Ατομική Διπλωματική Εργασία

«Ψηφιακός Μετασχηματισμός: Διερεύνηση των απαιτούμενων προχωρημένων ψηφιακών ικανοτήτων (Advanced Digital Skills) από οργανισμούς της Κύπρου και σε ποιο βαθμό αυτές καλύπτονται από προγράμματα τριτοβάθμιας εκπαίδευσης.»

Χριστόδουλος Μαυρίδης

ΠΑΝΕΠΙΣΤΗΜΙΟ ΚΥΠΡΟΥ

ΤΜΗΜΑ ΠΛΗΡΟΦΟΡΙΚΗΣ

Μάιος 2024

ΠΑΝΕΠΙΣΤΗΜΙΟ ΚΥΠΡΟΥ

ΤΜΗΜΑ ΠΛΗΡΟΦΟΡΙΚΗΣ

«Ψηφιακός Μετασχηματισμός: Διερεύνηση των απαιτούμενων προχωρημένων ψηφιακών ικανοτήτων (Advanced Digital Skills) από οργανισμούς της Κύπρου και σε ποιο βαθμό αυτές καλύπτονται από προγράμματα τριτοβάθμιας εκπαίδευσης.»

Χριστόδουλος Μαυρίδης

Επιβλέπουσα Καθηγήτρια
Ελπίδα Κεραυνού Παπαηλίου

Η Ατομική Διπλωματική Εργασία υποβλήθηκε προς μερική εκπλήρωση των απαιτήσεων απόκτησης του πτυχίου Πληροφορικής του Τμήματος Πληροφορικής του Πανεπιστημίου Κύπρου

Μάιος 2024

Acknowledgements

I would like to express my deepest gratitude to a number of people and organizations without whose support and guidance this diploma thesis would not have been possible.

First and foremost, I extend my heartfelt thanks to my supervisor, Professor Elpida Keravnou-Papailiou, for entrusting me with this challenging and insightful topic. Her guidance, encouragement, and expertise have been invaluable throughout this journey. Her wisdom and patience have greatly influenced my academic development and have been a constant source of inspiration.

I am profoundly grateful to the institutes, companies, and their employees in Cyprus who participated in our research. Their willingness to share their insights and experiences has been instrumental in shaping this study. The information and perspectives they provided have been critical in understanding the landscape of digital transformation and the advanced digital skills required in Cyprus.

A special note of thanks goes to my colleague, Alexandros Patsalides. His collaboration, dedication, and insights have greatly contributed to the success of this research. Working alongside Alexandros has been both a privilege and a rewarding learning experience.

I would also like to acknowledge the contributions of everyone who participated in our surveys. Their responses have been essential in providing a comprehensive view of the current state and needs of digital skills in the Cypriot landscape. Their input has been invaluable in making this research as thorough and accurate as possible.

Lastly, I extend my gratitude to my family and friends for their unwavering support and encouragement throughout my academic journey. Their belief in my capabilities and constant motivation have been a source of strength and perseverance.

This diploma thesis is not just a reflection of my efforts but a testament to the collaborative endeavour of all those who have been a part of this journey. Thank you all for your invaluable contributions and for making this research a reality.

Abstract

This diploma thesis investigates the alignment between the advanced digital skills demanded by organizations in Cyprus and the level of student preparation provided by tertiary education institutions. Through a comprehensive analysis of data collected from three questionnaires targeted at educational institutes, companies, and employees within these companies, this study explores the digital transformation landscape in Cyprus. The findings reveal a significant gap: while the demand for advanced digital skills in the workplace is rising, current educational programs in Cyprus are not adequately preparing students for the digital challenges they face in professional settings. This discrepancy highlights a critical need for educational reform and curriculum development that is more closely aligned with the evolving digital skill requirements of the modern workplace. The study offers insights into the specific areas where educational institutions fall short and suggests potential strategies for bridging the gap between academia and industry needs. This research is pivotal for educational policymakers, academic institutions, and corporate entities in Cyprus, as it underscores the urgency of adapting educational frameworks to meet the rapidly changing demands of the digital era.

Περίληψη

Η παρούσα διπλωματική εργασία διερευνά την ευθυγράμμιση μεταξύ των προηγμένων ψηφιακών δεξιοτήτων που απαιτούνται από οργανισμούς στην Κύπρο και του επιπέδου προετοιμασίας που παρέχουν τα ιδρύματα τριτοβάθμιας εκπαίδευσης. Μέσω ολοκληρωμένης ανάλυσης δεδομένων τα οποία προέκυψαν από τρία ερωτηματολόγια – για εκπαιδευτικά ιδρύματα, εταιρείες και εργαζομένους αντίστοιχα – αυτή η μελέτη διερευνά το τοπίο του ψηφιακού μετασχηματισμού στην Κύπρο. Τα ευρήματα αποκαλύπτουν ένα σημαντικό κενό: ενώ η ζήτηση για προηγμένες ψηφιακές δεξιότητες στο χώρο εργασίας αυξάνεται, τα υφιστάμενα εκπαιδευτικά προγράμματα στην Κύπρο δεν προετοιμάζουν επαρκώς τους φοιτητές για τις ψηφιακές προκλήσεις που θα αντιμετωπίσουν στο επαγγελματικό περιβάλλον. Αυτή η απόκλιση αναδεικνύει την άμεση ανάγκη για εκπαιδευτική μεταρρύθμιση και ανάπτυξη προγραμμάτων σπουδών τα οποία να ευθυγραμμίζονται με τις εξελισσόμενες απαιτήσεις ψηφιακών δεξιοτήτων του σύγχρονου χώρου εργασίας. Η μελέτη προσφέρει πληροφορίες για τους συγκεκριμένους τομείς όπου τα εκπαιδευτικά ιδρύματα υπολείπονται και προτείνει πιθανές στρατηγικές

για τη γεφύρωση του χάσματος μεταξύ των αναγκών της ακαδημαϊκής εκπαίδευσης και του κλάδου εργασίας. Αυτή η έρευνα είναι ζωτικής σημασίας για τους υπεύθυνους χάραξης εκπαιδευτικής πολιτικής, τα ακαδημαϊκά ιδρύματα και τις εταιρικές οντότητες στην Κύπρο, καθώς υπογραμμίζει την επείγουσα ανάγκη προσαρμογής των εκπαιδευτικών πλαισίων για να ανταποκριθούν στις ταχέως μεταβαλλόμενες απαιτήσεις της ψηφιακής εποχής.

Table of Contents

Chapter 1 Introduction

1.1 Background and Context

Digital transformation has revolutionized industries worldwide, reshaping the skills required in the modern workforce. In Cyprus, this transformation is particularly shown in the IT sector, where a dynamic interplay between education and industry continually evolves. This diploma thesis in collaboration with my fellow student and friend Alexandros Patsalides, stems from our journey as senior computer science students at the University of Cyprus, which provided a unique vantage point to observe and experience the differences between academic preparation and professional demands in the field of information technology.

1.1.1 Personal Motivation

My initiation into the professional world was marked by an eye-opening realization: there exists a major disconnect between the curriculum offered by higher education institutions in Cyprus and the actual skills demanded in the job market, especially in the IT sector. This observation is not unique to my experience but resonates with many peers entering the workforce.

In the corridors of the University of Cyprus, I, alongside my fellow students, were rigorously trained in fundamental areas such as algorithmic thinking, problem-solving, and programming skills. These competencies form the bedrock of computer science and are indisputably crucial for any aspiring IT professional. They equip students with a robust analytical framework and a toolkit for approaching complex computational problems, a testament to the high academic standards maintained by our institution. However, as I transitioned from academia to industry, it became increasingly evident that while these skills are necessary, they are not always sufficient in isolation.

1.1.2 Current State of Digital Transformation in Cyprus

In the context of Cyprus, the IT industry is undergoing a rapid transformation, mirroring global trends towards more advanced and specialized skill sets. Despite the high confidence expressed by educational institutes in their ability to prepare students for the

workforce, there remains a noticeable gap in aligning their curriculum with the evolving needs of the industry.

This disconnect is particularly seen in the realm of advanced digital skills such as Artificial Intelligence (AI), Cybersecurity, Cloud Computing, Software Engineering, and the Internet of Things (IoT). These areas represent the cutting edge of technology, where innovation drives progress, and skill requirements are constantly in flux. While the foundational skills provided by institutes are invaluable, there is a growing need for these educational programs to evolve and encompass these emerging domains, ensuring that graduates are not just competent, but are fully equipped to thrive in an ever-changing digital landscape.

In this diploma thesis, I aim to analyse and understand this misalignment, drawing on empirical data and comprehensive analysis to offer insights and recommendations that could bridge the gap between academic preparation and industry requirements in Cyprus's IT sector.

1.2 Statement of the Problem

The core of this thesis centres around a critical issue in the landscape of digital transformation and education in Cyprus: the misalignment between the advanced digital skills taught in academic institutions and those required by the IT industry. This disparity has significant implications not only for new graduates entering the workforce but also for the broader trajectory of the technological sector in Cyprus.

1.2.1 Skills Gap in the IT Sector

One of the most pressing challenges in the IT sector in Cyprus is the evolving nature of technological advancements and their swift adoption in the industry. This rapid evolution creates a dynamic demand for specific skills, particularly in areas like Artificial Intelligence (AI), Cybersecurity, Cloud Computing, Software Engineering, and the Internet of Things (IoT). These fields represent the forefront of digital innovation and are critical drivers of competitiveness and efficiency in the modern business landscape.

