

Special Analysis

Key Takeaways from QC Buyer/Users Study: Most QC Users Foresee Strong QC Budget Growth for 2020-2024

Bob Sorensen and Earl Joseph
August 2020

HYPERION RESEARCH OPINION

According to a recent Hyperion Research study of 115 current and interested QC end-users from both HPC and enterprise IT organizations, the average budget of surveyed QC buyers/users, worth about \$3.2 million in 2019, will grow at a 27% CAGR between 2019 and 2024. This growth includes follow-on budget commitments from existing QC users as well as new budget commitments from a tranche of survey respondents who are currently only considering QC involvement. However, the number of organizations that are not yet certain of budget timetables over the next four years remains relatively constant at about 15% of those surveyed. A strong anticipated growth rate in QC end-user budgets implies high expectations for QC developments that can support adequate return on investment or sector-relevant competitive advantage. Current and potential QC users likely will be looking for QC suppliers to roll out a series of steady technological and use case advances that provide assurance that the QC sector is successfully moving to achieve stability, reducing the risk of being an early adopter.

CURRENT SITUATION

Hyperion Research recently completed a survey of 115 current and interested QC end-users from HPC and enterprise IT organizations on their perceptions of the nascent quantum computing sector. Data collected included expectations, plans, schedules, and budgets for the introduction and use of quantum computing in existing and planned computational workloads. As seen in Table 1, the list of organizations represented in the survey cuts across a wide range of sectors. Figure 1 captures the range of surveyed organizational annual revenues (or budgets for academic or government entities) that spanned less than \$15 million to over \$10 billion.

- All respondents indicated that they were either currently using QC (42%) or were considering, planning to use, or were interested in any QC technology or products (58%) in their current or planned computing environment.

TABLE 1

Survey Respondents' Organization's Main Area of Activity

	Number of Responses	Percent
Advanced Manufacturing	3	2.6%

TABLE 1**Survey Respondents' Organization's Main Area of Activity**

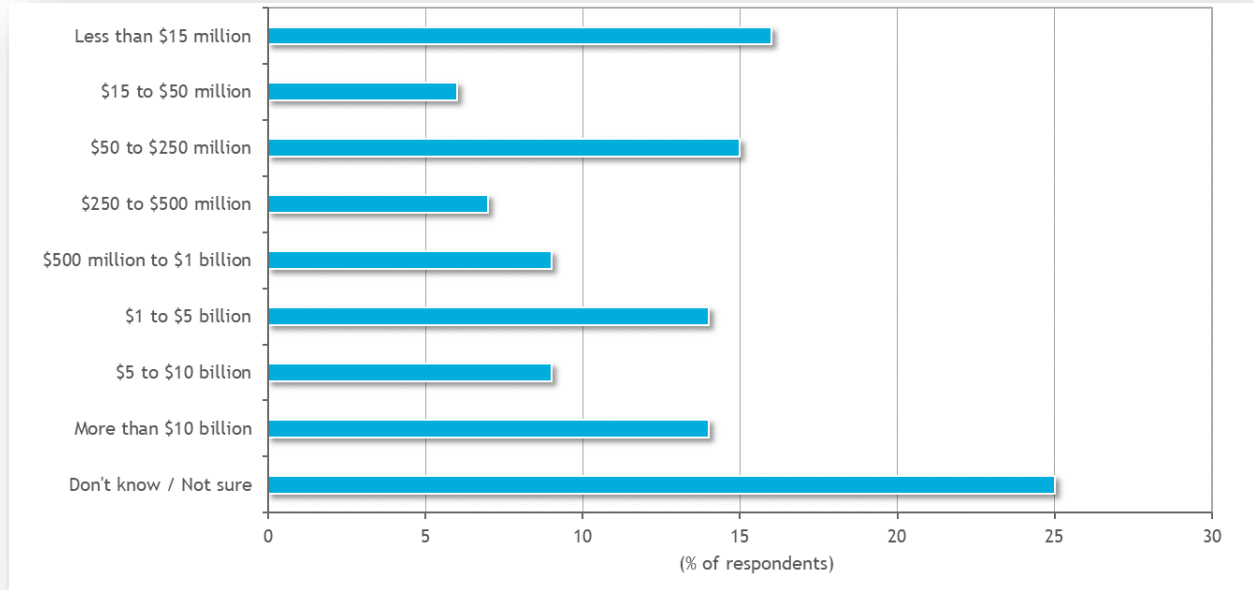
	Number of Responses	Percent
Aerospace	6	5.2%
Automotive / Transportation / Mobility	3	2.6%
Bio-Sciences	4	3.5%
Computer-aided engineering	2	1.7%
Chemicals (excluding pharmaceuticals)	1	0.9%
Computer, electronic, and optical products	3	2.6%
Defense	3	2.6%
Financial	15	13.0%
Energy (excluding Oil & Gas)	2	1.7%
Geosciences	3	2.6%
Government Lab	8	7.0%
Oil & Gas	0	0.0%
Pharmaceuticals	2	1.7%
Retail / E-commerce	4	3.5%
Telecommunications	2	1.7%
University / Academic	35	30.4%
Weather	2	1.7%
Other	17	14.8%

