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MACOMB COMMUNITY COLLEGE
REGIONAL INDUSTRY IT SKILL NEEDS ASSESSMENT

University of Michigan
Master of Business Administration

Eight years of opinion research and survey analytics

With WIN since Oct. 2022

KEVIN L. CRANICK

Senior Economic Research Manager

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Project Overview

The Information Technology (IT) industry is a vast and dynamic field that encompasses the use of computer systems, software, hardware, and networks to manage, process, and exchange information. Macomb Community College commissioned the Regional Industry Information Technology Skill Needs Assessment to explore the current state of the IT industry in Macomb, Oakland, and Wayne Counties in Michigan. Specifically, this assessment seeks to gather data on the current IT workforce job landscape, identify skill gaps and make recommendations to address these gaps effectively. The findings of this study will be critical for informing workforce development and training initiatives, educational programs, and industry collaboration aimed at strengthening the region's IT workforce.

This material is based upon work supported by the U.S. Department of Education under Award Number P116Z230184

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Agenda

- Phase I:
    - Identify IT Occupations
    - Labor Market Analysis
- Phase 2: Stakeholder Engagement
- Phase 3: Skill Assessment
- Phase 4: Best Practices Review
- Phase 5: Future Trends

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IT SKILL NEEDS ASSESSMENT

Phase 1: Identify IT Occupations & Labor Market Analysis

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Phase One: Part One Overview

Part one, Identify IT Occupations, consists of two components:

1) Listing and validation of IT occupations and skill gaps and 2) keyword analysis and occupation grouping, including an outline of middle-skill jobs based on commonly accepted criteria for this classification

15-1221	Computer and Information Research Scientists
11-3021	Computer and Information Systems Managers
15-1241	Computer Network Architects
15-1231	Computer Network Support Specialists
15-1299	Computer Occupations, All Other
15-1251	Computer Programmers
15-1211	Computer Systems Analysts
15-1232	Computer User Support Specialists
15-1242	Database Administrators
15-1243	Database Architects
15-1212	Information Security Analysts
15-1244	Network and Computer Systems Administrators
15-1252	Software Developers
15-1253	Software Quality Assurance Analysts and Testers
15-1255	Web and Digital Interface Designers
15-1254	Web Developers

WIN conducted a cross-reference of these 16 occupations against those identified on the Bureau of Labor Statistics (BLS.gov) website for Computer and Information Technology Occupations. All occupations listed on BLS.gov are captured by the WIN Information Technology grouping.

Data Source: Lightcast (2024) | Analysis: Workforce Intelligence Network

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Phase One: Part One Overview

To first identify where skill gaps exist in various IT occupations, WIN sought to validate the existence of these gaps as a preliminary step. To conduct this assessment, Lightcast (2024) data was analyzed, comparing skills listings in the "% of Total Profiles" against the "% of Total Postings."

Where any skill is shown to have a greater "% of total profiles" value than "% of total postings," this indicates an over-supply of skills relative to demand. Where the "% of Total Postings" is greater than the "% of Total Profiles," this indicates a supply shortage relative to market demand as measured by job postings data. For each of these skills areas, the top ten skills by posting frequency were selected.

Common Skills

- Communication
- Management
- Problem-solving

Software Skills

- Application Programming Interface (API)
- Microsoft Azure
- Python

Specialized Skills

- Computer Science
- Agile Methodology
- Debugging

Data Source: Lightcast (2024) | Analysis: Workforce Intelligence Network

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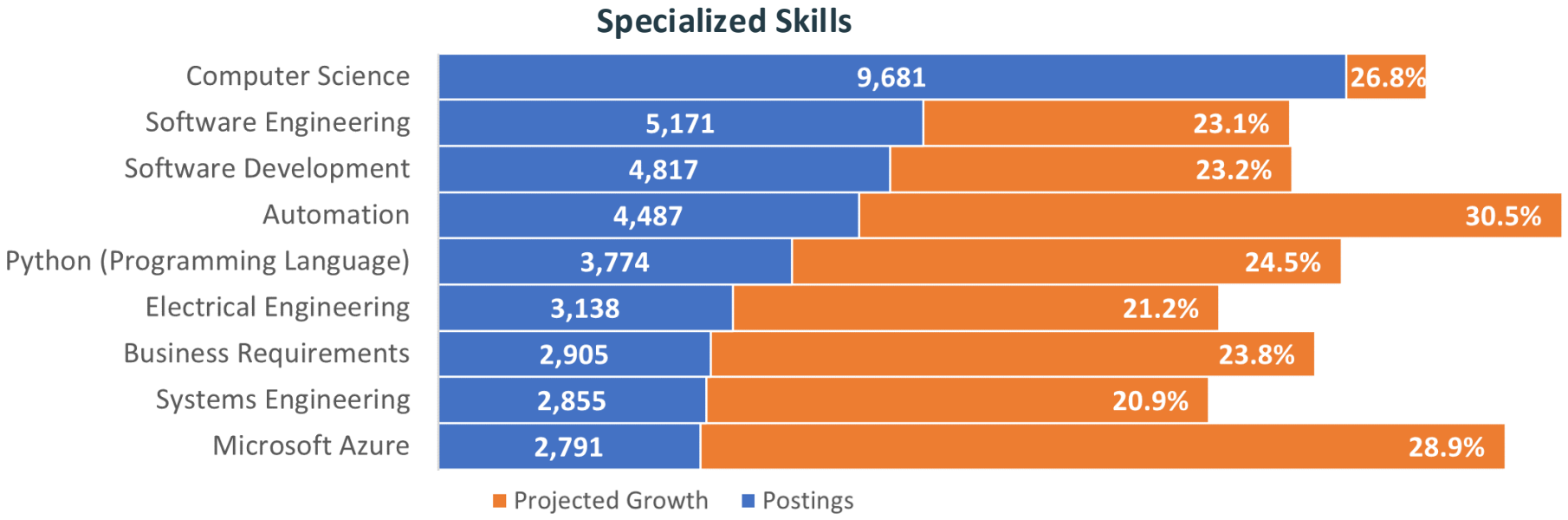
Phase One: Part One Overview

- **Keyword analysis:** Among all 16 occupations in the WIN IT group, there are many skills characterized as "rapidly growing" relative to the market. This designation is given on the basis of having greater than ~20% projected skill growth. Given that the data is extracted from job postings, these keywords may also serve as a leading indicator of future skills demand.



Data Source: Lightcast (2024) | Analysis: Workforce Intelligence Network

Phase One: Part One Overview

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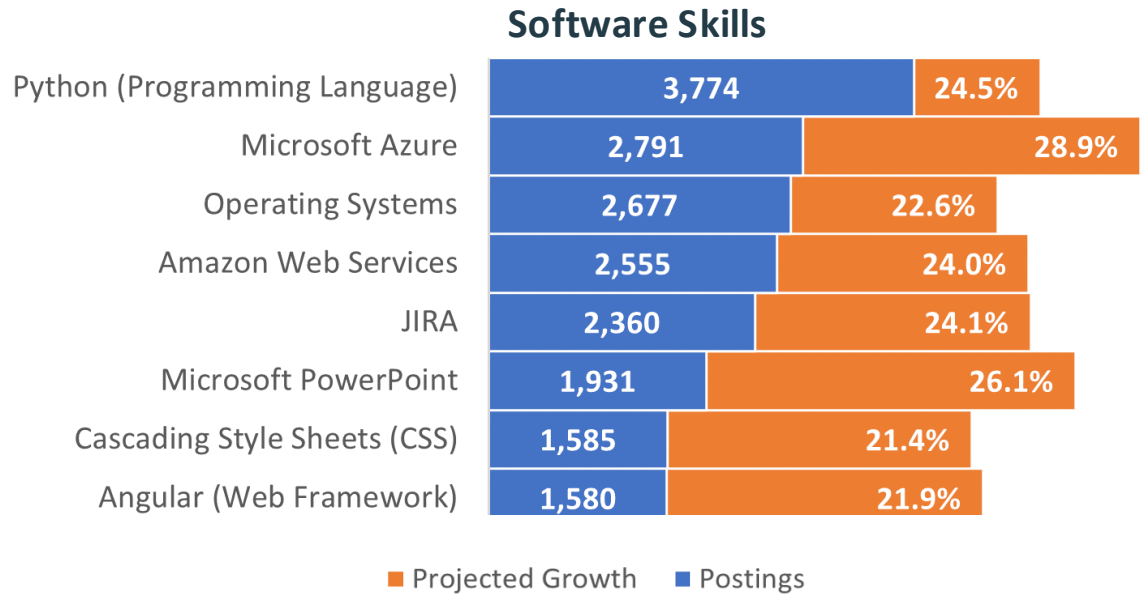

Data Source: Lightcast (2024) | Analysis: Workforce Intelligence Network

Phase One: Part One Overview

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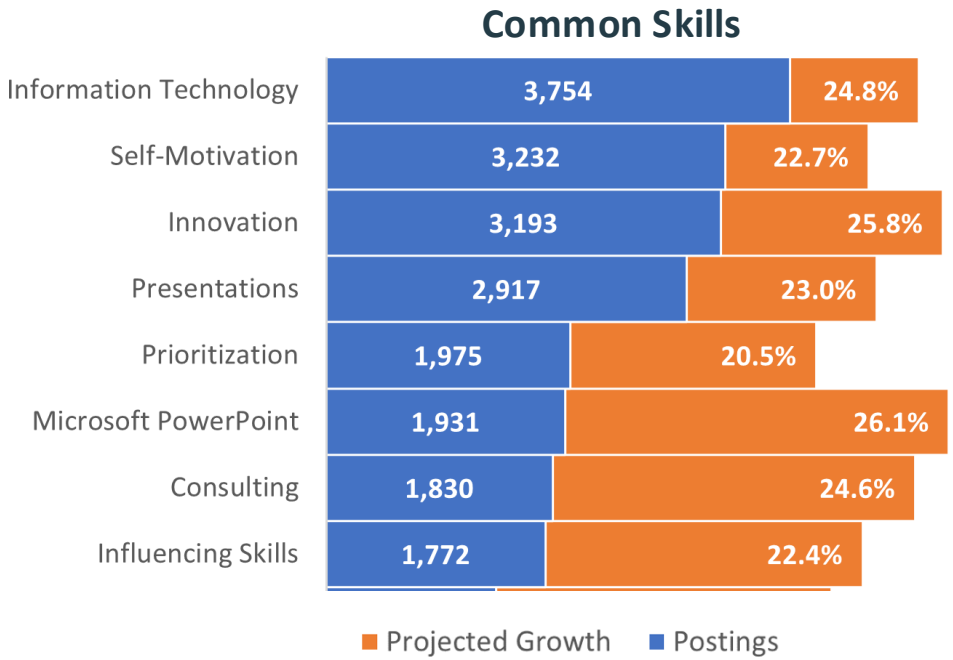

Greater demand for Agile Methodology, Project Management, Amazon Web Services, Mathematics, Docker (software), and Firewall at the national level compared with the 3-county region.

Data Source: Lightcast (2024) | Analysis: Workforce Intelligence Network

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Phase One: Part One Overview

Keyword analysis and occupation grouping, including an outline of **middle-skill** jobs based on commonly accepted criteria for this classification: Middle-skills jobs are those that require more than high school but less than a 4-year degree and pay over the state median wage of $21.80 per hour. There will be negative job growth in the coming years for jobs that currently only require a high school diploma and the jobs that will take their place are middle-skill.

