HAWAIʻI IT WORKFORCE NEEDS ANALYSIS

Executive Summary

November 2021

Conducted by SMS Research on behalf of the Chamber of Commerce Hawaiʻi and the University of Hawaiʻi Community Colleges with financial support from Harold K.L. Castle Foundation.

EXECUTIVE SUMMARY

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This report aims to understand Hawai'i companies' information technology (IT) workforce needs and how well Hawai‘i meets those needs. The results will inform education and training programs, including K-12, UH credit and noncredit programs, and statewide programs. In this way, more Hawai‘i students and residents can be employable in IT-related fields in Hawai‘i.

The report is intended to serve as a starting point for further discussion by stakeholders who together can help ensure Hawai‘i is preparing our own future-focused IT talent pipeline, and supporting workforce diversification and an innovation economy.

OVERVIEW OF IT WORKFORCE IN HAWAI‘I

In 2020, the IT sector in Hawai‘i was responsible for 12,740 jobs, 3,834 hires, and 894 average annual openings. In 2018, the industry had contributed $2.037 billion, or 2.2 percent, to Hawai‘i’s total nominal Gross Domestic Products[1] (GDP).[2] The average tech industry hourly wage in Hawai‘i is $39.92[3], 157 percent higher than the $15.53 ALICE Individual Living Wage.[4]

The US Bureau of Labor Statistics (BLS) data has shown that computer and technology occupations are promising career fields. Related employment is projected to increase 13 percent nationally between 2020 to 2030. In Hawai‘i, the total employment forecast for the computer and mathematics occupation group, from 2018-2028, is an increase of 7%.

The largest number of IT positions by industry in Hawai‘i are within the NAICS 541 Professional, Scientific, and Technical Services. This category includes technology companies and consulting companies that provide services to the Department of Defense. Overall, of companies posting for IT positions, 48% are technology companies or have military contracts, 25% are non-technology companies that rely heavily on technology such as banks and healthcare providers and the remaining 27% are educational institutions, non-profits, and government.

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1 The gross domestic product (GDP) in a region is the monetary value of all goods and services produced within the geographic area of the region in a particular period of time. It is the broadest quantitative measure of a region's total economic activity. DBEDT.

2 Hawai‘i Economic Structure Analysis Using the Industry Level Gross Domestic Product Data, State of Hawai‘i Department of Business, Economic Development and Tourism (DBEDT), July 2019.

3 Workforce Availability Report, Emsi Q4 2021 Dataset, November 2021, University of Hawai‘i Community Colleges, www.economicmodeling.com

4 ALICE in Hawai‘i: A Financial Hardship Study, 2020 Hawai‘i Report, Aloha United Way, ALICE Project – Hawaii (unitedforalice.org)

5. The State of Hawai‘i ’s Department of Business, Economic Development and Tourism (DBEDT) Hawai‘i Defense Economy (HDE) Strengths-Weaknesses-Opportunities-Threats (SWOT) Analysis Report and Action Plan

The Hawai'i Defense Economy SWOT Analysis Report[5] estimates that Defense-related contract awards in NAICS 5415 (Computer Systems Design and Related Services) was close to $128 million in 2020. This level is estimated to support 1,700 jobs (not all of them IT) and contribute $240 million in economic impact to the Hawai'i economy.

IN-DEMAND OCCUPATIONS

The four IT occupations with the largest number of employees are Computer Systems Analysts, Software Developers & Quality Assurance Engineers/Analysts and Testers, Computer User Support Specialists, and Network and Computer Systems Administrators. These are the occupations that are common within most industries. Other IT positions are more concentrated within specific industries.

FASTEST GROWING OCCUPATIONS

The top three fastest-growing IT occupations in Hawai'i from 2018 to 2028 are projected to be: Information Security Analysts with 60 new positions (+33%); Computer and Information Research Scientists with 20 new jobs (+25%); and Software Developer and Software Quality Testers with 220 new positions (+15%). This last category is projected to have the largest increase in jobs, followed by Computer User Support Specialists with 110 (+12%) more jobs[6]

SUPPLY AND DEMAND

The demand for IT employees in Hawai'i exceeds the number of available IT individuals seeking jobs in the industry. In 2020 there were approximately 894 job openings (including retirements and new positions) within the category of Computer and Mathematical occupations in Hawai'i.[7] There were about 775 program completions from Hawai'i higher educational institutions in Comprehensive Instructional Programs (CIPs) that included IT-related skills in the same year. If the skills gained in the completed programs matched the skills required in the job openings, that still leaves a gap of 111 unfilled positions. This gap is a rough estimate, but it is consistent with the number of unique IT job postings exceeding the number of IT job applications.