Note: n = 115

Source: Hyperion Research, 2020

FIGURE 1

Organizations' 2019 Total Revenues (or 2019 Budget for Academic or Government Entities)



Note: The bulk of Don't know / Not sure entries came from either academic or government users, but a number of commercial firms also likely elected to keep their revenue numbers private.

Source: Hyperion Research, 2020

As part of the survey, respondents were asked to provide their anticipated spending on quantum computing across the 2019-2024 time frame. This spending included budgets for both in-house efforts as well as expenditures for QC hardware, software, and related services procured from commercial QC suppliers.

Based on survey results, the total budget for QC buyers/users from the 115 survey respondents was about \$324 million in 2019, an average of \$3.2 million per organization excluding those that did not know or were not sure about their budgets. This estimate draws on data seen in Figure 2 and is the sum of the average budget in each band multiplied by the number of companies in that same band. Using the same procedure, the estimated sum of total respondents' projected budgets will grow to a combined \$616 million in 2022, and \$1.06 billion in 2024.

- This represents a 27% CAGR for 2019-2024 total QC expenditures for the survey respondents.

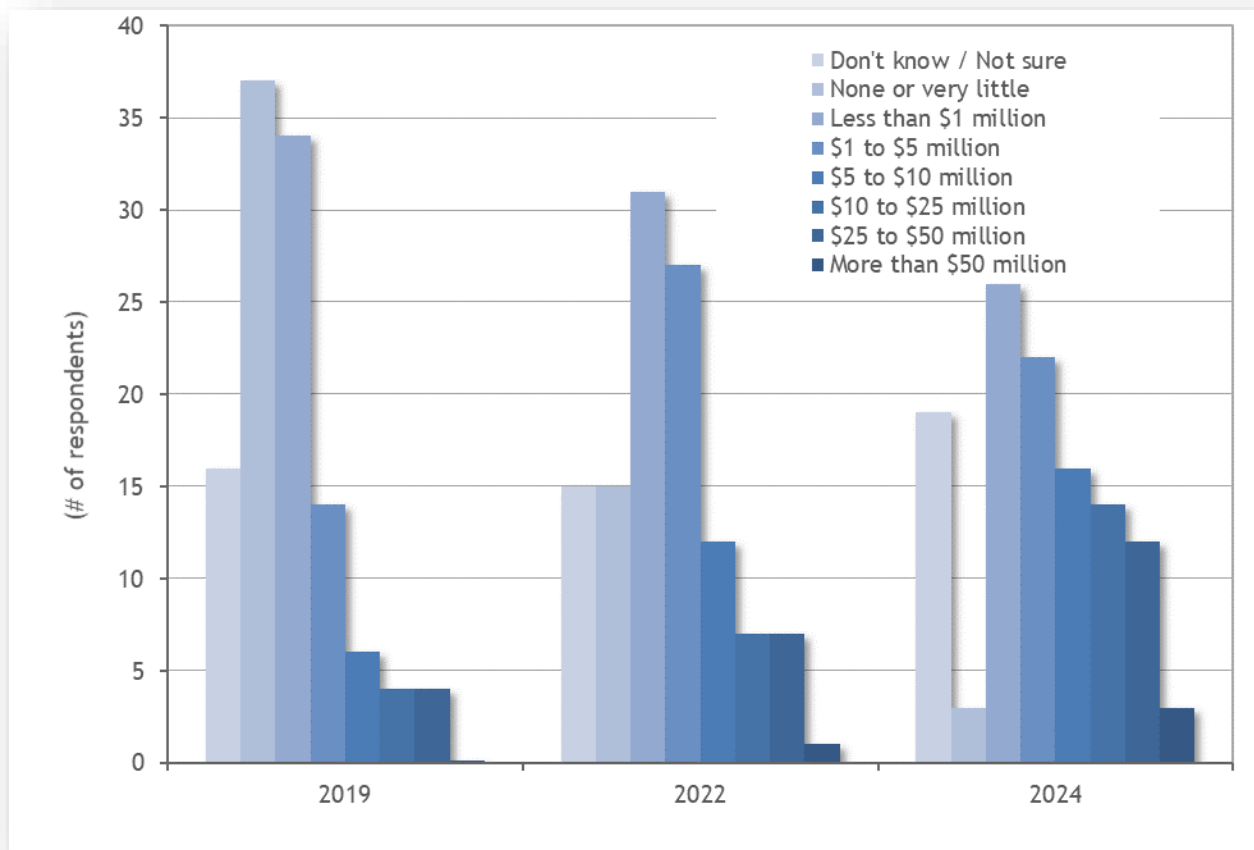
This growth not only characterizes additional budget commitments from existing QC users but also new budget commitments from a tranche of survey respondents who are currently only considering QC