SOC	Description	2023 Jobs	2033 Jobs	2023 - 2033 % Change	Annual Openings	Median Hourly Earnings	Typical Entry Level Education
15-1231	Computer Network Support Specialists	1,067	1,109	3.9%	77	$31.12	Associate's degree
15-1232	Computer User Support Specialists	9,597	9,246	(3.7%)	629	$25.89	Some college, no degree

Data Source: Lightcast (2024) | Analysis: Workforce Intelligence Network

There is much stronger demand for these occupations at the national level compared with the 3-county area.

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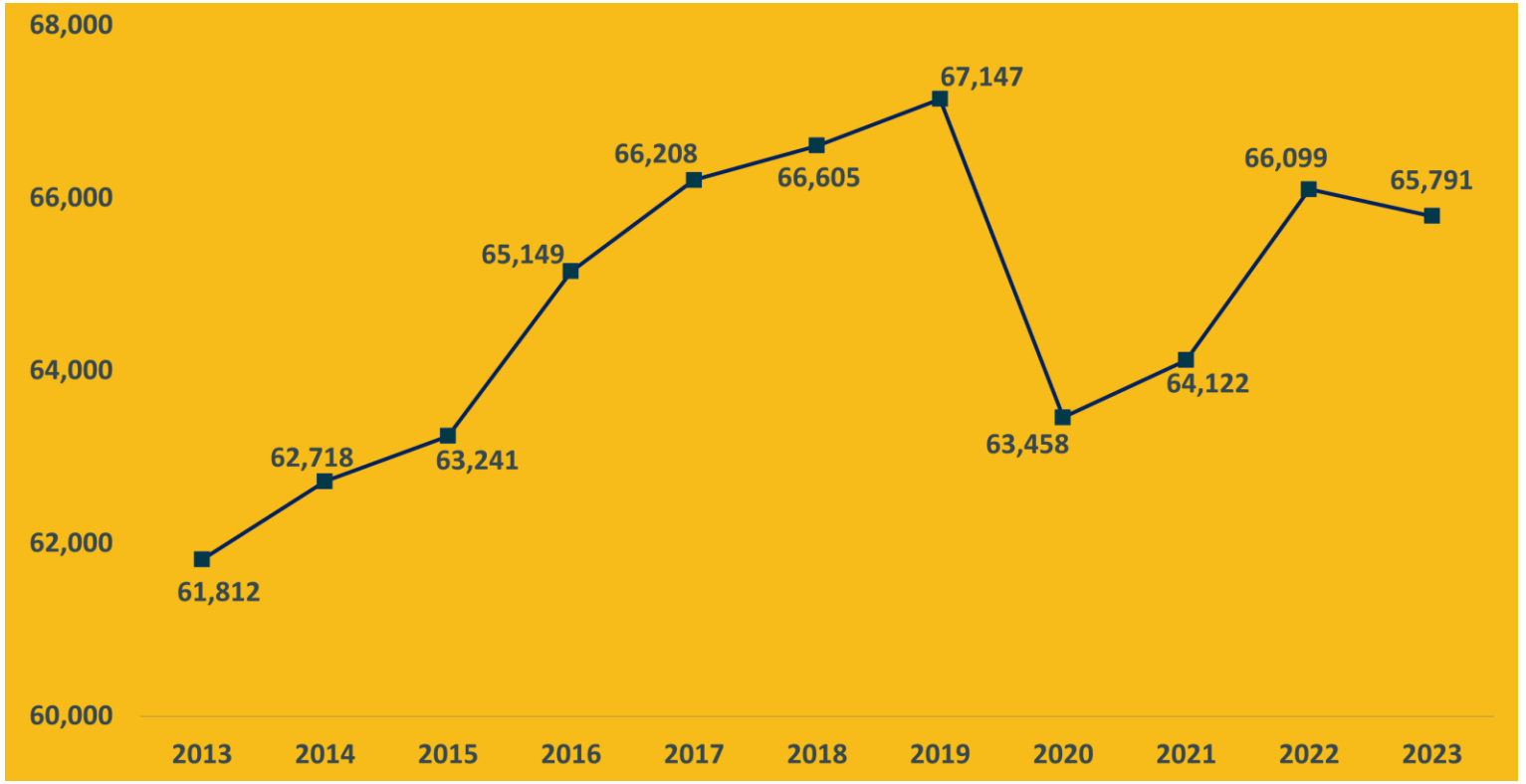
Phase One: Part Two Overview

Part two, Labor Market Analysis, utilizes the existing IT group that has been highlighted in the WIN Labor Market reports for several years. WIN cross-referenced these 16 occupations against those identified on the Bureau of Labor Statistics (BLS.gov) website for Computer and Information Technology Occupations. All occupations listed on BLS.gov are captured by the WIN Information Technology grouping.



Data Source: Lightcast (2024) | Analysis: Workforce Intelligence Network

WIN WORKFORCE INTELLIGENCE NETWORK

Phase One: Part Two Overview

Labor Market Analysis Key Takeaways

- Employment over time: total employment in IT is stable, but never fully recovered from the COVID-19 pandemic in the 3-county area.
- Employment over time at the national level has been steady and climbing since the pandemic.
- There are 65,791 IT workers within various occupations in the 3-county area
  - Of this, there is a ratio of 26.1% female to 73.9% male
  - 77.0% are between the ages of 25-54
  - Only 5.1% of workers are under 24
  - The IT workforce is 65.9% White

Data Source: Lightcast (2024) | Analysis: Workforce Intelligence Network

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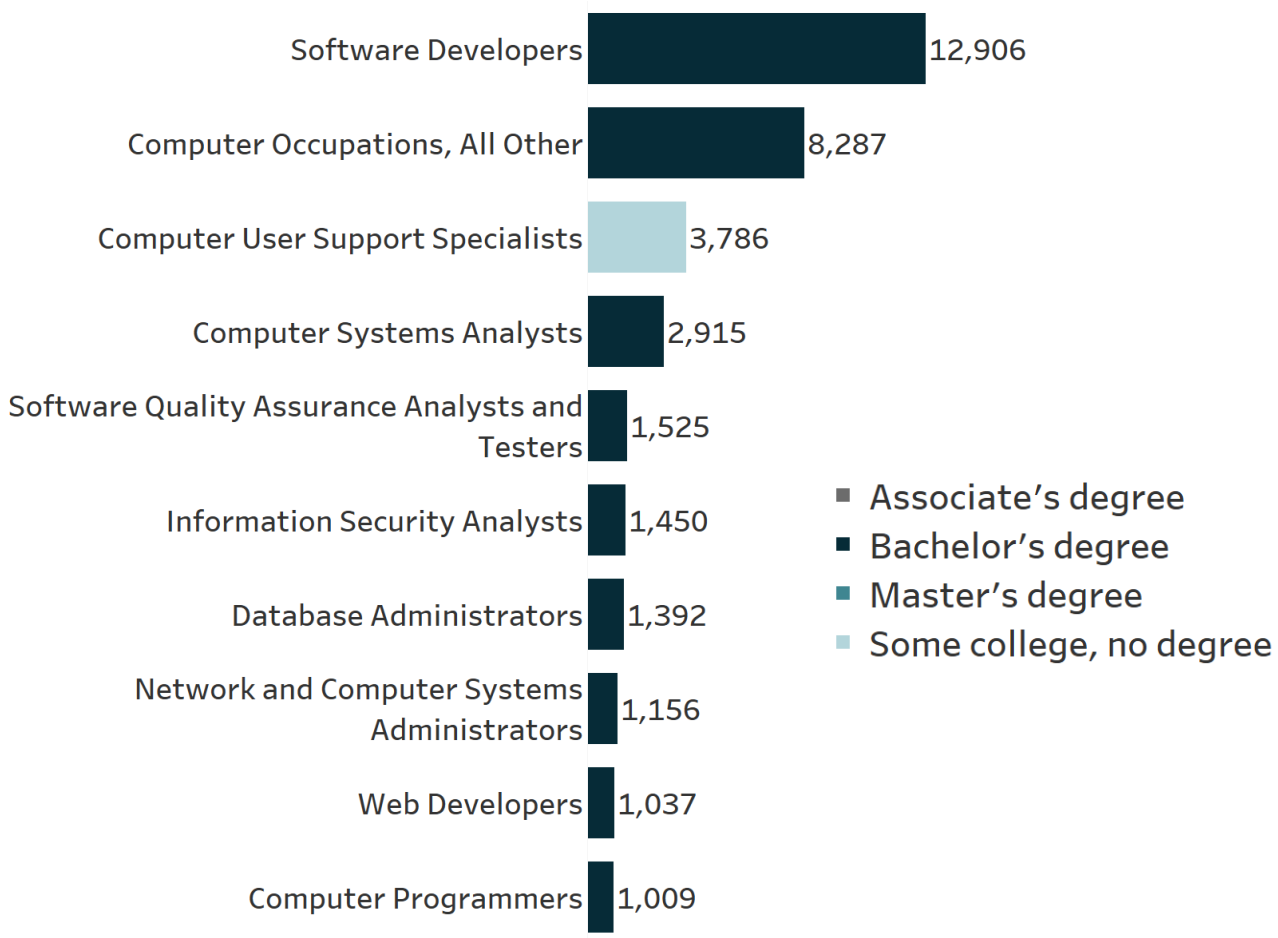
Phase One: Part Two Overview

Top-Posted Jobs



There is stronger demand for Computer Network Architects, and Web and Digital Interface Designers at the national level compared to the 3-county region

Data Source: Lightcast (2024) | Analysis: Workforce Intelligence Network

Phase One: Part Two Overview

In-demand IT occupations provide high wages, even for those at entry-level and with fewer credentials. Software Developers, the most in-demand occupation, offers a median hourly wage of $50.45 per hour or almost $104,936 per year.

Occupation Code	Occupation Name	10th Percentile Wages	25th Percentile Wages	Median Wages	75th Percentile Wages	90th Percentile Wages
15-1252	Software Developers	$33.96	$40.83	$50.45	$62.50	$68.99
15-1299	Computer Occupations, All Other	$25.21	$32.74	$46.48	$59.28	$67.46
15-1232	Computer User Support Specialists	$17.54	$20.36	$25.89	$32.87	$40.55
15-1211	Computer Systems Analysts	$37.02	$42.02	$51.77	$62.10	$67.64
15-1253	Software Quality Assurance Analysts and Testers	$27.52	$35.97	$41.23	$48.67	$57.90
15-1212	Information Security Analysts	$28.90	$37.85	$49.47	$63.10	$74.54
15-1242	Database Administrators	$27.69	$32.79	$45.73	$52.38	$62.40
15-1244	Network and Computer Systems Administrators	$30.14	$36.40	$42.31	$52.84	$64.45
15-1254	Web Developers	$21.27	$31.96	$41.49	$51.78	$61.79
15-1251	Computer Programmers	$25.45	$34.83	$41.06	$56.43	$70.49
15-1243	Database Architects	$36.01	$38.63	$46.68	$59.96	$67.20
15-1241	Computer Network Architects	$36.80	$47.17	$63.73	$73.13	$86.04
11-3021	Computer and Information Systems Managers	$48.74	$61.58	$67.25	$81.80	$104.26
15-1255	Web and Digital Interface Designers	$25.08	$31.90	$38.67	$50.52	$60.87
15-1231	Computer Network Support Specialists	$21.01	$24.14	$31.12	$39.02	$47.42
15-1221	Computer and Information Research Scientists	$43.70	$51.11	$64.37	$77.67	$83.42

Data Source: Lightcast (2024) | Analysis: Workforce Intelligence Network

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IT SKILL NEEDS ASSESSMENT

Phase 2: Stakeholder Engagement

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Phase Two: Stakeholder Engagement

This study employs a mixed-methods approach, integrating both quantitative and qualitative data collection techniques. The primary data sources include a structured survey and a focus group discussion. The combination of these methods allows for a comprehensive understanding of the research questions, providing both breadth and depth in the data collected.