However, there is a noticeable lag in the integration of these advanced digital skills into the curriculum of higher education institutions. While universities and colleges in Cyprus provide robust training in fundamental computing concepts and basic digital literacy, they often fall short in equipping students with the specialized, cutting-edge skills now in high demand in the industry. This gap is not merely an academic oversight but a significant barrier to the employability and professional development of graduates. It also represents a potential hindrance to the growth and adaptability of the Cypriot IT sector, which relies heavily on a skilled workforce to remain competitive and innovative.

The disconnection is two-fold: on one side, educational institutions maintain a curriculum that, while strong in foundational aspects, does not fully align with the rapid advancements and specialized needs of the modern IT industry. On the other side, companies are increasingly seeking candidates with skills that are not being adequately addressed in current academic programs. This mismatch poses a challenge for both new graduates, who may find themselves inadequately prepared for the complexities of the job market, and for employers, who face difficulties in finding candidates with the requisite advanced skill sets.

1.3 Objectives of the Thesis

In the context of the aforementioned skills gap in the Cypriot IT sector, this thesis is guided by specific objectives aimed at addressing this critical issue. The primary goals of this research are multi-faceted, the identification of existing gaps, the proposal of potential improvements, and the provision of actionable insights for various stakeholders.

1.3.1 Research Goals

1. **Identifying the Gaps**: The first and foremost objective is to comprehensively identify and quantify the extent of the skills gap between the educational output of institutes in Cyprus and the digital skill requirements of the IT industry. This involves examining the findings of the questionnaires that many higher education institutions, companies, and employees have answered.
2. **Suggesting Improvements**: Based on the findings regarding the skills gap, the second objective is to propose targeted improvements to the existing educational frameworks. This includes recommending updates to curricula, suggesting new

courses or modules, and considering innovative teaching methodologies that can better prepare students for the demands of the modern IT workplace.

3. **Informing Stakeholders**: A critical objective of this research is to inform and guide key stakeholders. This includes providing insights to educational institutions on how to align their courses with industry needs, offering guidance to students about the skills that are in high demand, and assisting employers in understanding the current capabilities of recent graduates. Such information is vital for ensuring that the educational offerings are relevant, comprehensive, and geared towards the realities of the job market.
4. **Forecasting Future Trends**: Lastly, this thesis aims to project future trends in the IT sector in Cyprus over the next five years. Understanding these trends is crucial for educational institutions to stay ahead of the curve, ensuring that they are not only addressing current gaps but are also preemptively preparing for future industry requirements.

1.4 Significance of the Study

The research undertaken in this thesis is not just an academic exercise, it carries substantial significance for multiple stakeholders in the realm of digital technology and education in Cyprus. The implications of this study are far-reaching, affecting students, educational institutions, and the broader IT industry.

1.4.1 Implications for Stakeholders

1. **For Students and Graduates**: This research is particularly important for current and future students of IT and related fields. By identifying the existing skills gap, the study provides insights into the specific areas where students might need to supplement their university education with additional training or self-study. This knowledge empowers students to better prepare themselves for the demands of the job market, enhancing their employability and career prospects.
2. **For Educational Institutions**: The findings of this study are crucial for universities and other higher education institutes in Cyprus. They provide a data-driven basis for curriculum development and restructuring. By aligning educational offerings more closely with industry requirements, institutions can enhance the relevance and applicability of their programs, thereby increasing the

value of the education they provide and their attractiveness to prospective students.

3. **For the IT Industry and Employers**: Companies in the IT sector stand to benefit significantly from this research. The identification of skill gaps enables them to understand better the areas where new recruits might require additional training. Furthermore, the study's insights can inform recruitment strategies and collaborations with educational institutions for tailor-made training programs, thus contributing to the development of a more skilled and prepared workforce.
4. **For Policy Makers and Educational Authorities**: The insights from this research can guide policy makers and educational authorities in shaping policies and initiatives that support the alignment of education with industry needs. This alignment is crucial for the economic and technological development of Cyprus, as it ensures that the workforce is equipped with the skills necessary to drive innovation and growth in the IT sector.
5. **Long-term Economic Impacts**: Beyond the immediate stakeholders, the study has broader implications for the economic health and technological advancement of Cyprus. A workforce well-equipped with relevant digital skills is a pivotal asset in the global digital economy. Enhancing the alignment between education and industry requirements can lead to a more competitive and innovative IT sector, contributing to the overall economic growth and technological prowess of the country.

1.5 Research Questions

Central to the exploration of the skills gap in the IT sector of Cyprus is a set of research questions that guide the investigative process. These questions are designed to delve into the core of the issue, examining the relationship between academic training and industry requirements in the digital age.

1.5.1 Primary Question

The primary research question that this diploma thesis seeks to answer is:

- "What is the extent of the skills gap between the educational qualifications of IT graduates in Cyprus and the digital skill requirements of the IT industry?"

This overarching question breaks down into several sub-questions, each addressing a different facet of the central issue:

1. **Curricular Analysis**: What are the current educational curricula offered by tertiary institutions in Cyprus in the field of IT, and how do these curricula align with the identified needs of the IT industry?
2. **Industry Requirements**: What specific advanced digital skills are most in demand by IT companies in Cyprus, and how do these requirements evolve over time?
3. **Graduate Preparedness**: To what extent do recent graduates from Cypriot tertiary institutions possess the skills that are currently in high demand in the IT industry?
4. **Gap Analysis**: Where are the most significant discrepancies between the skills acquired through education programs taught in academic institutions and those required in the IT industry?
5. **Stakeholder Perspectives**: How do educational institutions, students, and IT companies perceive the skills gap, and what are their views on the causes and implications of this disparity?

These research questions are intended to provide a comprehensive understanding of the skills gap in the IT sector in Cyprus. By exploring these questions, the thesis aims to uncover the root causes of the gap, assess its breadth and depth, and understand the perspectives of various stakeholders involved. This exploration is critical for developing effective strategies and recommendations to address the identified issues, thereby ensuring that the higher education system in Cyprus is responsive to the evolving needs of the digital economy.

1.6 Scope and Limitations

To provide a focused and meaningful analysis, it is essential to define the boundaries of this research, as well as to acknowledge its inherent limitations. This section outlines the specific scope of the study and the constraints under which the research was conducted.

1.6.1 Focus of the Study

The scope of this thesis is strategically confined to address the following areas:

1. **Target Sector**: The primary focus is on the Information Technology sector in Cyprus, particularly companies engaged in software development, cybersecurity, cloud computing, AI, and IoT. These areas represent the forefront of digital innovation and are central to the investigation of advanced digital skills.
2. **Educational Institutions**: The study concentrates on tertiary education institutions in Cyprus that offer programs in computer science and related fields. The analysis involves examining the curricula of these institutions to understand how they align with industry requirements.
3. **Geographical Limitation**: The research is geographically limited to Cyprus, providing a case study of the skills gap in the context of a small, evolving economy within the European Union.

1.6.2 Limitations

Despite efforts to ensure comprehensive and accurate research, this study encounters certain limitations:

1. **Response Rate and Bias in Questionnaires**: The primary data collection method relies on responses to questionnaires distributed to companies, institutes, and employees. The effectiveness of this method is subject to the response rate and potential response bias.
2. **Rapidly Changing Industry Dynamics**: The IT sector is characterized by rapid technological advancements and shifting skill requirements. While the study aims to be as current as possible, the fast-paced nature of the sector means that some findings might quickly become outdated.
3. **Generalizability of Findings**: Given the focus on Cyprus, the findings and conclusions of this study may not be fully generalizable to other regions or countries with different economic, cultural, or educational contexts.
4. **Subjectivity in Qualitative Analysis**: Some aspects of the research, especially those involving the analysis of qualitative data from questionnaire responses, involve interpretative elements that may introduce subjectivity.

By acknowledging these limitations, this study maintains a transparent and critical approach to its findings and recommendations. Readers need to consider these constraints when interpreting the results and conclusions drawn from this research.

1.7 Chapter List

Following the current introductory chapter, the rest of the diploma thesis report is structured as follows:

- **Chapter 2: Current Status of Advanced Digital Skills in Cyprus**
  - Provides an overview of the historical context, current landscape, and key developments in digital transformation.
  - Discusses government and educational initiatives to improve digital skills and the gap between industry needs and educational offerings.
- **Chapter 3: Methodology**
  - Describes the research design, data collection, and analysis methods used.
  - Details the questionnaire distribution to companies, employees, and educational institutions.
- **Chapter 4: Analysis of Advanced Digital Skills in Cypriot IT Companies**
  - Presents and interprets the results of the survey targeting IT companies in Cyprus.
  - Identifies the advanced digital skills in demand, training and development practices, challenges, and future trends.
- **Chapter 5: Analysis of Advanced Digital Skills in Cypriot IT Employees**
  - Analyzes the survey results from IT employees, focusing on their training satisfaction, skill proficiency, and needs.
- **Chapter 6: Analysis of Advanced Digital Skills in Cypriot Institutes**
  - Explores survey results from educational institutions on their digital skills programs and curriculum alignment with industry needs.
- **Chapter 7: Discussion**
  - Compares the survey findings across the three groups to identify commonalities, discrepancies, and areas for improvement.
  - Suggests strategies for bridging the digital skills gap.
- **Chapter 8: Conclusion**
  - Summarizes the research findings and practical implications.
  - Provides recommendations for future research and discusses the study's limitations.
- **Chapter 9: Bibliography**
  - Lists all references cited throughout the diploma thesis.