involvement. Indeed, for this survey, between 2019 and 2024, for those having budget forecasts, the percentage of respondents with little or no QC capability will decline from 32% to less than 3%.

- In contrast, between 2019 and 2024 the number of surveyed organizations spending \$25 million or more on QC will increase by more than 4X, from 4 to 17.
- These results, however, do not offer any insights for the respondents (about 15% of those surveyed) who don't know or are not sure about their future budget commitments.

FIGURE 2

Spending on QC Capability



Note: For 2019, there were no entities that reported spending levels in the more than \$50 million range.

Source: Hyperion Research, 2020

FUTURE OUTLOOK

A strong anticipated growth rate in QC end-user budgets means that a wide range of current QC users are interested continued integration of QC capabilities into their existing and planned workloads while a number of potential QC users are planning to enter the sector in the next few years. All of the organizations, either current or planned QC participants, however, will be looking to QC suppliers to roll out a series of steady advances that provide some assurance that the QC sector is successfully moving to achieve stability and reduce the risk of being an early adopter. Near-term demonstrations of real-world use cases that can clearly demonstrate adequate return on investment or sector-relevant competitive advantage will be a key confidence building mechanism.

Although a wide range of organizations have expressed interest in building a QC capability, they will have a range of workload requirements and the need for strong support from their QC vendors, at least in the early stages of the adoption process. Aspiring QC suppliers can benefit from a careful selection of targeted organizations with some understanding of the various computational and application-specific requirements that may be unique to each sector, or perhaps even to each organization.

For more information on how to obtain the complete study, QC Buyer/User Status and Outlook, along with the companion data set of survey results, contact Bob Sorensen at bsorensen@hyperionres.com.

About Hyperion Research, LLC

Hyperion Research provides data-driven research, analysis and recommendations for technologies, applications, and markets in high performance computing and emerging technology areas to help organizations worldwide make effective decisions and seize growth opportunities. Research includes market sizing and forecasting, share tracking, segmentation, technology and related trend analysis, and both user & vendor analysis for multi-user technical server technology used for HPC and HPDA (high performance data analysis). We provide thought leadership and practical guidance for users, vendors and other members of the HPC community by focusing on key market and technology trends across government, industry, commerce, and academia.

Headquarters

365 Summit Avenue
St. Paul, MN 55102
USA
612.812.5798

www.HyperionResearch.com and www.hpcuserforum.com

Copyright Notice

Copyright 2020 Hyperion Research LLC. Reproduction is forbidden unless authorized. All rights reserved. Visit www.HyperionResearch.com to learn more. Please contact 612.812.5798 and/or email info@hyperionres.com for information on reprints, additional copies, web rights, or quoting permission.