- **Population and Sample**: The target population for this study comprises professionals working in the IT industry across various regions. Feedback was solicited from different sectors of the workforce, including professionals, employers, education, and workforce development.
- **Sample Size**: Over 1,300 participants were sampled for the survey, collecting close to 50 responses, while a more intensive group of six participants volunteered for the focus group discussion. The survey participants were randomly selected from a larger database of IT professionals.
- **Survey Instrument**: A structured survey was developed, consisting of 22 multiple-choice or multiple-selection questions and seven open-ended questions.
- **Focus Group**: A focus group was convened to facilitate the discussion, comprising seven open-ended questions designed to explore the themes identified in the survey in greater depth.

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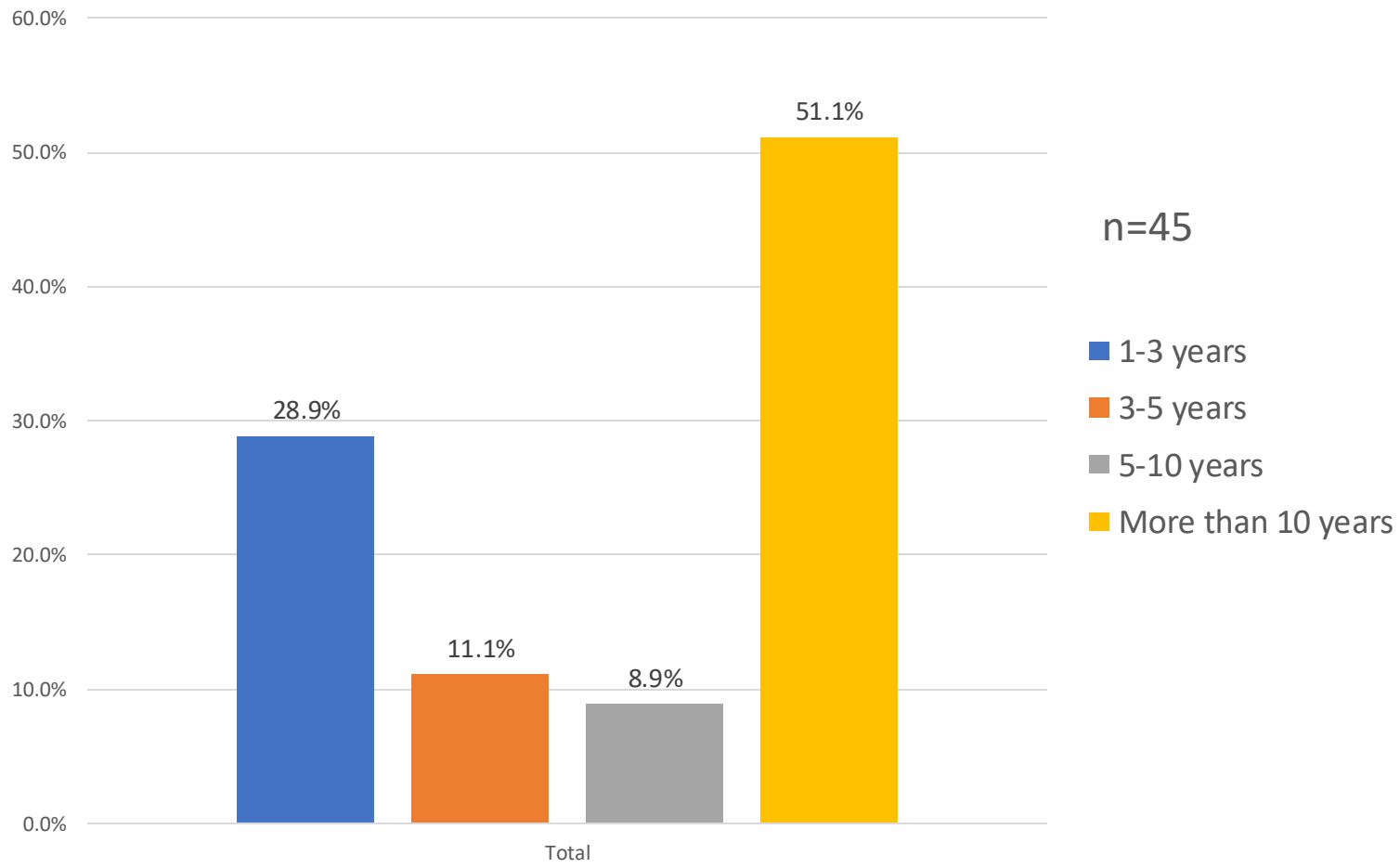
Phase Two: Stakeholder Engagement

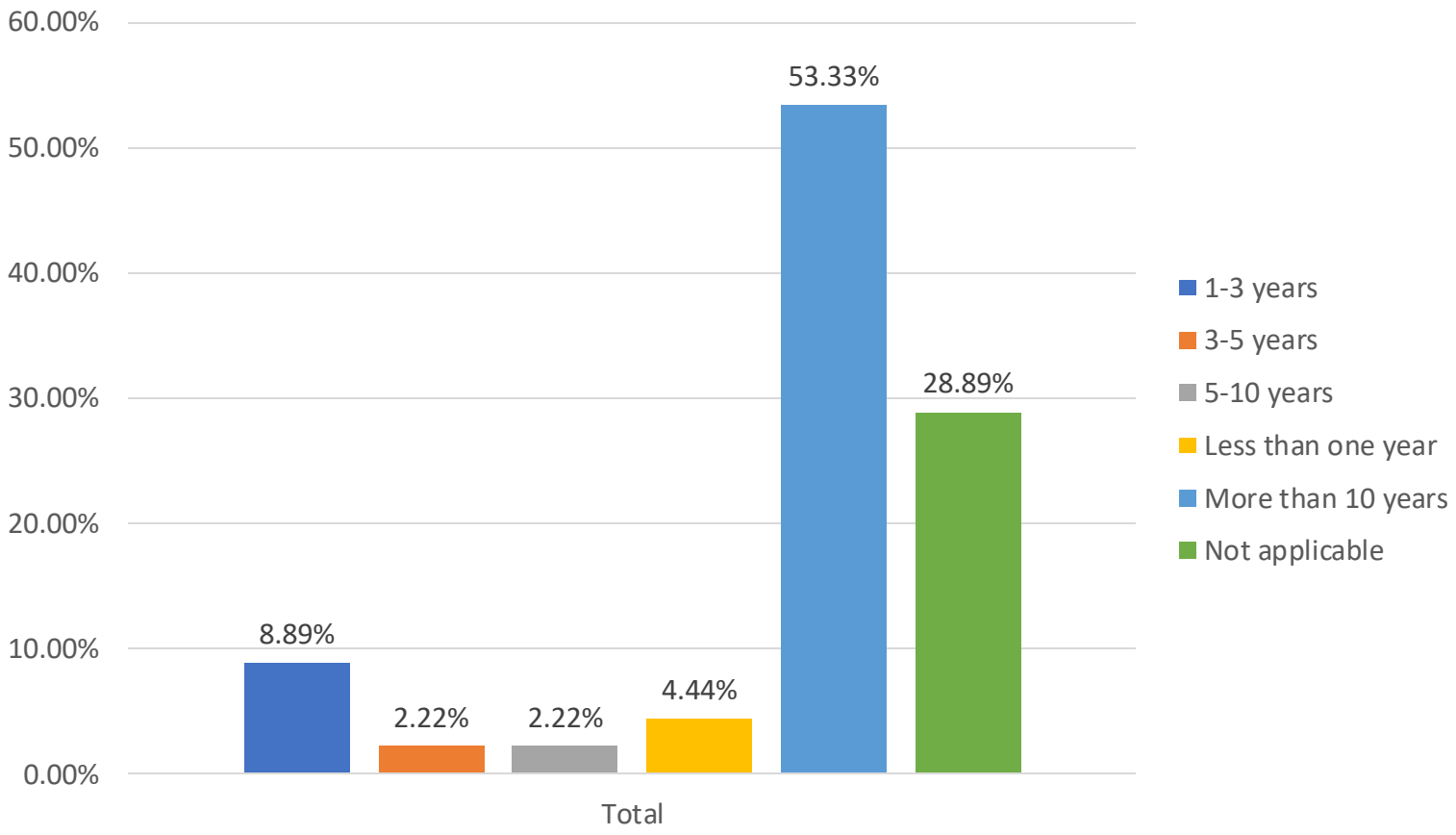
Key Findings: Time Spent with Current Employer