Chapter 2: Current Status of Advanced Digital Skills in Cyprus

2.1 Brief History of Digital Transformation in Cyprus

Cyprus embarked on its digital transformation journey in the late 1990s, initially focusing on incorporating digital solutions into public services to improve efficiency and access for citizens. This era marked the onset of the island's systematic efforts to integrate technology into the everyday functioning of government operations. One of the first major initiatives was the development of e-government services, which aimed to streamline administrative processes and make government interactions more accessible to the public [5].

2.1.1 The Early Years

The early 2000s saw a push towards digitizing public services, which laid the groundwork for broader digital initiatives across the island. During this period, Cyprus focused on establishing basic online services that enhanced the efficiency of public administration and improved citizen access to government resources. These initiatives were part of a larger vision to transform Cyprus into a more digitally competent society, recognizing the growing importance of technology in global economic and social landscapes [5].

2.1.2 Key Developments in Digital Transformation

- **E-Government Services**: By the mid-2000s, Cyprus had made significant strides in launching e-government services. This pivotal move was aimed at reducing bureaucratic procedures and making governmental services more accessible to both citizens and businesses. The introduction of these services marked a key milestone in Cyprus's digital transformation journey, reflecting the government's commitment to leveraging technology to enhance public service delivery [5].
- **ICT in Education**: Parallel to the advancements in government services, there was a concerted effort to integrate Information and Communication Technology (ICT) into the educational sector. This initiative included equipping schools with computer labs and introducing digital learning tools to classrooms. Supported by European Union funds, these programs aimed to cultivate a digitally literate generation poised to participate in an increasingly digital world [1][3].

- **Broadband Expansion**: The expansion of broadband connectivity across the island, including rural and remote areas, was another critical development. By enhancing internet accessibility, Cyprus aimed to democratize access to digital resources and foster an inclusive digital economy where all citizens could benefit from technological advancements [2][4].
- **Tech Startup Ecosystem**: In recent years, the rise of a vibrant tech startup ecosystem has illustrated Cyprus' progress in digital innovation. Supported by both government and private sector investments, new incubators, accelerators, and innovation hubs have emerged, focusing on sectors such as fintech, cybersecurity, and health tech. These developments have positioned Cyprus as an emerging hub for technology and innovation in the Mediterranean region [14].

2.1.3 Digital Adoption in the Private and Public Sectors

Today, the landscape of digital transformation in Cyprus is characterized by increased adoption of digital services in both the public and private sectors. This shift has been significantly accelerated by the COVID-19 pandemic, which highlighted the critical importance of digital readiness for business continuity and effective public service delivery:

- **Public Sector**: The government has continued to expand its range of digital services, improving the interface for citizen interactions and streamlining government processes to increase transparency and efficiency.
- **Private Sector**: Businesses across various industries have embraced digital technologies to enhance operational efficiency, expand market reach, and innovate product offerings. Digital tools have become integral to business strategies, driving competitiveness and growth in the local and global markets [5].

2.1.4 The Current Digital Landscape

Today, Cyprus stands at a crossroads of traditional economic sectors and burgeoning digital opportunities. The digital transformation journey has been characterized by:

- **Increased Digital Services Adoption**: Both public and private sectors have embraced digital services more robustly, driven partly by the COVID-19 pandemic, which underscored the importance of digital readiness (*see Figure 1*).

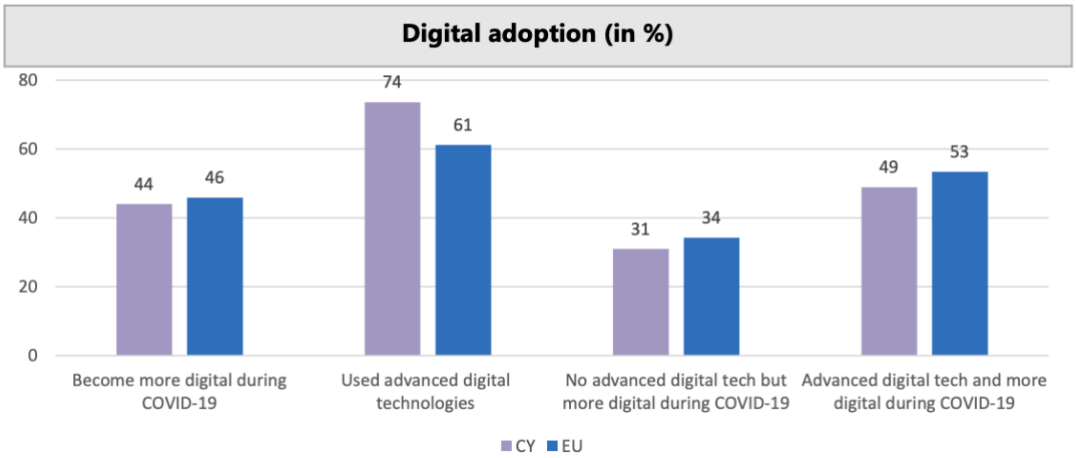

Figure 1: The provided graph shows how Cyprus changed digitally in comparison to the European Union 2021-2022 [16].

- **Focus on Digital Education**: There's a renewed focus on enhancing digital education, with initiatives aimed at integrating coding, digital literacy, and advanced ICT skills into school curricula from an early age.
- **Digital Innovation and Entrepreneurship**: The country has seen a surge in digital innovation and entrepreneurship, with the government and the European Union providing funds and support for digital startups and innovation projects.[14]
- **Challenges and Resilience**: Despite facing challenges such as cyber security threats, a digital divide between urban and rural areas, and the need for continuous upskilling of the workforce, Cyprus has shown resilience and adaptability. The government's Digital Strategy for 2021-2025 outlines ambitious goals for digital transformation across all sectors of the economy, aiming to create a cohesive digital society.

2.2 Digital Transformation's Influence on Businesses and Education

The impact of digital transformation in Cyprus has been profound, reshaping both the corporate and educational sectors. This section examines how digital technologies have revolutionized business practices and educational systems in Cyprus, highlighting the opportunities and challenges presented by this shift.

2.2.1 Influence on Businesses

The advent of digital technology has fundamentally altered the landscape of Cypriot businesses, impacting various aspects of operations from marketing to management, and production to customer service. The transformation has ushered in significant efficiencies and opened new avenues for revenue generation.

- **Operational Efficiency**: Businesses across the island have utilized digital tools to enhance their operational efficiencies. This includes the integration of ERP systems, cloud computing for remote work setups, and AI-driven analytics to streamline decision-making processes. Such technologies have not only reduced costs but have also improved productivity across sectors [5][6].
- **Market Reach**: The digital age has enabled Cypriot companies to expand their market presence beyond geographical borders. Through online platforms and digital marketing, local businesses can now reach an international audience, increasing their customer base and revenue potential significantly [5].
- **Customer Engagement**: Digital channels have revolutionized the way businesses interact with customers. Social media, mobile apps, and personalized marketing have become the norm, enhancing customer engagement and satisfaction. These tools allow for more precise targeting and customization of marketing messages, fostering better customer relationships [5].
- **Innovation and Agility**: The digital shift has also spurred innovation, with companies quick to adopt new technologies to stay competitive. This agility is particularly evident in the tech sector, where startups often lead in adopting emerging technologies like blockchain and IoT, driving further innovation and sector growth [6]. Also, the European Investment Bank's Corporate Digitalisation Index (EIBIS) has recognized Cyprus for its investment in software and data during the COVID-19 pandemic, as shown in *Figure 2*. This suggests that Cypriot firms have actively invested in digital assets and capabilities, which is an essential component of digital transformation. By channelling resources into software and data, these companies are not only equipping themselves with the necessary tools to operate efficiently in a digital landscape but are also contributing to the broader digital transformation of Cyprus. This investment enhances the agility of Cypriot businesses, fosters innovation, and creates a robust digital ecosystem that can support sustainable economic growth and resilience in the face of future

challenges. As these companies adopt and integrate more digital technologies, they influence the entire country's digital landscape by setting standards, generating demand for digital skills, and contributing to a culture that values and understands the importance of digital transformation. (*Figure 2*) [16]

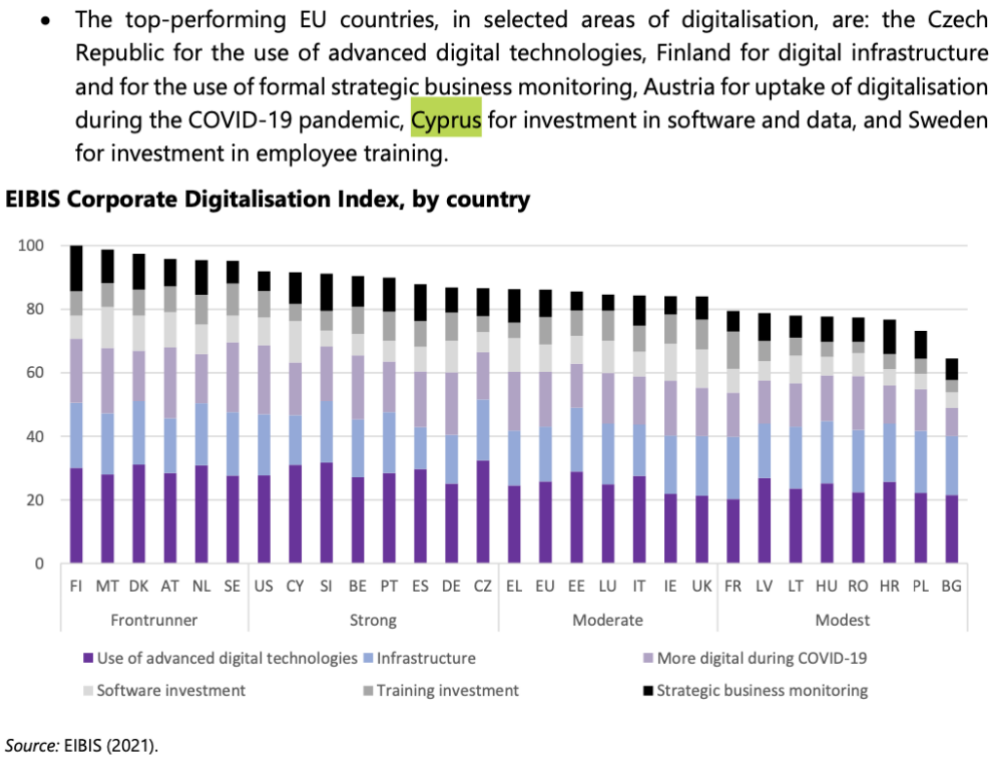

Figure 2: EIBIS Corporate Digitalisation Index, by country by EIBIS (2021).

