M. (2025a, April 14). *RAND Europe: Quantum's Future Workforce Needs More Than Physicists*. The Quantum Insider. <https://thequantuminsider.com/2025/04/14/rand-europe-quantums-future-workforce-needs-more-than-physicists/>
- Swayne, M. (2025b, May 3). *Quantum Tech Remains a Long-Term Bet, Stanford Report Says*. The Quantum Insider. <https://thequantuminsider.com/2025/05/03/quantum-tech-remains-a-long-term-bet-stanford-report-says/>



**Thank You!**