Data Source: WIN IT Survey (2024) | Analysis: Workforce Intelligence Network

Phase Two: Stakeholder Engagement

Key Findings: Years of Experience in IT



Data Source: WIN IT Survey (2024) | Analysis: Workforce Intelligence Network

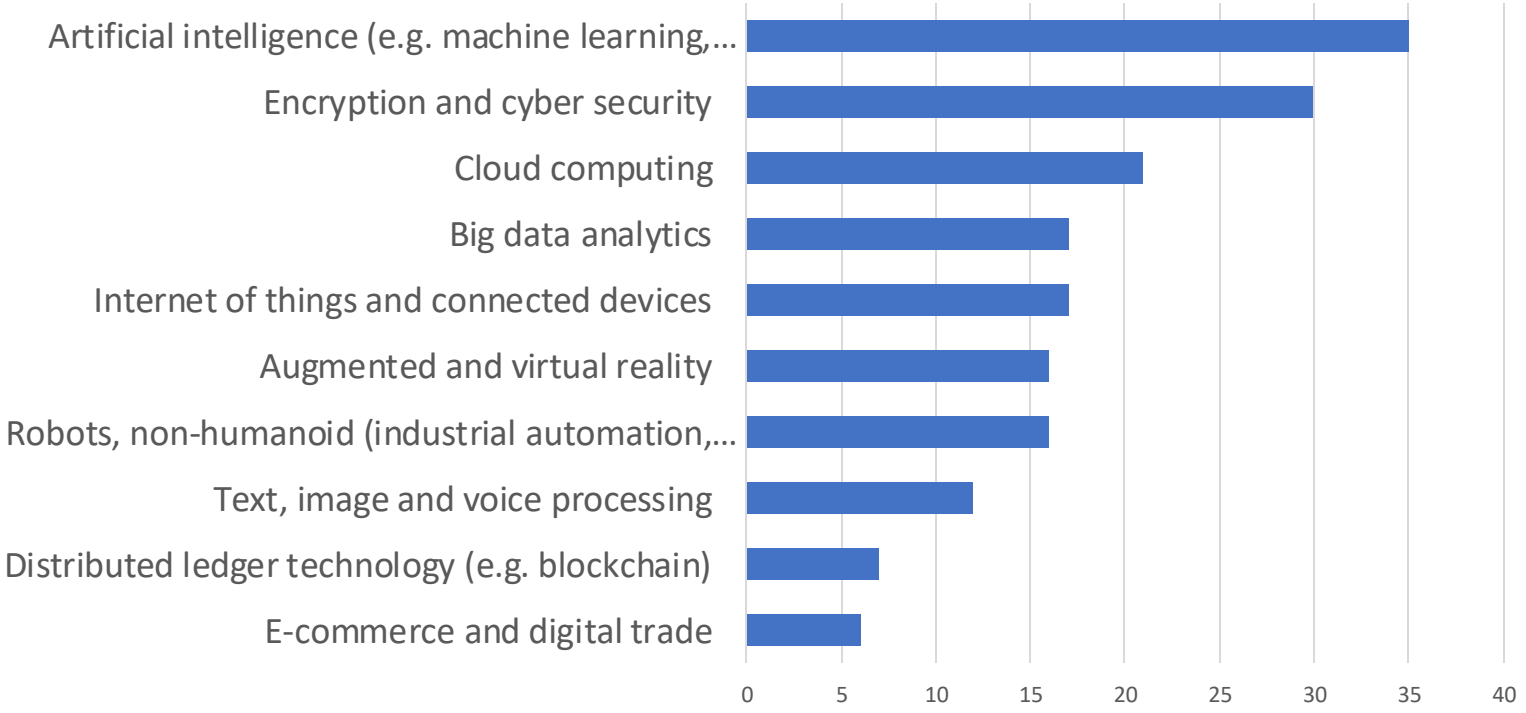
Phase Two: Stakeholder Engagement

Key Findings: Most Important Emerging Skills

Data Source: WIN IT Survey (2024) | Analysis: Workforce Intelligence Network

Phase Two: Stakeholder Engagement

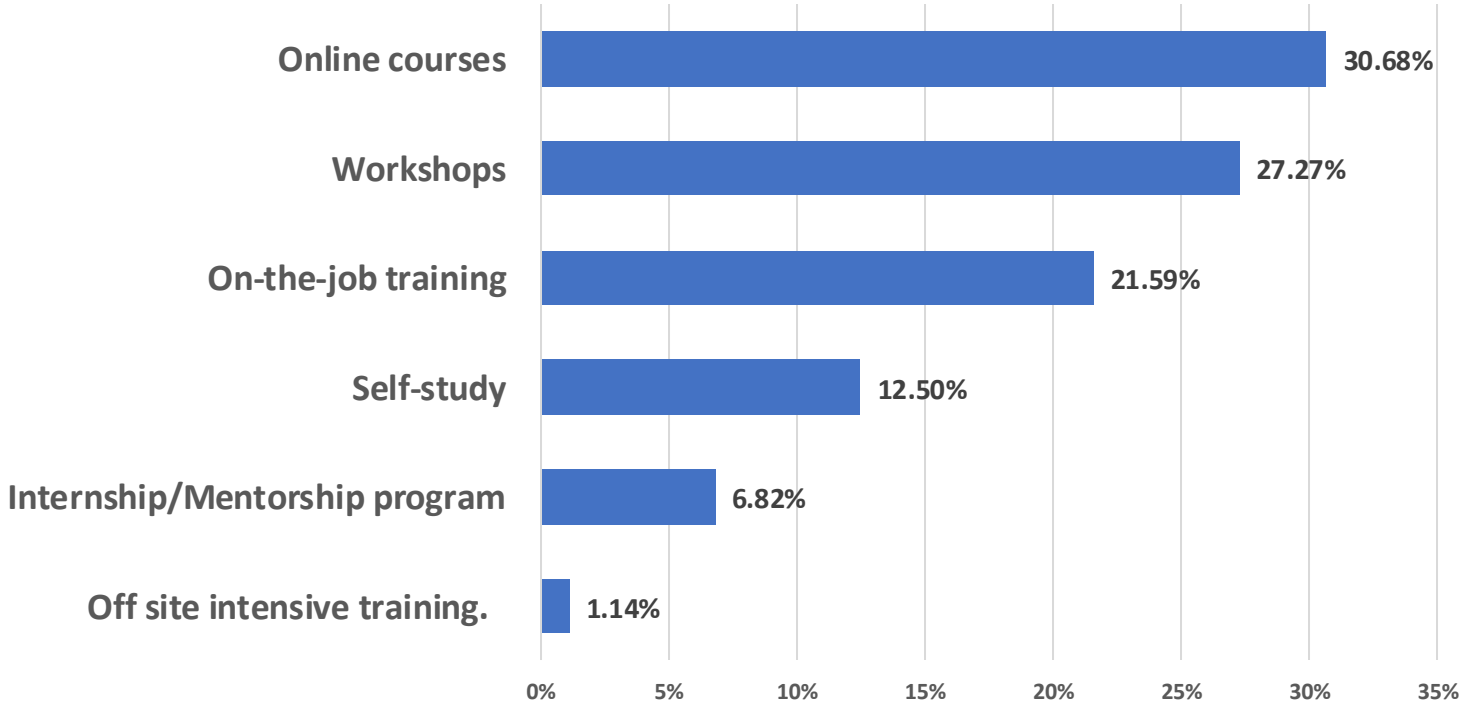
Key Findings: Emerging tech that will have the greatest impact during the next five years



Data Source: WIN IT Survey (2024) | Analysis: Workforce Intelligence Network

Phase Two: Stakeholder Engagement

Key Findings: Preference for learning new skills



Over 30% of respondents preferred online courses, underscoring the value of flexibility and accessibility in their education. Close behind, an additional 27% preferred workshops while 21% favored on-the-job training, indicating a continued appreciation for interactive and hands-on learning experiences.

Data Source: WIN IT Survey (2024) | Analysis: Workforce Intelligence Network

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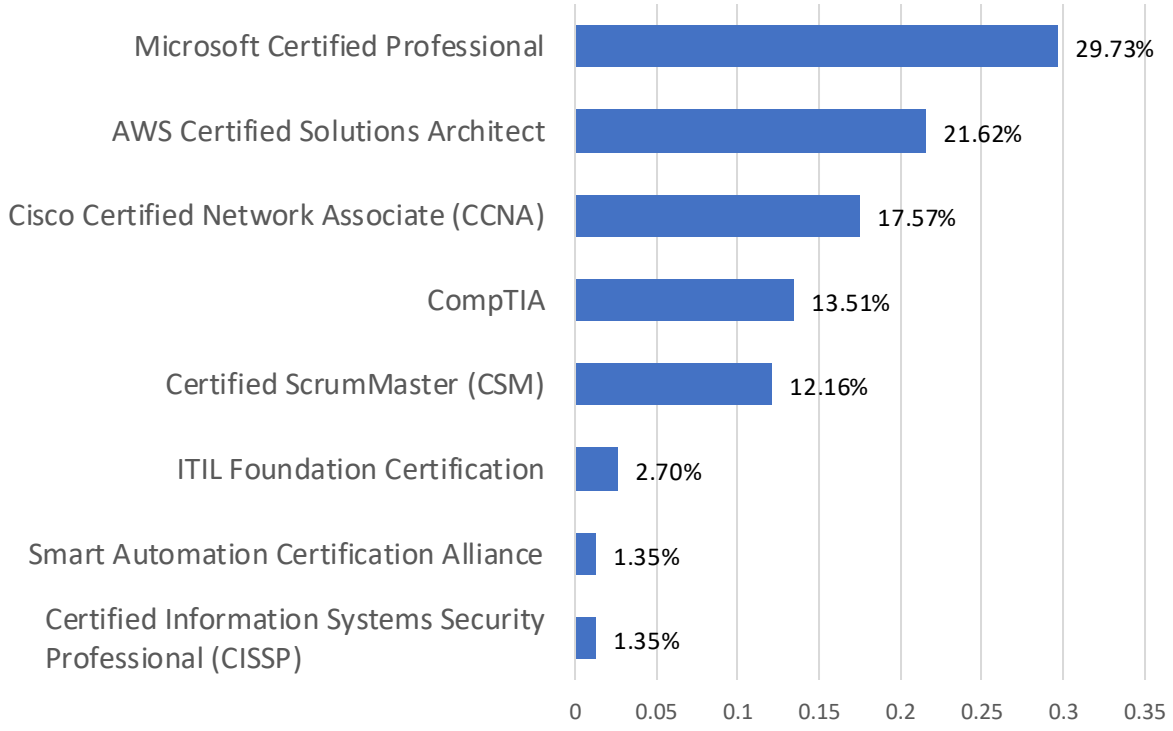
Phase Two: Stakeholder Engagement

Key Findings: Certifications that enhance employability

WIN Survey



Lightcast Data

Top Qualifications

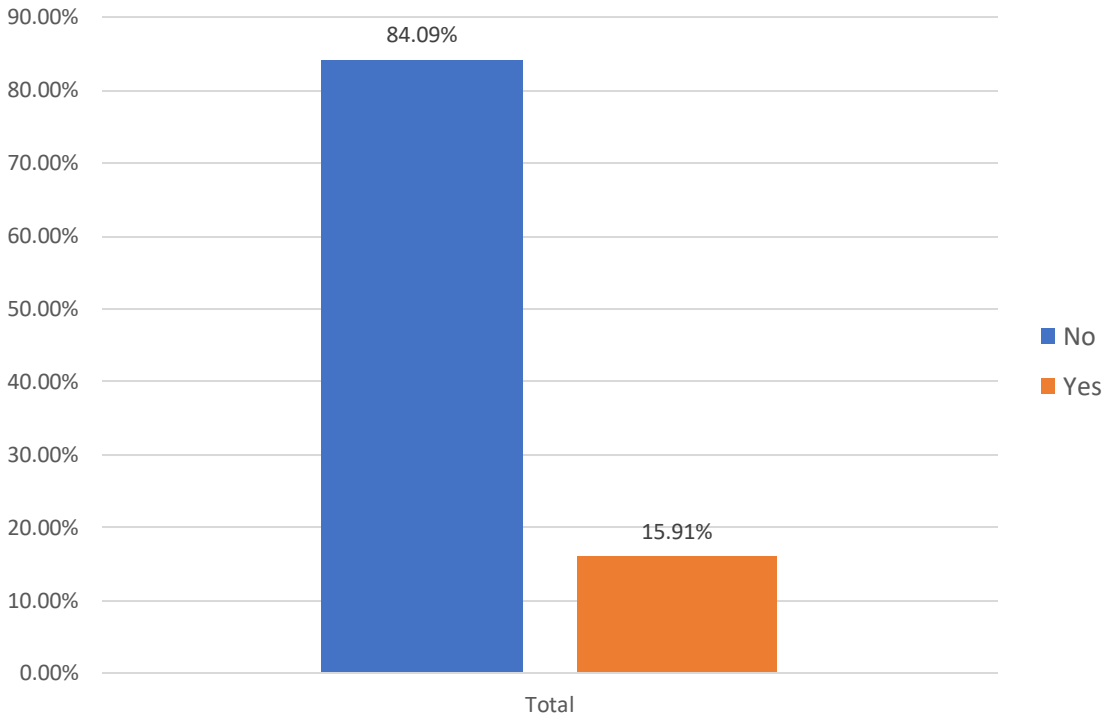
Qualification	Postings with Qualification
Valid Driver's License	957
Security Clearance	708
Certified Information Systems Security Professional	637
Secret Clearance	626
Project Management Professional Certification	494
CompTIA A+	360
Master Of Business Administration (MBA)	321
Cisco Certified Network Associate	291
Certified Information System Auditor (CISA)	289
Certified Information Security Manager	285
Microsoft Certified Professional	254
Cisco Certified Network Professional	210
CompTIA Security+	210
Certified Scrum Master	196
GIAC Certifications	195
Microsoft Certified Systems Engineer	183
Certified Ethical Hacker	161
CompTIA Network+	158
ITIL Foundation Certification	112

Data Source: WIN IT Survey (2024), Lightcast (2024) | Analysis: Workforce Intelligence Network

Phase Two: Stakeholder Engagement

Key Findings: Sentiments on Apprenticeship

Does your Organization currently have an IT Registered Apprenticeship Program?