2.2.2 Impact on Education

The educational sector has undergone a similar transformation, with significant implications for how education is delivered and accessed.

- **Curriculum Integration**: Recognizing the importance of digital literacy, educational institutions across Cyprus have integrated digital skills into their curricula. From basic computer science classes in primary schools to advanced courses in AI and machine learning at universities, the aim is to prepare students for the demands of the digital world [1][3].
- **Methodological Shifts**: The traditional classroom setting is increasingly being supplemented by digital learning environments. Through the use of educational technology (EdTech), teachers are employing more interactive and participatory

teaching methods which have been shown to enhance student learning and engagement [1][3].

- **Infrastructure Development**: Investments in digital infrastructure have been pivotal in this transformation. Schools and universities have upgraded their facilities to include high-speed internet connections and digital learning tools, ensuring that students from all backgrounds have access to the necessary resources for a comprehensive digital education [2][4].
- **Professional Development**: To keep pace with the evolving educational demands, there has been a focus on professional development for educators. Training programs designed to enhance digital teaching skills are being implemented, equipping teachers with the knowledge and tools needed to effectively incorporate digital technologies into their teaching practices [3][4].

2.2.3 Synergy Between Business and Education

The collaboration between the business sector and educational institutions has been crucial in aligning educational outcomes with the practical needs of the industry. Internships, joint projects, and consultation services are common, providing students with real-world experience and helping businesses tap into fresh talent and innovative ideas [2]. Also, KIOS, as part of the Cyprus DiGital INNovation Hub (DiGiNN) project, is an impactful educational initiative aimed at enhancing digital skills across Cyprus. This initiative is orchestrated by the KIOS Research and Innovation Center of Excellence at the University of Cyprus, which collaborates with various organizations to foster digital transformation. KIOS specifically facilitates a comprehensive support system for enterprises, offering access to advanced technological resources, expert mentoring, and investment opportunities to help businesses enhance their digital capabilities and competitiveness. This initiative not only prepares participants to tackle digital challenges but also contributes significantly to the broader goal of digital transformation in Cyprus. [6]

2.3 Government and Educational Initiatives to Improve Digital Skills

The Cypriot government, along with educational institutions, has been proactive in addressing the extreme demand for digital skills through various initiatives. These

endeavors aim to equip citizens with the necessary digital competencies to thrive in a rapidly evolving global digital economy.

2.3.1 Government Initiatives

The government of Cyprus has implemented several strategic actions to enhance digital literacy and promote digital inclusion across all sectors of the population.

- **National Digital Strategy**: The cornerstone of Cyprus' efforts is its National Digital Strategy (2020-2025), which outlines a comprehensive plan to improve digital infrastructure, increase digital literacy, and foster digital innovation across the economy. This strategy is integral in setting the direction for future digital development and in securing Cyprus' position in the digital world [2].
- **The EIT Deep Tech Talent Initiative** offers a variety of training programs aimed at advancing knowledge and skills in emerging deep tech fields. This initiative supports the development of a skilled talent pool to enhance innovation and economic growth across Europe. It promises comprehensive opportunities for both reskilling and upskilling, inviting participants to significantly contribute to the future of technology and innovation by engaging in these programs [15]. This is a European initiative, open for participation to all providers of deep tech education programs.
- **Digital Skills Certifications**: In collaboration with educational institutions and industry stakeholders, the government has introduced certification programs for various digital skills levels. These certifications aim to standardize the qualifications related to digital competencies and ensure that they meet international standards [9]. Also, ANAD can play a pivotal role. The program supports training in advanced digital skills, promoting widespread digital literacy essential for modern industries. Moreover, ANAD encourages the adoption of technologies like AI and IoT, which are integral to developing a competitive edge in today's economy. [13]
- **Public-Private Partnerships (PPPs)**: Recognizing the importance of collaboration between the public and private sectors, the government has encouraged the formation of PPPs. These partnerships focus on creating educational programs that are directly linked to industry needs, thereby enhancing the relevance and applicability of the skills being taught [2][4].

- **Incentives for Digital Startups**: To stimulate innovation and entrepreneurship in the digital sector, the government provides incentives such as grants, subsidies, and mentorship programs. These initiatives are designed to support the growth of digital startups and by extension, to promote the development of digital skills among entrepreneurs and their employees [4][6].

2.3.2 Educational Initiatives

Parallel to government efforts, educational institutions in Cyprus have undertaken significant measures to integrate digital skills into their curricula and teaching methodologies:

- **Curriculum Overhaul**: Universities and schools have updated their programs to include more comprehensive digital skills training. This overhaul ranges from the introduction of basic computer science courses at the lower educational levels to more complex subjects like cybersecurity and data science at the university level [1][3].
- **Teacher Training Programs**: To ensure that educators are prepared to teach these new curricula, professional development programs focusing on digital pedagogy have been implemented. These programs help teachers integrate digital tools effectively in their classrooms [1][3].
- **Infrastructure Improvements**: Significant investments have been made to upgrade educational infrastructure with modern technology. This includes the installation of high-speed internet in schools and the provision of digital devices to students and educators, which are essential for facilitating a modern educational environment [1][3].
- **Online Learning Platforms**: The expansion of online learning platforms has been another critical area of focus. These platforms offer a range of digital resources and courses, making it possible for students to learn at their own pace and according to their individual needs [1][3].

2.3.3 Challenges and Opportunities

While these initiatives have advanced digital education in Cyprus, they also present challenges such as ensuring equitable access to technology and continuously updating curricula to keep pace with rapid technological changes. The dynamic nature of the digital

economy requires that educational programs not only respond to current needs but also anticipate future demands [2][4].

2.4 Gap between Industry Needs and Educational Offerings

The transformation driven by digital technologies has not been uniformly absorbed across all sectors in Cyprus, particularly in the alignment between the skills taught by educational institutions and those demanded by the industry. This section explores the gap, identifies its primary areas, and discusses potential strategies for better alignment based on detailed studies and reports.

2.4.1 Identifying the Gap

The discrepancy between the competencies provided by the educational system and the needs of the industry is significant in Cyprus. This gap has been highlighted in multiple reports that assess the readiness of graduates entering the workforce:

- **Skills Mismatch**: There is a noticeable mismatch in certain technology sectors such as cybersecurity, AI, and data analytics where the demand for skilled professionals outstrips the supply from educational institutions [7][11].
- **Curriculum Lag**: Higher education often suffers from slow curriculum updates, which fail to keep pace with the rapid development of technology. This delay leads to a workforce that is not fully prepared for the immediate needs of today's digital economy [3][11].

2.4.2 Areas of Mismatch

The mismatch between educational output and industry requirements is particularly evident in several high-demand fields as illustrated in Figure 3 below:

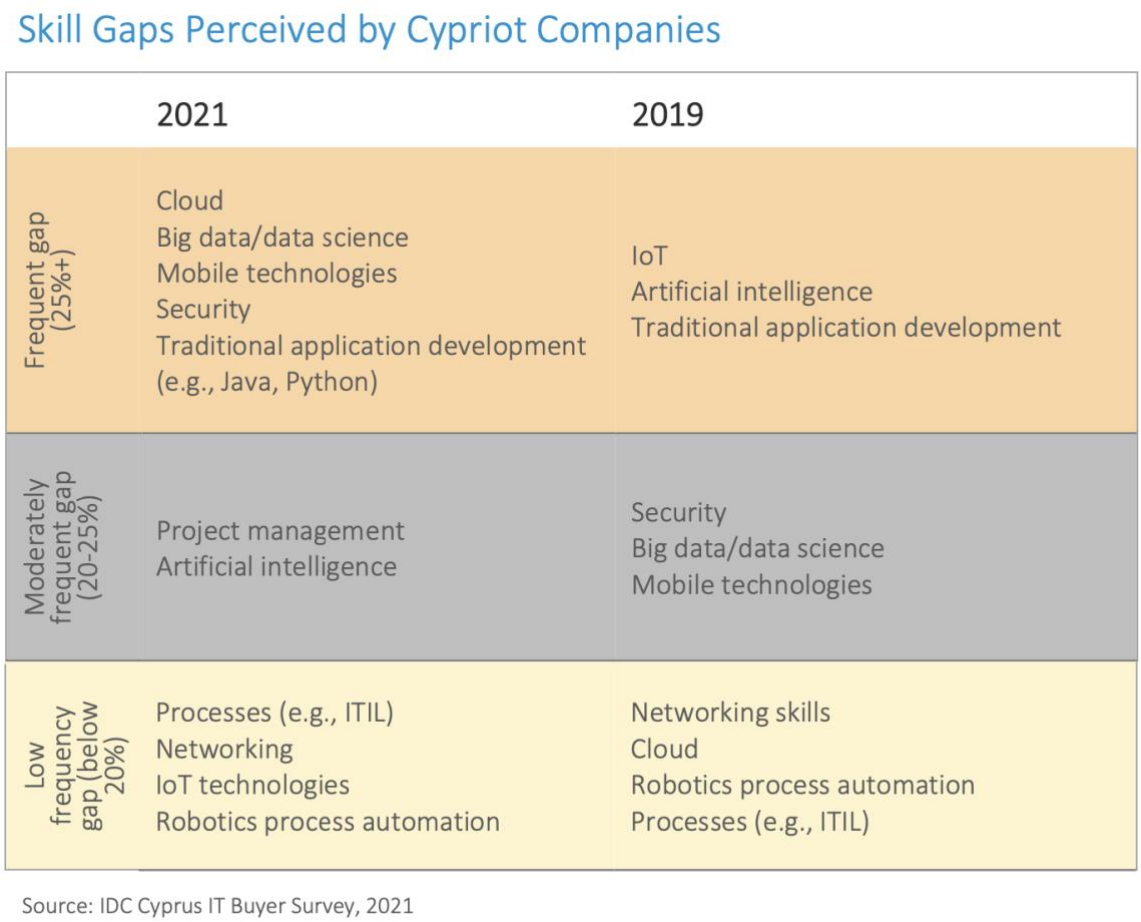

Figure 3: Skill Gaps Perceived by Cypriot IT Companies in 2021 by IDC Cyprus

In 2021, Cypriot companies identified several skill gaps among their workforces. The most frequently cited gaps, affecting more than 25% of companies, included expertise in cloud computing, big data/data science, mobile technologies, cybersecurity, and traditional application development with languages such as Java and Python. These areas are critical in the modern digital landscape and represent the top-tier skills that organizations are seeking. In a moderately frequent context, affecting 15-25% of companies, there was a need for skills in project management and artificial intelligence. Lastly, a lower frequency gap, noted by 10-20% of companies, pointed to processes like ITIL, networking, Internet of Things (IoT) technologies, and robotics process automation. This information suggests a clear demand for technical and project-oriented skills as companies continue to navigate an increasingly technology-driven economy.[12]

Other European sources define gaps in:

- **Cybersecurity**: There is a critical shortage of professionals with advanced cybersecurity skills, despite the growing number of cyber threats [7].
- **Data Science and AI**: The explosion of data-driven industries and AI technologies has created a vast demand for experts in these fields, which is not being met by the current educational offerings [11].
- **Software Development**: Modern programming skills, agile methodologies, and cloud computing techniques are often underrepresented in traditional computer science curricula [11].

2.4.3 Contributing Factors

Several factors contribute to the persistence of this educational gap:

- **Rapid Technological Advancements**: The speed at which new technologies are developed and adopted in the industry often outpaces the ability of educational institutions to integrate these advancements into their curricula [3].
- **Inadequate Industry Input**: There is often a lack of direct communication between the industry and educational policymakers, which means feedback from the workplace does not always reach academic planners in a timely fashion [2].
- **Economic Constraints**: Financial limitations can prevent educational institutions from updating technological infrastructures or from hiring staff who are experts in cutting-edge technologies [4].

2.4.4 Strategies to Bridge the Gap

To reduce this skills gap, several strategies can be implemented:

- **Curriculum Overhaul**: Educational programs need frequent updates to include the latest technological advancements. Partnerships with tech companies can help ensure that the skills taught are those required in the job market [8][9].
- **Enhanced Collaboration**: Creating continuous feedback loops between industry and academia can help align educational outcomes with economic needs. This could be facilitated through advisory boards or industry placements [2][6]. “Technology can be leveraged as a powerful learning tool. Online courses, digital certifications, and immersive learning experiences offer accessible avenues for

upskilling. Employers should invest in training programs to equip their workforce with digital talent." [17]

- Likewise, individuals must actively seek free resources and online courses to stay updated with the latest advancements. Collaboration among educators, policymakers, and industry leaders is essential in addressing the digital skills crisis and preparing the global workforce for sustained growth.
- **Government Initiatives**: Policies that encourage and financially support internships, apprenticeships, and cooperative education can help students gain real-world experience before graduation [4][10]

Chapter 3: Methodology

This chapter outlines the methodology employed in this research to investigate the alignment between the advanced digital skills demanded by the workforce and the level of preparation provided by tertiary education institutions in Cyprus. The study utilized a structured questionnaire approach, targeting three distinct groups: companies, employees of those companies, and tertiary education institutions (institutes/universities). This methodology section details the design, distribution, and analysis of the questionnaires.

3.1 Research Design

The research was structured around three questionnaires, each tailored to collect specific insights from the target groups: companies, their employees, and educational institutes. The purpose was to gather a comprehensive understanding of the digital skills landscape within Cyprus from multiple perspectives. This approach facilitated a multi-faceted analysis of the current digital skills gap, learning preferences, and the potential areas requiring enhancement in both corporate and educational settings.

3.1.1 Survey for Companies

The companies' survey aimed to explore the organizational perspective on the digital skills landscape. This included understanding the current skillsets of employees, identifying skills shortages, and recognizing areas where additional training and support are necessary. The questionnaire searched how well-equipped employees are with advanced digital skills and to gather feedback on HR and training initiatives designed to address any skills gaps.

3.1.2 Survey for Employees

The employees' survey mirrored the companies' questionnaire in its aim to gather insights but focused on the individual experiences and perceptions of the workforce. It explored employees' assessment of their own digital skills, their learning preferences, and their views on the sufficiency of training and support provided by their employers. This survey provided valuable insights into the effectiveness of existing training programs and identified areas for potential improvement from the employee's standpoint.

3.1.3 Survey for Educational Institutes

The educational institutes' survey was designed to capture the perspective of tertiary education providers on the advanced digital skills landscape. This included understanding the current digital skills offerings, assessing the alignment of curricula with industry needs, and identifying opportunities for enhancing the relevance of educational programs to meet the demands of the digital economy.

3.2 Sampling and Distribution

A total of 120 companies and 30 educational institutes across Cyprus were selected for this study, employing a purposive sampling technique to ensure a wide representation of sectors and sizes. The selection criteria aimed to encompass a broad spectrum of industries and educational disciplines to capture diverse insights into the advanced digital skills landscape.

The surveys were distributed via email. Respondents were assured of the anonymity of their responses to encourage honest feedback.

3.3 Data Collection and Analysis

Responses were collected over a three-month period, with follow-up reminders sent to increase participation rates. The data collected from the surveys were analyzed using quantitative methods to identify patterns, trends, and discrepancies in the digital skills landscape as perceived by companies, employees, and educational institutes. Qualitative feedback was also examined to gain deeper insights into the challenges and opportunities in enhancing digital skills among the workforce and in educational curricula.

3.4 Ethical Considerations

This study was conducted following the ethical guidelines provided by the University of Cyprus, ensuring the confidentiality and anonymity of all participants. Contact information of the responders was found on public websites where the information was available. Also, the emails of the responders to the questionnaire were not shared with us.

3.5 Limitations

The study acknowledges limitations related to the sampling technique, which may not fully represent the entire population of companies and educational institutes in Cyprus. Furthermore, the reliance on self-reported data from respondents may introduce biases or inaccuracies in the assessment of digital skills competencies and needs. Also, another limitation is that not all employees graduated from the institutes of Cyprus, thus this thesis analyses in a general way a global approach to this problem.

Chapter 4: Analysis of Advanced Digital Skills in Cypriot IT Companies

4.1 Introduction

In this chapter, we present the analytical results from the surveys conducted with various companies to understand the advanced digital skills sought in the IT sector, the training approaches, assessment strategies, and challenges encountered in aligning employee skills with organizational needs in Cyprus.

4.2 Presentation of Survey Results

4.2.1 Question 1: What are the primary advanced digital skills you seek in candidates when hiring for your IT department?

