From Once Upon a Time to Quantum Reality: Is Your Start-Up Ready for the Challenge?

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For start-ups striving to play their part in the emerging quantum computing revolution, understanding procurement dynamics in the hardware market can be the difference between success and sorrow.

Much like the dawn of classical computing, quantum computing has the potential to disrupt the world as we know it. As was the case in the early days of classical computing, today's quantum computing scene is a hotbed of activity. With the market having a projected annual growth rate exceeding 50 percent in the upcoming years, there is no surprise that the number of start-ups are growing with it. If we can learn anything from its predecessor, turning quantum computing from a dream to reality could depend on a fruitful collaboration between academia, industry, and entrepreneurial companies.

Despite all the buzz, a key challenge lingers: quantum computers have yet to demonstrate their quantum advantage, meaning the capability to outperform classical computers on real-world problems. Achieving this milestone requires a fine balance of scaling up the number of quantum bits while managing the noise phenomenon associated with quantum operations. Therefore, developing sophisticated quantum computing hardware solutions is instrumental in the quantum race.

Amid the heavy emphasis on technological breakthroughs in this fascinating landscape, our study aimed to break new ground by setting out to understand the decision-making factors for buyers of quantum computing hardware. Among a total of eight identified purchasing criteria, the categories performance, price, and trust stood out the most in the supplier selection. Start-ups were perceived to have a competitive edge over incumbent firms due to their innovative nature, willingness to customize, and collaborative attitude. On the other hand, they lacked trust and stability, owing to unreliable cash flows and an absence of track records. Organizations contemplating whether to make the hardware or buy it—from a start-up or any other vendor—face an economic trade-off between knowledge, time, budget, and customization, with the mindset of key participants looming in the background.

In a nutshell, start-ups seeking to participate in shaping the quantum future must pause and ponder to comprehend the intricacies within this deep technology market. Knowledge about what criteria customers scan for, how they perceive a start-up, and what leads them to either opt for making or buying are all key components to navigate in this exciting yet complex field. Knowing the do's and don'ts not only serves to the benefit of a start-up, but also to the promising land of quantum computing as a whole.