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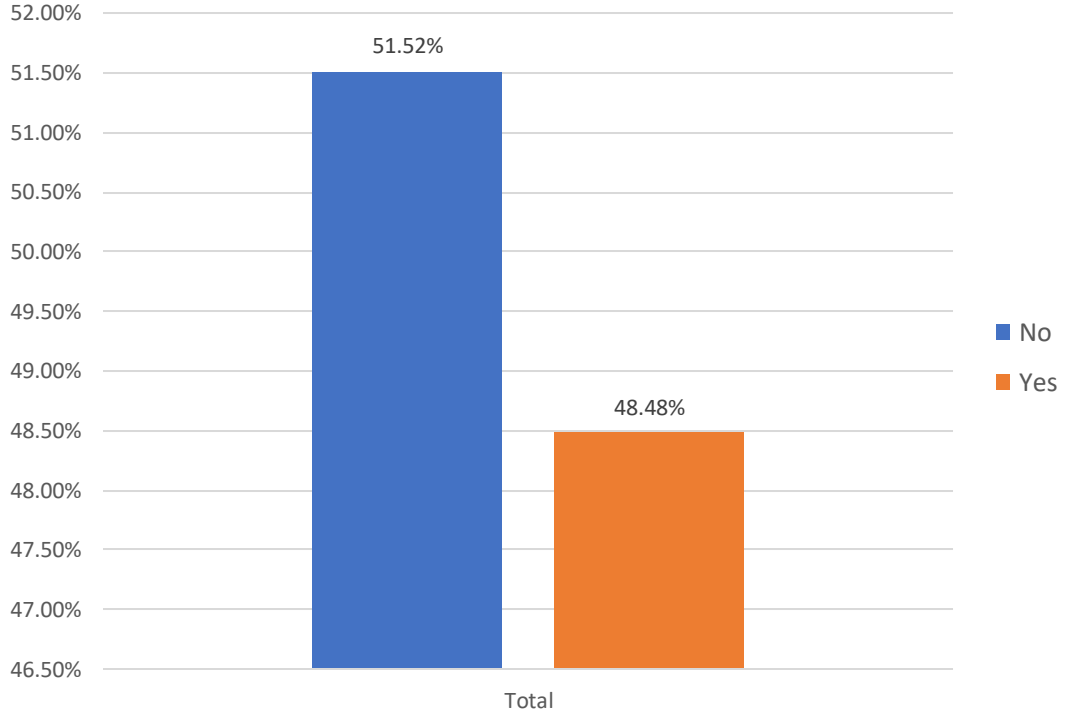
If no, would your Organization consider apprenticeships to meet talent development goals?



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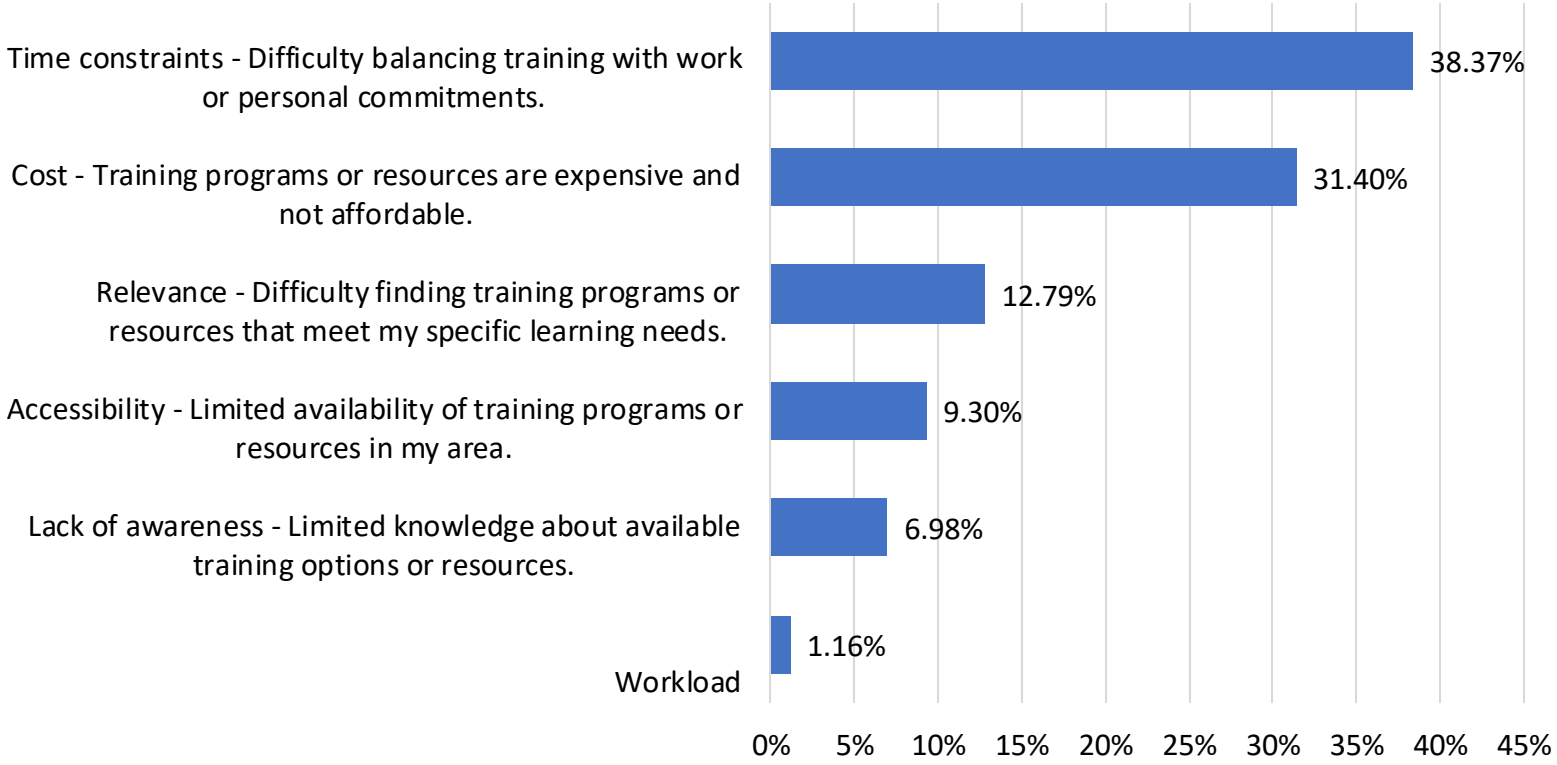
Data Source: WIN IT Survey (2024) | Analysis: Workforce Intelligence Network

Phase Two: Stakeholder Engagement

Key Findings: greatest challenges in adapting to technological advancements and acquiring new IT skills

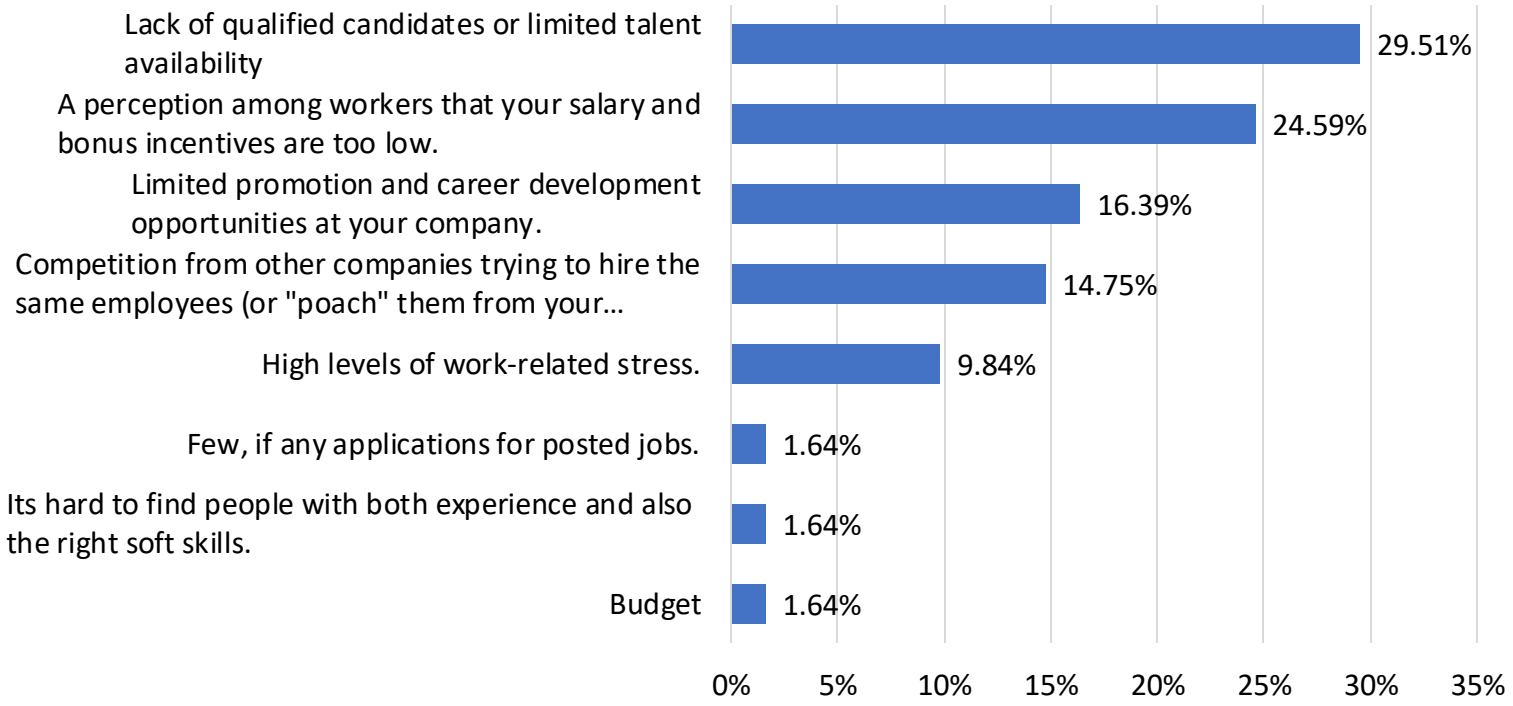


According to our survey, 38.4% of respondents cited **time constraints** as the primary hurdle in adapting to new technologies and upskilling. Meanwhile, 31.4% pointed to **cost** as the primary barrier, underscoring the financial investment required to stay current in a field characterized by rapid innovation.

Data Source: WIN IT Survey (2024) | Analysis: Workforce Intelligence Network

Phase Two: Stakeholder Engagement

Key Findings: most significant challenge in IT talent acquisition



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Phase Two: Stakeholder Engagement

Follow-up: most significant challenge in IT talent acquisition (Focus Group: What does a "qualified" candidate mean to you?