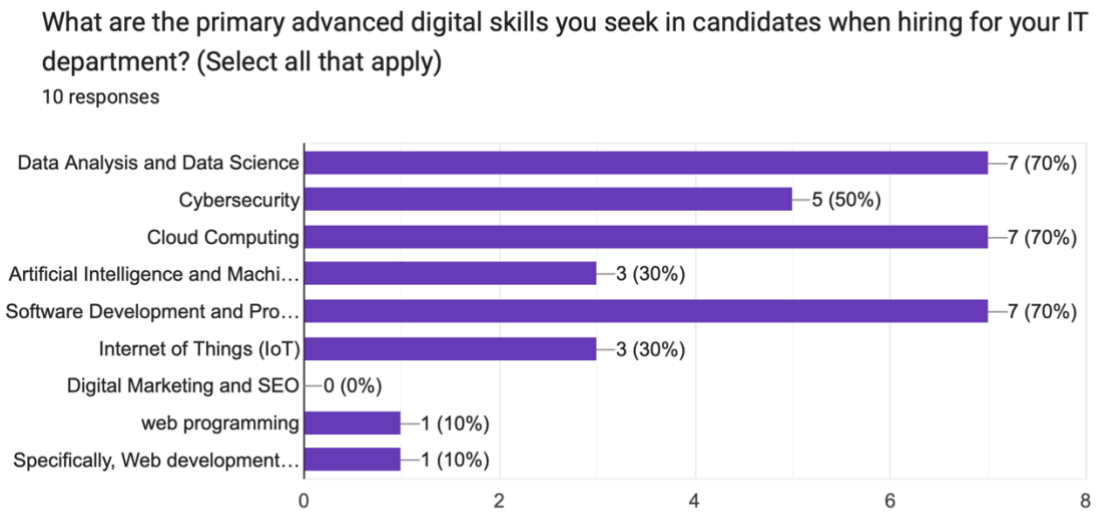

Figure 4.1: Question 1 of Companies' Questionnaire

According to the survey, IT companies in Cyprus show a strong preference for candidates who possess a variety of advanced digital skills. The results indicate that Data Analysis and Data Science, Cloud Computing and Software Development and Programming, are the primary skills sought by these companies. Each of these skill sets was highlighted by 70% of the respondents, showcasing their critical importance in the current advanced digital landscape (*Figure 4.1*).

Cybersecurity emerges as a pivotal skill, with 50% of the companies affirming its necessity. This finding is consistent with global trends, which see a growing emphasis on securing digital infrastructures against increasing cyber threats.

Artificial Intelligence and Machine Learning and Internet of Things (IoT), come third with a notable 30% of the respondents, which is odd with today's trends of increased AI and IoT applications.

Notably, while traditional web programming and web development skills are still required, they appear to be of secondary importance to the IT companies surveyed, with only 10% seeking these skills specifically. This could be indicative of a shift towards more advanced and specialized competencies within the IT industry in Cyprus.

These results are visualized in *Figure 4.1*.

4.2.2 Question 2: How do you provide ongoing training and development for your IT employees in advanced digital skills?

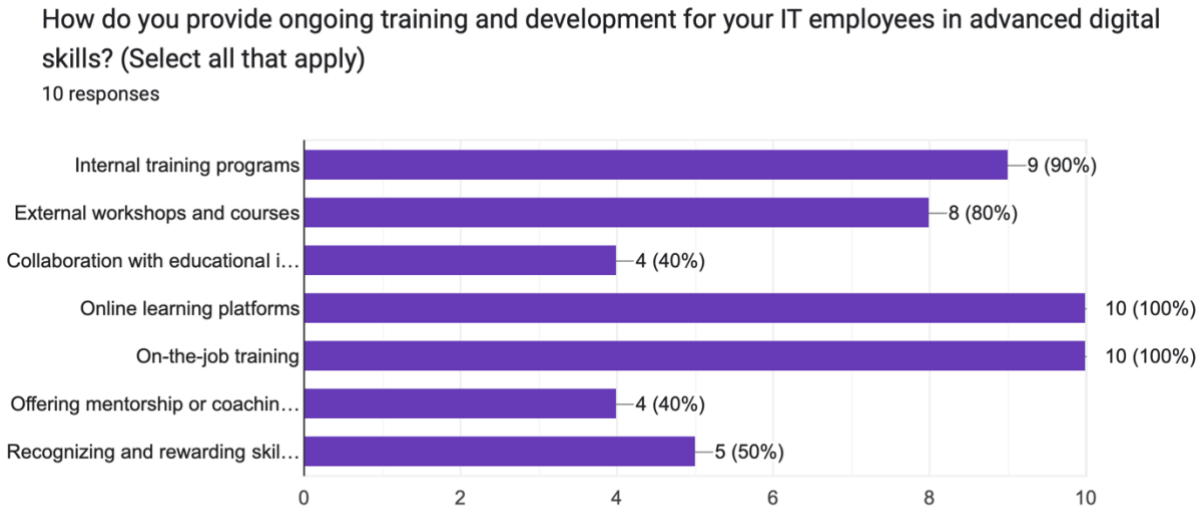

Figure 4.2: Question 2 of Companies' Questionnaire

The survey data illustrates the varied approaches IT companies in Cyprus are utilizing to foster advanced digital skills among their employees. Companies are heavily investing in the continuous development of their workforce, with 100% of respondents indicating the

use of online learning platforms and on-the-job training as their primary methods for skill advancement (*Figure 4.2*).

Additionally, a significant 90% of the companies provide internal training programs, emphasizing the importance of tailored, company-specific development paths. Close behind, 80% of the companies also utilize external workshops and courses, showcasing a commitment to leveraging a broad array of resources to enhance employee competencies. Collaboration with educational institutions is also a strategy employed by 40% of the companies, underlining the potential for synergy between academia and industry in the development of advanced digital skills. Moreover, offering mentorship or coaching and recognizing and rewarding skill acquisition and application, both employed by 40% and 50% respectively, indicate a holistic approach to employee development that extends beyond formal training programs.

These results are visualized in *Figure 4.2*.

4.2.3 Question 3: How do you assess the advanced digital skills of your IT employees?

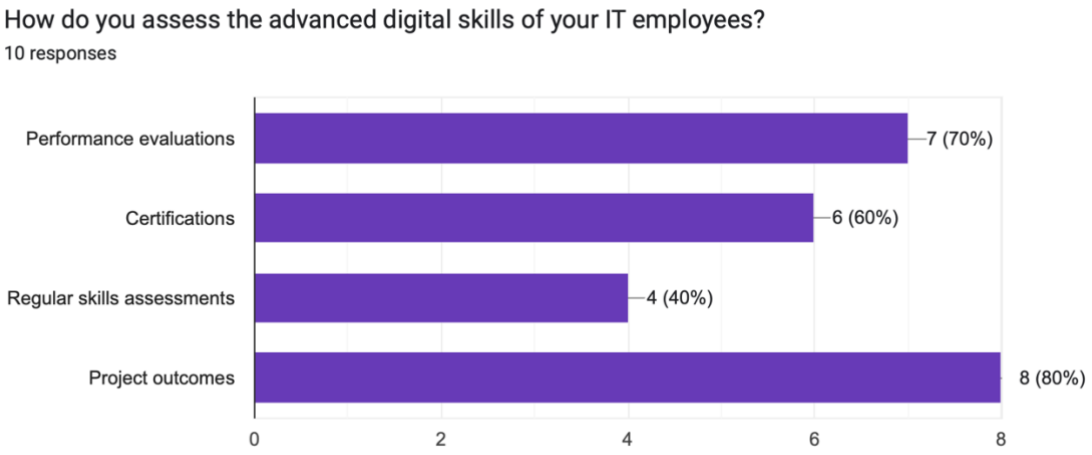

Figure 4.3: Question 3 of Companies' Questionnaire

The survey results indicate that IT companies in Cyprus are actively engaging in varied approaches to assess the advanced digital skills of their IT personnel. The prevalent methods used for evaluation are project outcomes, performance evaluations, certifications, and regular skills assessments, as indicated by 80%, 70%, 60%, and 40% of the respondents, respectively (*Figure 4.3*).

Project outcomes are the most favored method of assessment, with 80% of companies utilizing this approach. This preference highlights a results-oriented culture within the industry, wherein the application of skills in real-world projects is considered the most reliable indicator of an employee's competency.

Performance evaluations, employed by 70% of the companies, further reflect the importance placed on continuous monitoring and review of employee skill sets as part of their professional development. Certifications, cited by 60% of respondents, are valued as tangible evidence of employee qualifications and a means to validate skills against industry standards.

Regular skills assessments, though used by a smaller proportion (40%), indicate an ongoing commitment to ensuring that employee skills remain current and aligned with the company's evolving digital requirements. These assessments may also play a critical role in identifying specific training needs and gaps in the workforce's capabilities.

4.2.4 Question 4: Do you encourage IT employees to pursue additional certifications or training in advanced digital skills? If yes, how?

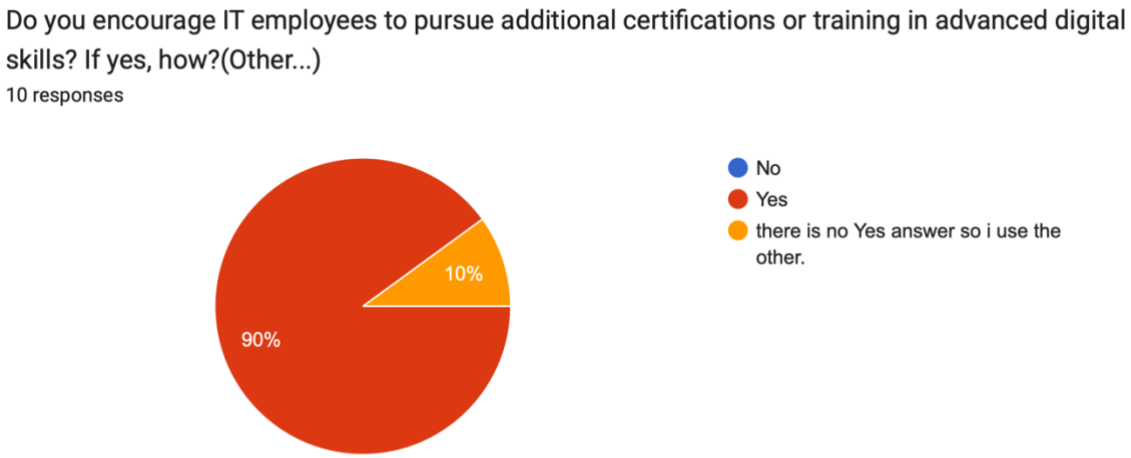

Figure 4.4: Question 4 of Companies' Questionnaire

All of the IT companies in Cyprus, that responded to the survey, encourage their IT employees to pursue additional certifications or training in advanced digital skills. This overwhelmingly positive response (*Figure 4.4*) showcases the industry's recognition of the value of continuous professional development and its commitment to fostering a culture of lifelong learning.