In addition, insights from interviews and analysis of Emsi data identify a high churn level within the Computer and Mathematical occupations in Hawai'i of about 30%.[8] These are individuals moving from one position to another within these occupations. An employer observed that the competition for experienced IT workers is very competitive locally and employees will leave a position for the same position with better pay.

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6 HireNet Hawai'i, calculations by SMS Research, the estimation and projection data only include non-confidential data.

7 Workforce Availability Report, Emsi Q4 2021 Dataset, November 2021, University of Hawai'i Community Colleges, www.economicmodeling.com

8 Occupation Table, 17 Computer and Mathematical Occupations in Hawai'i, Emsi Q2 2021 dataset, June 2021, University of Hawai'i Community Colleges.

SKILLS AND CREDENTIALS

- Ideal employees have a mix of technical skills, credentials, and professional skills.

- The five most sought technical skills between January and April 2021 were Computer Science, Operating Systems, Cyber Security, Information Systems, and Python.

- The three certifications included most in job postings were IAT Level II Cert., CompTIA Security+, and Certified Information Systems Security Professional.

- Communications, management, operations, troubleshooting, and leadership were the most frequent professional skills in job postings. With professional skills, new employees should have the ability to apply their technical skills to the challenges within a worksite and be a member of a working group. Work experience and internships are valued as a way of acquiring and demonstrating professional skills. Often a bachelor's degree is used as proxy for professional skills.
    - There is a high level of competition for internships. An example provided through an interview said there were over 80 applications for 15 internships.

WAGES

The 2020 ALICE Report for Hawai'i provided a survival level hourly wage for an individual at $15.53, and an hourly stability wage at $25.49[9] in 2018. Of the fourteen tech-specific occupations in the Workforce Availability report, thirteen had median income levels above the hourly stability wage and the one was above the survival level hourly wage. [10]

[9] Workforce Availability Report, Emsi Q4 2021 Dataset, November 2021, University of Hawai'i Community Colleges, www.economicmodeling.com

[11.] ALICE in Hawai'i: A Financial Hardship Study, 2020 Hawai'i Report, Aloha United Way, ALICE Project – Hawaii (unitedforalice.org)

RECOMMENDATIONS

- **Improve the alignment between educators and employers:** Increase communication between IT workforce employers and educational institutions to better match the technical skills and credentials students acquire with the needs of employers.

- **Increase career awareness opportunities**: Involve industry partners in career awareness and work-based learning (guest speakers, workplace visits, career fairs) to introduce IT occupations to Hawai'i students at a younger age. These actions will increase the likelihood of more students in higher education majoring in IT-related fields. Within higher education institutions, career counseling can make students more aware that different IT occupations have specific technical skills and certifications requirements.

- **Increase training opportunities to improve professional skills**: Engage industry partners to provide more on-the-job training opportunities, including internships and apprenticeship programs. Training opportunities help students acquire professional skills, including strong communications skills, critical thinking, problem solving and flexibility. These skills provide managers with the confidence that an employee can apply the technical skills they have learned to the work environment. Often employers perceive that these skills are only acquired by graduating with a bachelor's degree or having work experience. The challenge is to scale the work experiences that provide on-the-job training that make IT students employable.

- **Review minimum qualifications for entry-level jobs**: Employers should consider reviewing the screening criteria for entry-level IT positions. A bachelor's degree may not be necessary for some positions when skills have been gained through training or work experience.

- **Improve data collection**: Improve the tracking and reporting of data related to IT courses, certifications, and where students go when they leave an educational institution. This data will support better evaluation of programs and contribute to better planning for the future.

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DATA SOURCES

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