Educational qualifications, such as degrees or certifications, are not a primary consideration for the speaker's organization. Some believe these are not essential to perform a job, potentially because IT is so fragmented in nature.

Hiring decisions are **tailored individually**, depending on the specific role. **Years of experience** are considered but are not always a reliable indicator of ability. When evaluating a resume, the focus would be on **generic skills** rather than just educational qualifications or specific certifications.

Technical skills are important, but the process of assessing them can be flawed due to **keyword stuffing** in resumes. Therefore, they also place significant importance on a candidate's **cultural fit** within the organization. These points suggest a holistic approach to hiring that values practical skills and cultural alignment over formal education credentials.

Phase Two: Stakeholder Engagement

Focus Group Insights

Which IT (or AI) skills are required for success in IT? Discussion about soft skills or even basic employment skills commanded the conversation. This included communication/teamwork/collaboration, problem-solving/troubleshooting, project/time management and curiosity/lack of fear/willingness to learn. Some technical skills were mentioned, such as programming, cloud computing, and database management.

What specific areas of IT or AI have recognized skills gaps or need improvement? Employers may struggle to "weed out" candidates with the right skill sets because different employers are often solving different problems. This seems to be the nature of IT. Many candidates understand how to code in a specific programming language but may not have the direct experience working on the same specific problem.

There seems to be a consensus that the classroom and certifications can only take you so far. Because of the complexity and specificity of IT-related projects, there is significant demand for hands-on learning. Employers want prospects who have worked on things and can quantify that experience with projects. They seem to agree that, while classroom time and studying for a specific designation like CompTIA is value-added, the gap seems to be in actual experience.

Phase Two: Stakeholder Engagement

Focus Group Insights

What are your observations about the readiness or preparedness of recent IT graduates in entry-level positions?

Niche-specific skills are increasingly important, and a growing number of college graduates possessing the right qualifications for specialized roles. The job market has evolved from valuing generic skills to requiring **specialized expertise** due to client demands for specific skill sets, i.e. a Python developer may not be suitable for a **data engineering** role without additional knowledge, such as database optimization. Candidates are expected to have a **focused education** in areas like machine learning or contributions to **open-source projects.**

Portfolios showcasing contributions to open-source projects on platforms like GitHub are becoming more important, allowing hiring agents to assess a candidate's actual capabilities. In summary, there is increased importance of **specialized skills and practical experience** demonstrated through tangible contributions, reflecting a shift in the hiring landscape towards more targeted expertise.

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IT SKILL NEEDS ASSESSMENT

Phase 3: Skill Assessment

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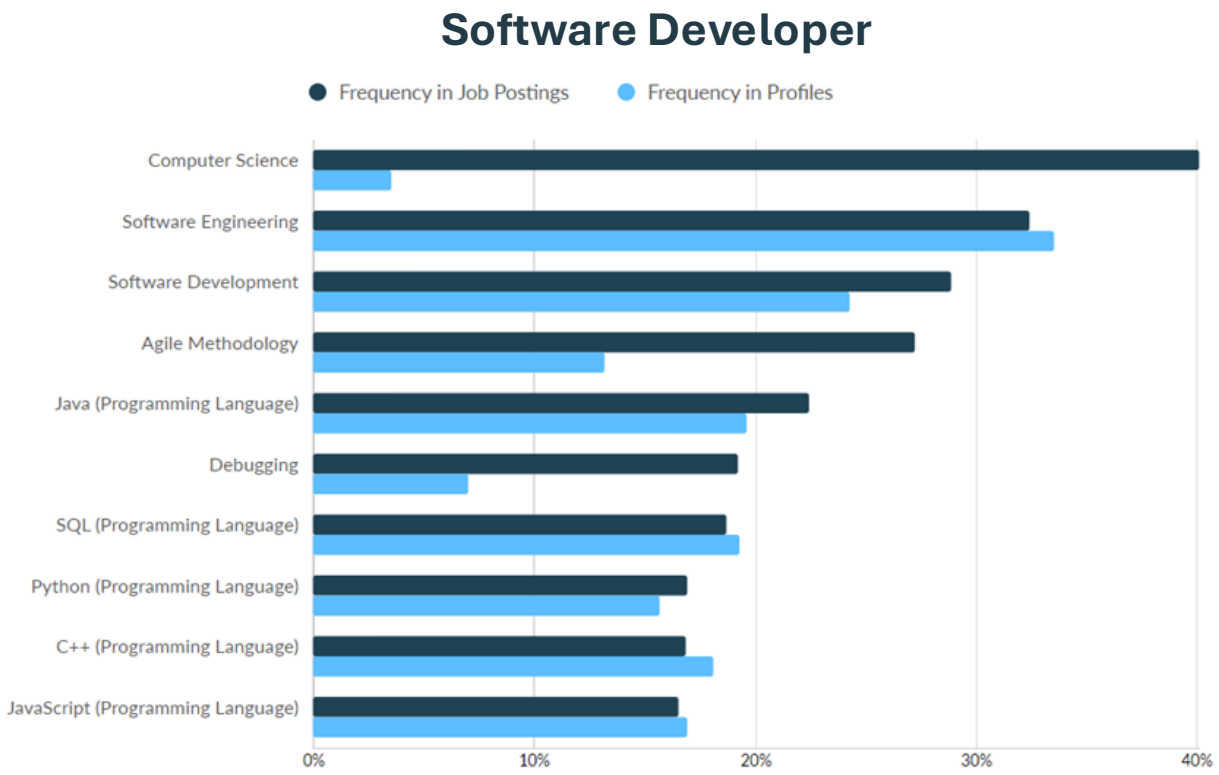
Phase Three: Skills Assessment

Some Gaps Are Found To Be Much More Frequent Across Several IT Occupations



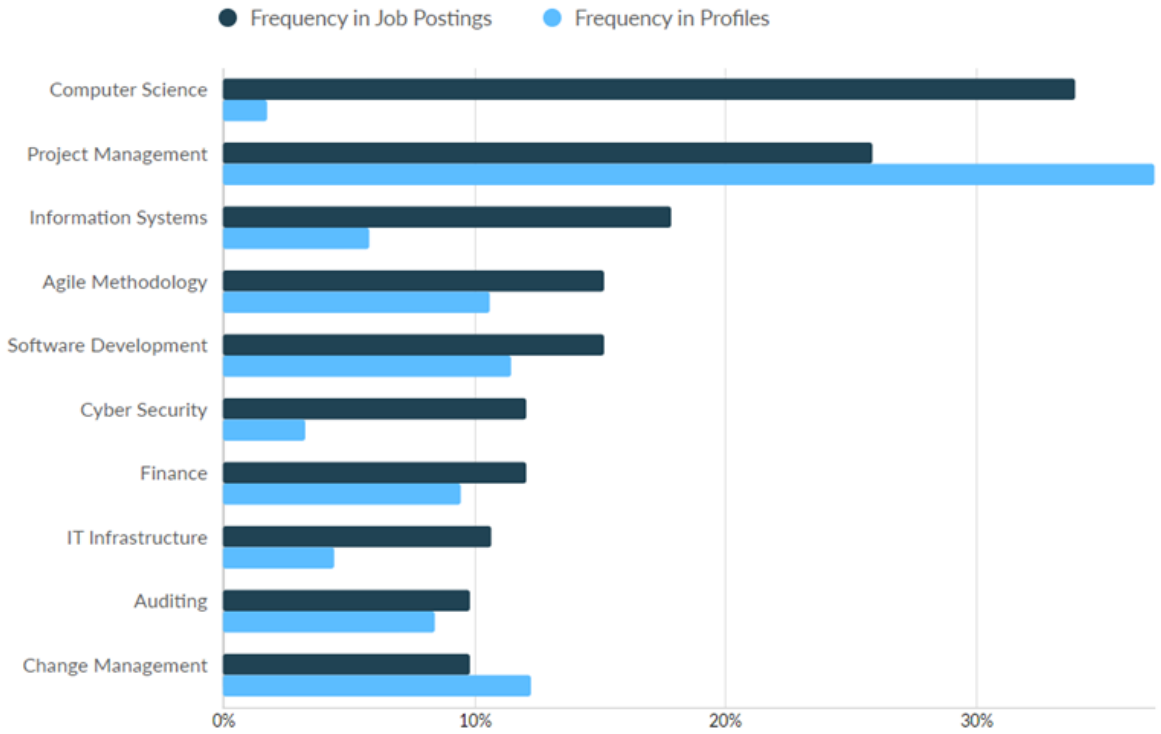
A core component of this research entails identifying the primary **technical** and **common skills** needed for various IT roles. The following content provides insight into the **supply and demand** of relevant skills for several of the top in-demand IT jobs. This is achieved by comparing the frequency of skills present in real-time job postings against the availability of these skills in today's workforce using online resumes and candidate profiles.

Data Source: Lightcast (2024) | Analysis: Workforce Intelligence Network

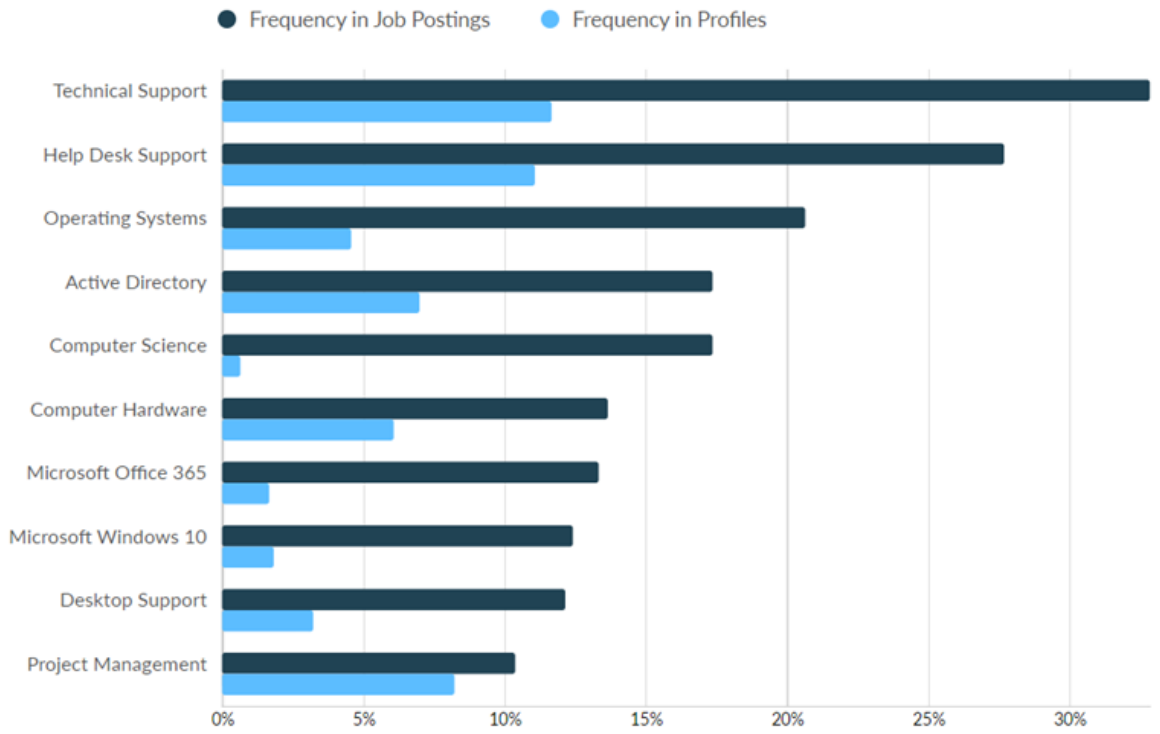
Phase Three: Skills Assessment

Some Gaps Are Found To Be Much More Frequent Across Several IT Occupations

Computer and Info Sys. Managers



Computer User Support Specialists



Data Source: Lightcast (2024) | Analysis: Workforce Intelligence Network

Phase Three: Skills Assessment

As revealed in the previous skill gap outlines, there are many overlapping skill gaps across the common skills group for these IT positions. Here, results have been aggregated into one of two categories: **Frequent Gaps** and **Infrequent Gaps**. The observation that common skills have considerably more overlap than technical skills seems to confirm the focus group findings, which imply that IT is a highly fragmented and specialty-driven industry.