4.2.5 Question 5: How often do you conduct skills assessments or evaluations for your employees to gauge their digital skills proficiency?

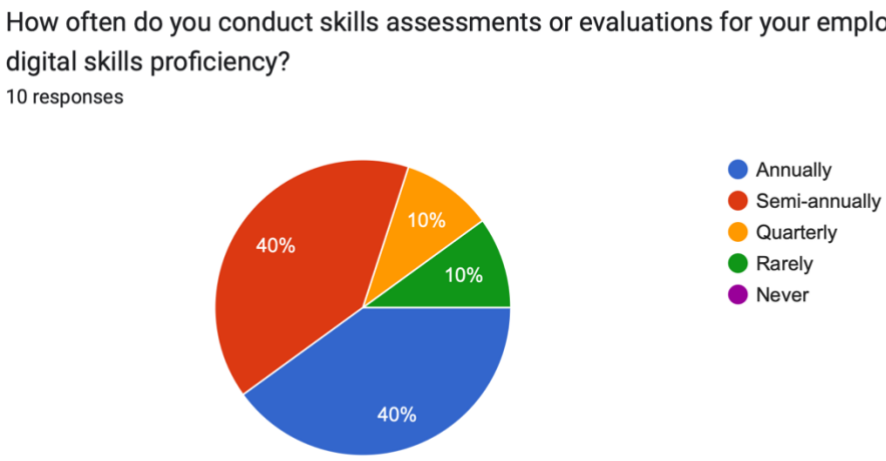

Figure 4.5: Question 5 of Companies' Questionnaire

The frequency with which companies assess the digital skills proficiency of their employees provides insight into the commitment to maintaining a highly skilled workforce. According to the survey, the companies display a balanced distribution in the frequency of conducting these assessments (*Figure 4.5*).

Equal proportions of the surveyed companies, each accounting for 40%, conduct skills assessments on an annual and semi-annual basis. This demonstrates a systematic approach to tracking and managing employee development and ensuring that skills remain up to date with industry standards.

A smaller percentage of the companies, 10%, conduct these evaluations more frequently, every quarter, indicating a dynamic and responsive approach to skills development, possibly reflecting a fast-paced or rapidly changing technological environment.

Interestingly, another 10% of respondents rarely conduct skills assessments, which could suggest either a high level of confidence in ongoing employee skill levels or a potential area for improvement in employee development practices. The survey results indicate that none of the companies never conduct assessments, which is a positive indication that regular skills evaluations are an established practice within the IT sector in Cyprus.

4.2.6 Question 6: Do you provide financial support or incentives for employees who pursue further education or certifications in digital skills?

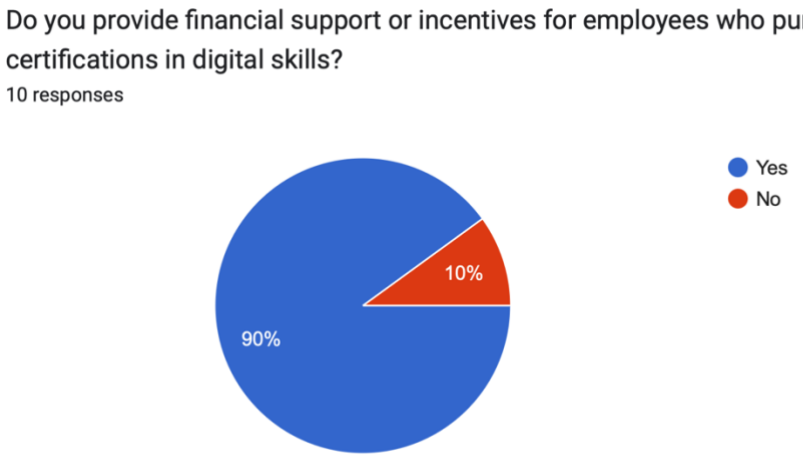

Figure 4.6: Question 6 of Companies' Questionnaire

An overwhelming majority of IT companies in Cyprus, as depicted by 90% of respondents, provide financial support or incentives for employees seeking to further their education or acquire certifications in digital skills (*Figure 4.6*). This strong affirmative response indicates a strategic investment in human capital development within the industry. The remaining 10% of companies that do not offer such support may either rely on other non-financial encouragement methods or this could represent an area for potential enhancement in their talent development strategies.

4.2.7 Question 7: Have you encountered any challenges in attracting or retaining employees with advanced digital skills in your industry?

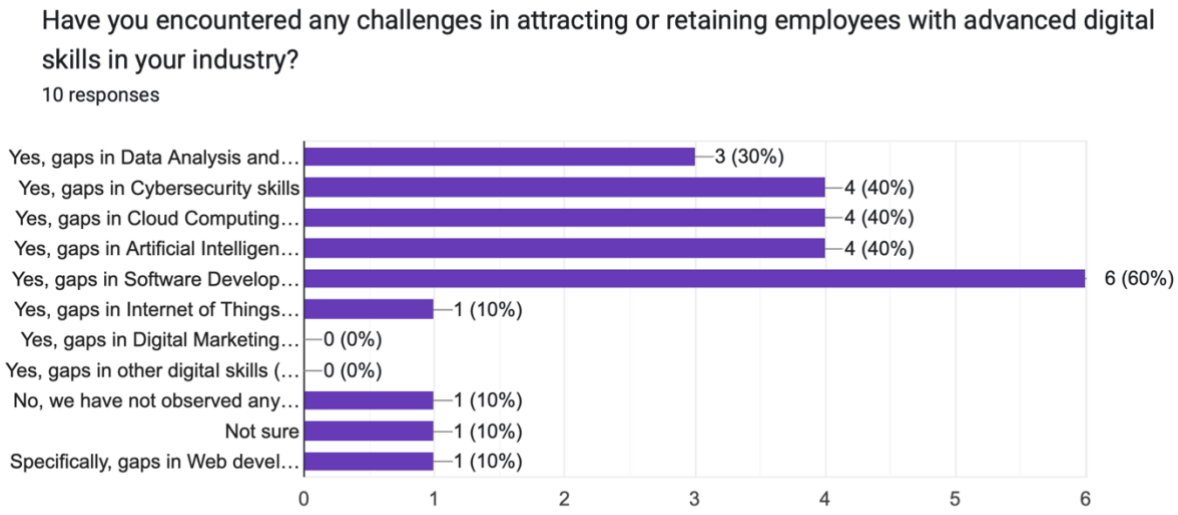

Figure 4.7: Question 7 of Companies' Questionnaire

The survey data highlights a significant challenge faced by IT companies in Cyprus: the difficulty in attracting or retaining employees who are proficient in advanced digital skills. According to the responses (*Figure 4.7*), the greatest challenge lies in Software Development skills, where 60% of companies have identified gaps. This is closely followed by gaps in Cybersecurity, Cloud Computing, and Artificial Intelligence skills, each reported by 40% of respondents.

A smaller proportion, 30%, have experienced difficulties specifically in Data Analysis and Data Science roles, indicating a need for stronger data management and analytics competencies in the workforce.

A notable 10% of companies report challenges in finding expertise on the Internet of Things (IoT), while gaps in other digital skills like Digital Marketing have not been observed according to the survey. Interestingly, only one company reported no challenges in this area, and the same number was uncertain, which could indicate a general consensus about the existence of skill gaps in the industry.

4.2.8 Question 8: How would you rate the alignment between the digital skills of your current workforce and the evolving needs of your organization?

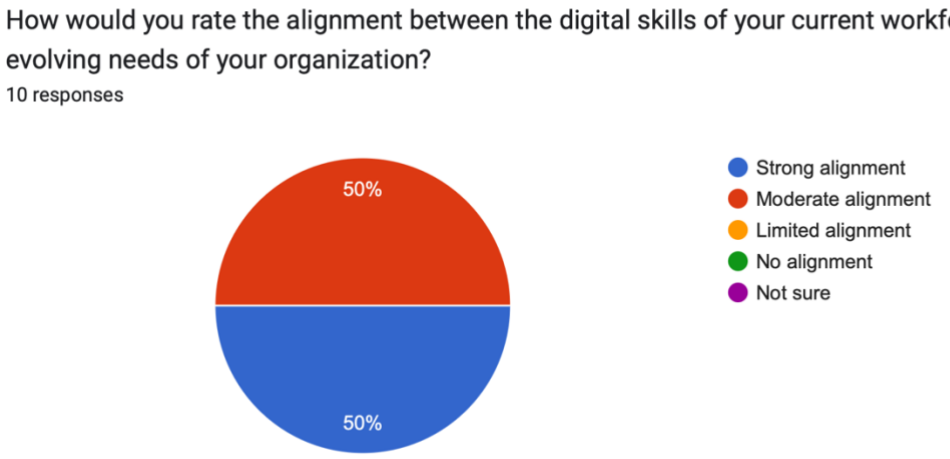

Figure 4.8: Question 8 of Companies' Questionnaire

The responses to the survey indicate a split perspective regarding the alignment of the current workforce's advanced digital skills with the evolving needs of IT companies. Half of the companies surveyed report a moderate alignment, suggesting that while there is some level of skill adequacy, there is room for improvement to fully meet the companies' growing and changing needs (*Figure 4.8*).