Common Skills

Frequent Gaps

- Communication
- Problem-Solving
- Writing
- Planning

Infrequent Gaps

- Innovation
- Troubleshooting
- Customer Service
- Management
- Self-motivation
- Detail Oriented
- Leadership
- Infrequent Gaps

Technical Skills

Frequent Gaps

- Agile Methodology
- Computer Science

Infrequent Gaps

- Information Systems
- Cyber Security
- IT Infrastructure
- Business Process
- Business Requirements
- Auditing
- Workflow Management
- Agile Methodology
- SQL (Programming)
- Technical Support
- Help Desk Support
- Operating Systems
- Active Directory
- Computer Science
- Computer Hardware
- Microsoft Office 365
- Microsoft Windows 10
- Desktop Support
- Computer Science
- Debugging
- Software Development

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Data Source: Lightcast (2024) | Analysis: Workforce Intelligence Network

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IT SKILL NEEDS ASSESSMENT

Phase 4: Best Practices Review

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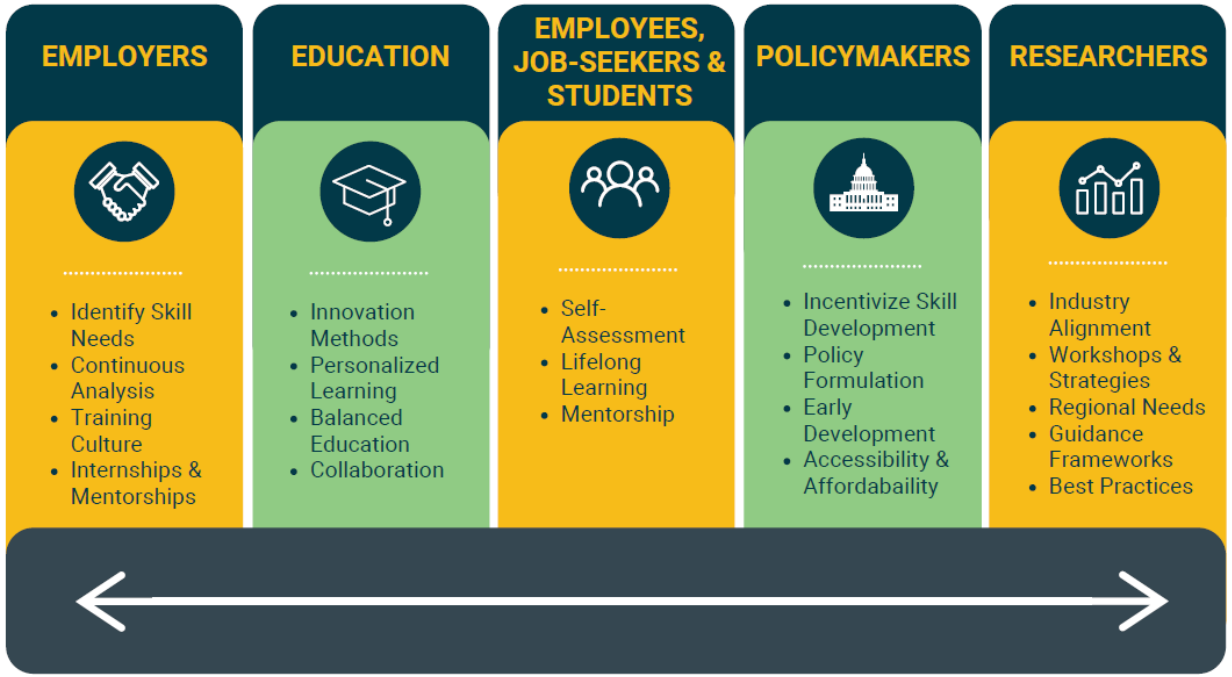
Phase Four: Best Practices Review

This work is based on a comprehensive literature review pertaining to addressing skills gaps through **workforce training and development** strategies. For many aspects of workforce training there are either few studies that qualify as “best-evidence” or the number of studies is too few for conclusions to be drawn with confidence. As such, this report has been developed to serve the entire spectrum of workforce development activities, from **apprenticeship** training to **specific education modalities**. In some instances, there were sufficient anecdotal frameworks which provided for a general theme. For this reason, **sample training protocols** are provided instead of a one-size-fits-all framework. Training institutions should tailor the program to the specific needs of their student demographics.



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Phase Four: Best Practices Review

Theme 1: Provide hands-on experience

Most of the research analyzed suggests that one of the best ways to address skill gaps in IT is to provide **ample opportunities for hands-on learning**. Educators should focus on **real-world project experience**, industry tools, problem-solving skills, and effective communication. Hands-on learning has been shown to **improve student comprehension** and **reduce failure rates**. Active learning techniques also lead to better educational outcomes, even if students feel they learn more from traditional lectures.

> *"The most commonly reported knowledge deficiencies that educators should address involve providing some type of real-world project experience, ensuring that students are exposed to the tools most commonly used in the software industry, making sure that students have effective problem solving skills and that they can effectively communicate their solutions to others..."*
>
> ***-Radermacher, Walia, & Knudson, 2014***

Source: Radermacher, Walia, & Knudson (2014)

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Phase Four: Best Practices Review

Theme 2: Industry collaboration

Postsecondary institutions and industry partnerships aim to bridge the gap between academic training and employer expectations in a rapidly evolving job market.

In 2023, the CyberAmbassadors project was one such partnership, then recognized for its global impact by the American Society for Engineering Education. With support and collaboration from a number of academic and professional organizations, the CyberAmbassadors project was expanded to offer professional skills training to college students and professionals working across STEM (science, technology, engineering, math) disciplines.

Source: Luchini-Colbry, Joel-Luchini Colbry, Rojewski & Briliyanti (2019)

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Phase Four: Best Practices Review

Theme 3: Apprenticeships & Mentorships

The apprenticeship model in workforce development is a structured program that combines **paid on-the-job training** with classroom instruction, allowing workers to gain **practical experience** while learning theoretical aspects of their trade. This model benefits employers by **creating a pipeline of skilled workers** tailored to their specific needs, improving employee retention, and boosting productivity.

> *"Apprenticeships in the IT and telecommunications sector grew by more than 300% between 2011 and 2020, while cybersecurity apprenticeships grew by 600% during the same period, according to the Department of Labor... Verizon...uses the apprenticeship model to fill software engineering jobs and reports that 95% of an initial cohort accepted full-time offers at the company after completing an apprenticeship program."*
>
> ***-Chopra-McGowan, 2023***

Source: Chopra-McGowan (2023)

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Phase Four: Best Practices Review

Theme 4: Training Protocols

Boot Camps

"In delivering training, one proven approach is to provide two- to three-month 'boot camps.' During the boot camp, competency is assessed regularly, based on actual demonstrations. Employers collaborate with the training providers and can offer their staff as trainers. The boot camp must be practical, including in-person simulations, on-site apprenticeships, and 'serious games' customized to the workplace, where learners can play virtually and repeatedly. Programs need to have a strong in-person component to deliver the necessary dosage of intensive practice and to build the trust that allows providers to support learners…"

Web-based Learning

Online classes, specifically Massive Open Online Courses (MOOCs), are demonstrated to be as effective as traditional classroom courses, irrespective of students' initial preparation levels.

- Pu-Shih Daniel Chen, Amber D. Lambert, and Kevin R. Guidry (2010) investigated the impact of Web-based learning technology on college student engagement and self-reported learning outcomes in both face-to-face and online learning environments. The study found a positive relationship between the use of learning technology and student engagement and learning outcomes in terms of better understanding of course content, improved grades, and enhanced problem-solving.

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Source: Laboissiere & Mourshed (2017), Pu-Shih Daniel Chen, Amber D. Lambert, and Kevin R. Guidry (2010)

Phase Four: Best Practices Review

Theme 4: Training Protocols

Problem-Based Learning

Definition: Problem-based learning (PBL) in information technology (IT) is an instructional method where students learn by actively **engaging in solving complex, real-world problems**. Instead of passively receiving information, students are presented with a problem and **work collaboratively** to research, analyze, and develop solutions. In IT, PBL helps students develop practical skills like **problem-solving, critical thinking**, and teamwork while also applying theoretical knowledge to real-world scenarios. It's a **hands-on approach** that bridges the gap between theory and practice.

- Problem-Based Learning program (University of Waterloo - School of Computer Science):
- Description: The co-op program integrates PBL by having students **alternate between academic study and work terms in industry**. During their work terms, students solve real problems in professional settings, applying their classroom knowledge to practical challenges.

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Source: Pu-Shih Daniel Chen, Amber D. Lambert, and Kevin R. Guidry (2010)

Phase Four: Best Practices Review

Theme 4: Training Protocols

Cohort-based Courses

> *Now, a new delivery format called "cohort-based courses" has emerged as a way to improve completion rates. Groups of participants together take a course with* ***defined start and end dates, regular homework*** *assignments, and an* ***instructor to run periodic live*** *online discussion sessions. Within this more structured format,* ***participants still access much of the learning material on their own time,*** *making it easier for them to complete the course and have the chance to apply what they learn over its duration… **Boston Consulting Group** (BCG) is one leading employer that has embraced cohort-based courses…Lidia Juszko, BCG's executive director of global learning and teaming, describes how the format works particularly well for a professional services firm like hers. 'We've found that cohort-based courses offer a level of structure and support that makes them more engaging than standard online learning,' she said. 'Our colleagues report that* ***the combination and cadence of 'office hours' with instructors, live discussion sessions with the rest of the cohort****, and* ***short videos and exercises*** *to be completed each week are a more accessible way for them to learn. Learning and development opportunities like this allow us to continue to attract and retain the best talent.*

Source: Chopra-McGowan (2023)

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IT SKILL NEEDS ASSESSMENT

Phase 5: Future Trends

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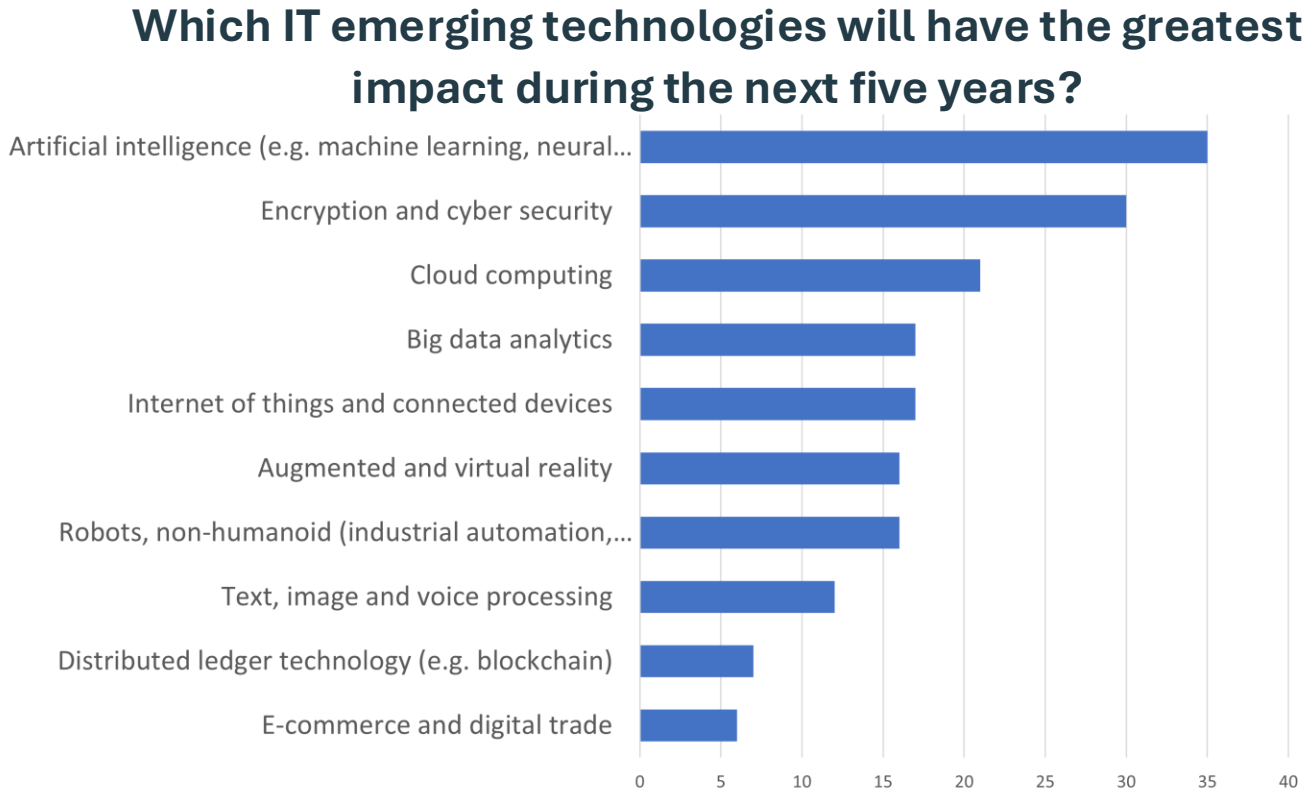
Phase Five: Future Trends

In the rapidly evolving landscape of information technology, several key trends are poised to shape the future of the industry. Among these, **artificial intelligence** (AI) continues to revolutionize various sectors by enhancing automation, decision-making, and predictive analytics. **Cybersecurity** remains a critical focus as organizations strive to protect sensitive data and infrastructure from increasingly sophisticated threats. **Immersive-reality technologies**, including virtual and augmented reality, are transforming user experiences and creating new opportunities for interaction and engagement. Meanwhile, **cloud computing** is driving innovation by providing scalable, flexible, and cost-effective solutions for data storage and processing.



Data Source: WIN IT Survey (2024) | Analysis: Workforce Intelligence Network

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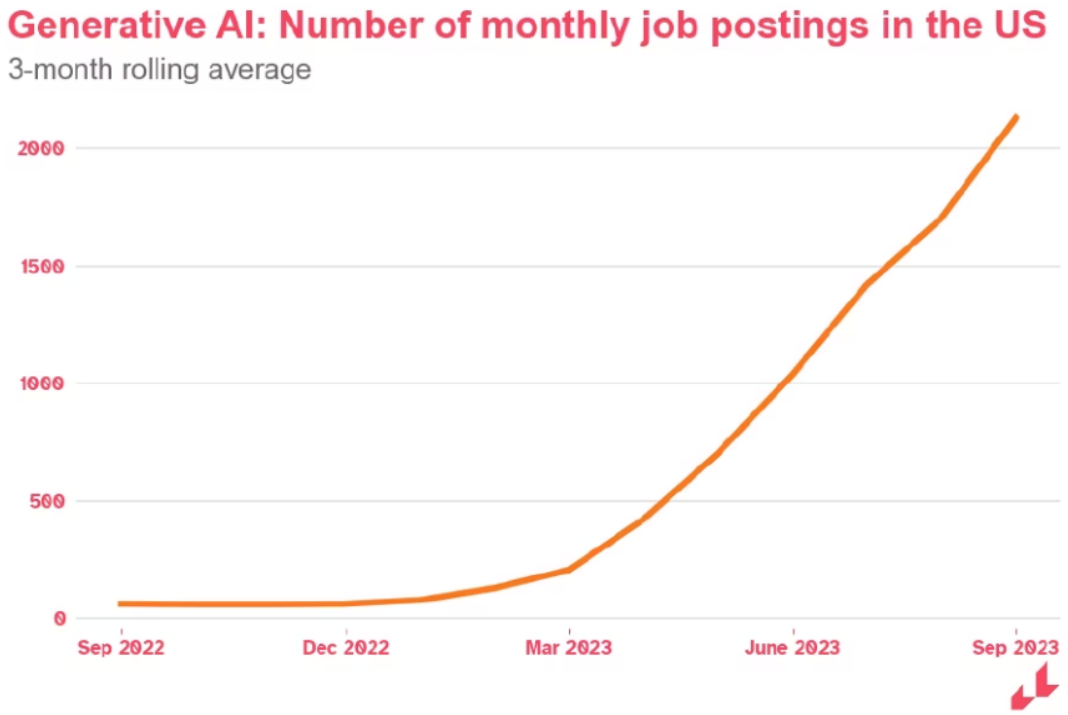
Phase Five: Future Trends

Generative Artificial Intelligence (AI)

- Gen AI has made significant progress, expanding machine capabilities by producing unique outputs from unstructured data like text, code, images, music, and 3D models. Since 2019, roles related to Gen AI have seen a 111% increase in job postings by 2023.



Source: McKinsey & Company (2024), Lightcast (2023)

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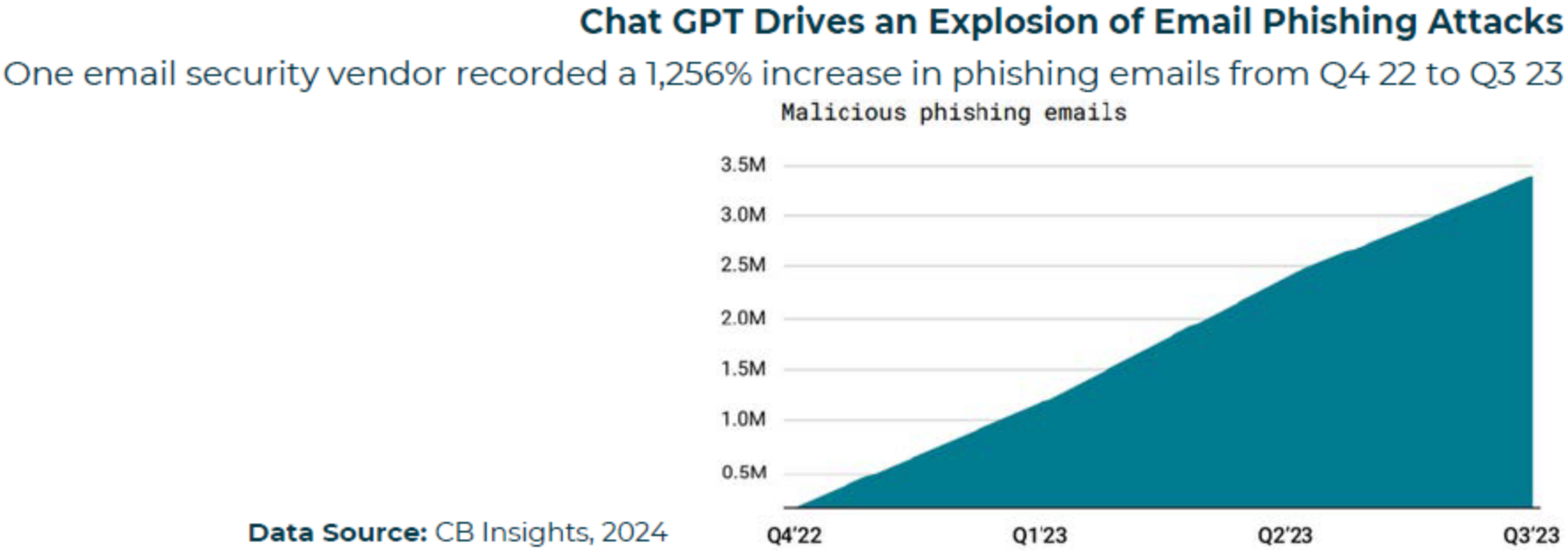
Phase Five: Future Trends

Digital Trust and Cybersecurity

- Despite the recent decline, there was a 123% increase in job postings for Digital Trust and Cybersecurity between 2019 and 2023.



Source: McKinsey & Company (2024), CB Insights (2024)

Phase Five: Future Trends

Immersive Reality Technologies & Cloud/Edge Computing

- Immersive Reality Technologies: Between 2019 and 2023, there was a notable rise in scores across news, searches, publications, and patents related to immersive-reality technologies. The increases suggest that companies see significant long-term potential in developing immersive-reality technologies.
- Cloud and edge computing: Enterprises are moving away from traditional on-site storage and management to a distributed approach across multiple infrastructure points, including remote hyperscale data centers and on-site edge servers. Edge computing allows data to be processed closer to where it is generated, reducing latency, lowering data-transfer costs, and enhancing data privacy, while also complying with data residency laws.

Source: McKinsey & Company (2024)

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IT SKILL NEEDS ASSESSMENT

Takeaways and Observations

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Key Takeaways and Observations

What does the research show and what steps should be taken?

Several challenges emerge:

- Employer needs tend to be very specific regarding skill needs
    - This issue may be compounded by the economics of course design and enrollment for overly-specific skill development
- The curriculum development timeline is outpaced by technological change
- The current IT workforce is highly experienced and the market for talent is dominated by those who are older and possess at least a Bachelor's degree or a highly specific skill set.
- Total employment in IT for the Macomb, Oakland and Wayne counties has been somewhat unstable following the pandemic.
- Turnover in IT tends to be very low, with many survey respondents indicating over 10 years with their current employer.

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Key Takeaways and Observations

What does the research show and what steps should be taken?

Recommendations for further exploration:

- Talent development must be a collaborative effort. Industry and employer representatives should seek to work closely with higher-ed institutions to best communicate their needs.
- The learning experience should include several modalities to enhance skill retention, including Boot Camps, Web-based learning, problem-based learning, and cohort-based classroom models.
    - These opportunities should include hands-on learning as often as possible and should facilitate the building of a portfolio for candidates to showcase.
    - The apprenticeship model may be an option to promote a talent pipeline with sufficient employer input.
- Partnership organizations may provide additional training opportunities, including those promoting underrepresented groups in IT.

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QUESTIONS? & THANK YOU!

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