The other half of the companies perceive a strong alignment, which reflects confidence in their current employees' ability to meet organizational demands with their existing digital skill sets. This suggests that these companies may have effective ongoing training and development programs, are keeping pace with technological changes, or have recruitment strategies that effectively match skill needs with talent acquisition.

4.2.9 Question 9: How do you currently identify the digital skills needs within your organization?

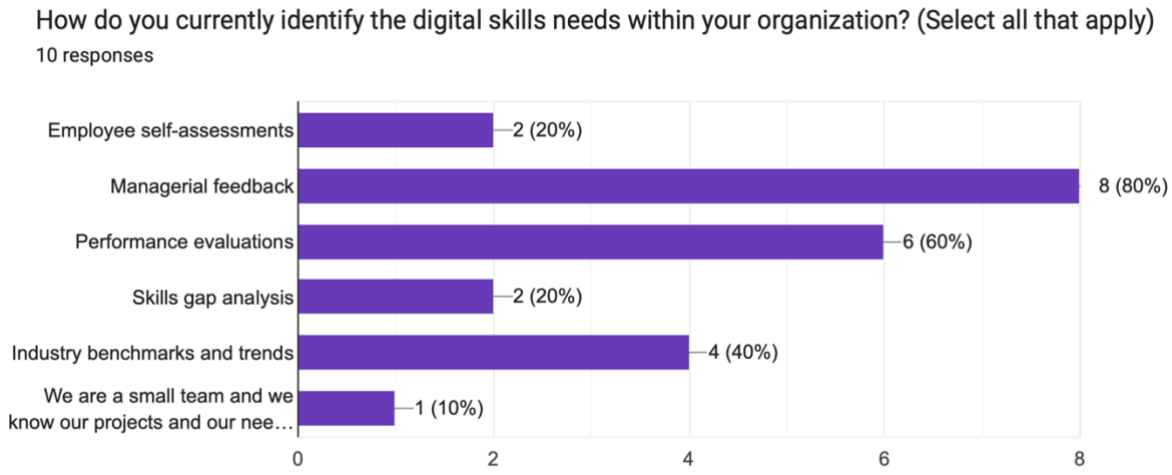

Figure 4.9: Question 9 of Companies' Questionnaire

Identifying the necessary advanced digital skills within an organization is key to staying competitive and innovative. According to the survey, IT companies in Cyprus predominantly rely on managerial feedback, as indicated by 80% of the responses, to determine their digital skills needs (*Figure 4.9*).

Performance evaluations also play a significant role, with 60% of companies using this method to assess skills requirements. This suggests that companies monitor their employees' output and progress to help identify areas where further training or hiring may be needed.

Interestingly, industry benchmarks and trends are utilized by 40% of the companies, reflecting an awareness of the broader industry's direction and the need to align with it. Skills gap analysis and employee self-assessments are less commonly used, each by only 20% of respondents. This may indicate a preference for top-down assessment approaches over self-evaluation methods.

The fact that one company, representing 10% of the survey participants, notes that their small team size and project intimacy obviate the need for formal skills assessment processes highlights the diversity of organizational contexts within the industry.

4.2.10 Question 10: Have you encountered any challenges in attracting or retaining employees with advanced digital skills in your industry?

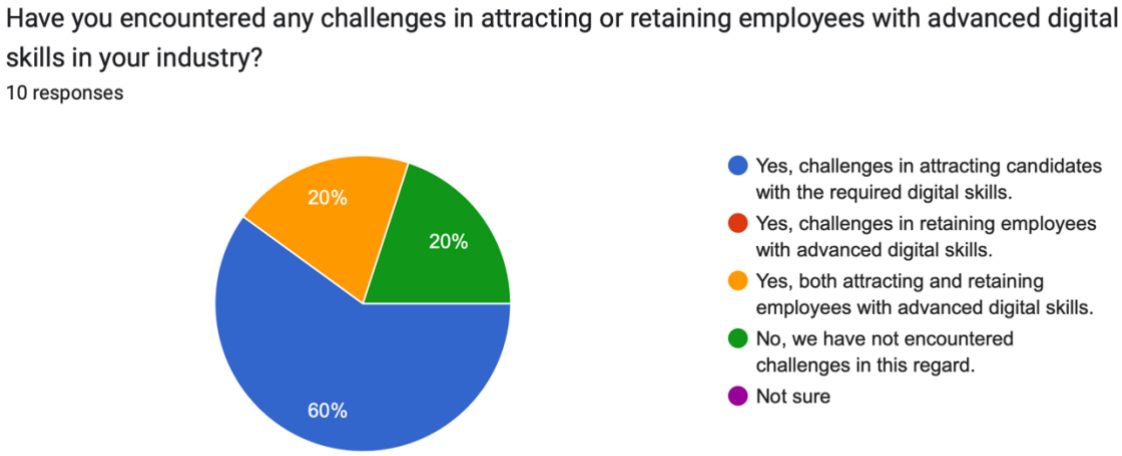

Figure 4.10: Question 10 of Companies' Questionnaire

A crucial aspect of sustaining a competitive edge in the IT industry is the ability to attract and retain talent proficient in advanced digital skills. The survey reveals that 60% of the respondents encounter challenges in both attracting and retaining such employees (*Figure 4.10*). This indicates that the demand for skilled professionals in advanced digital areas may exceed the supply and that there is also competition to retain this valuable talent.

A smaller portion of companies, each constituting 20% of the responses, report difficulties exclusively in either attracting or retaining employees with advanced digital skills. This distinction may reflect varying internal conditions and market dynamics, with some companies finding it harder to attract the right talent and others struggling to keep them.

The absence of any company reporting no challenges at all is telling of the universally recognized difficulty in this area within the Cypriot IT industry. Moreover, the fact that no respondents selected 'Not sure' suggests a clear awareness of the challenges associated with managing a digitally skilled workforce.

4.2.11 Question 11: What additional resources or support would assist your HR department in better addressing the digital skills development needs of your employees and the company as a whole?

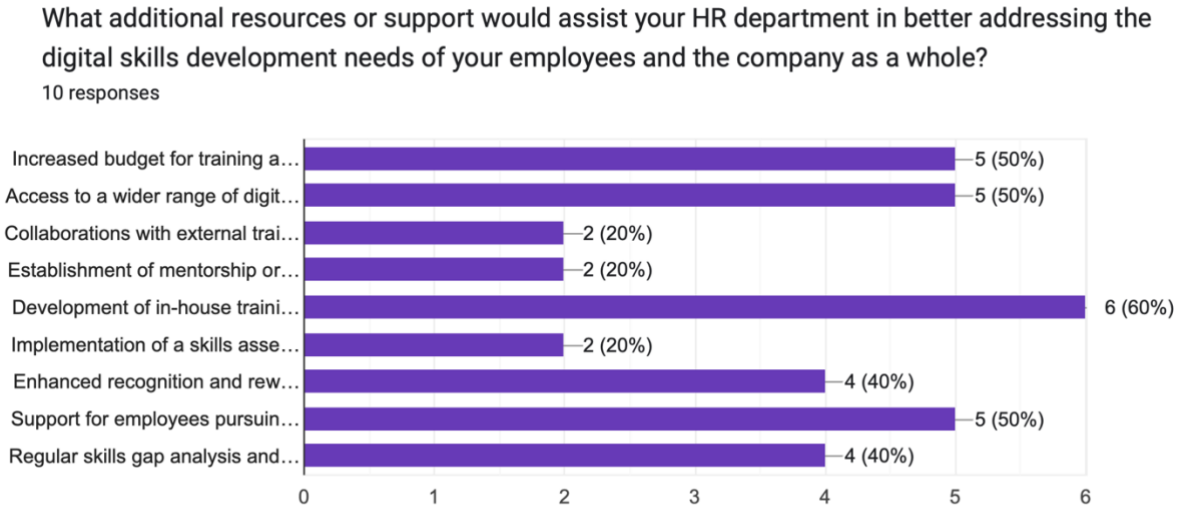

Figure 4.11: Question 11 of Companies' Questionnaire

The data suggests that there are two primary areas where companies seek additional support: increased budget for training and development, and access to a wider range of advanced digital skills training programs, each cited by 50% of the respondents (*Figure 4.11*).

The development of in-house training programs is also highlighted by 60% of the participants as a significant avenue for addressing digital skills needs, indicating a preference for customized and organization-specific training solutions.

Furthermore, enhanced recognition and reward systems and regular skills gap analysis and assessments are equally regarded as important by 40% of companies. These strategies underline the importance of not only identifying and addressing skills gaps but also fostering a workplace environment that values and incentivizes skill development.

Collaborations with external training providers and the establishment of mentorship or coaching programs are viewed as beneficial by 20% of the respondents. These figures reflect the multifaceted nature of digital skills development, which can be enhanced by leveraging a variety of internal and external resources.

4.2.12 Question 12: What future digital skills do you think will be important in ten years from now?

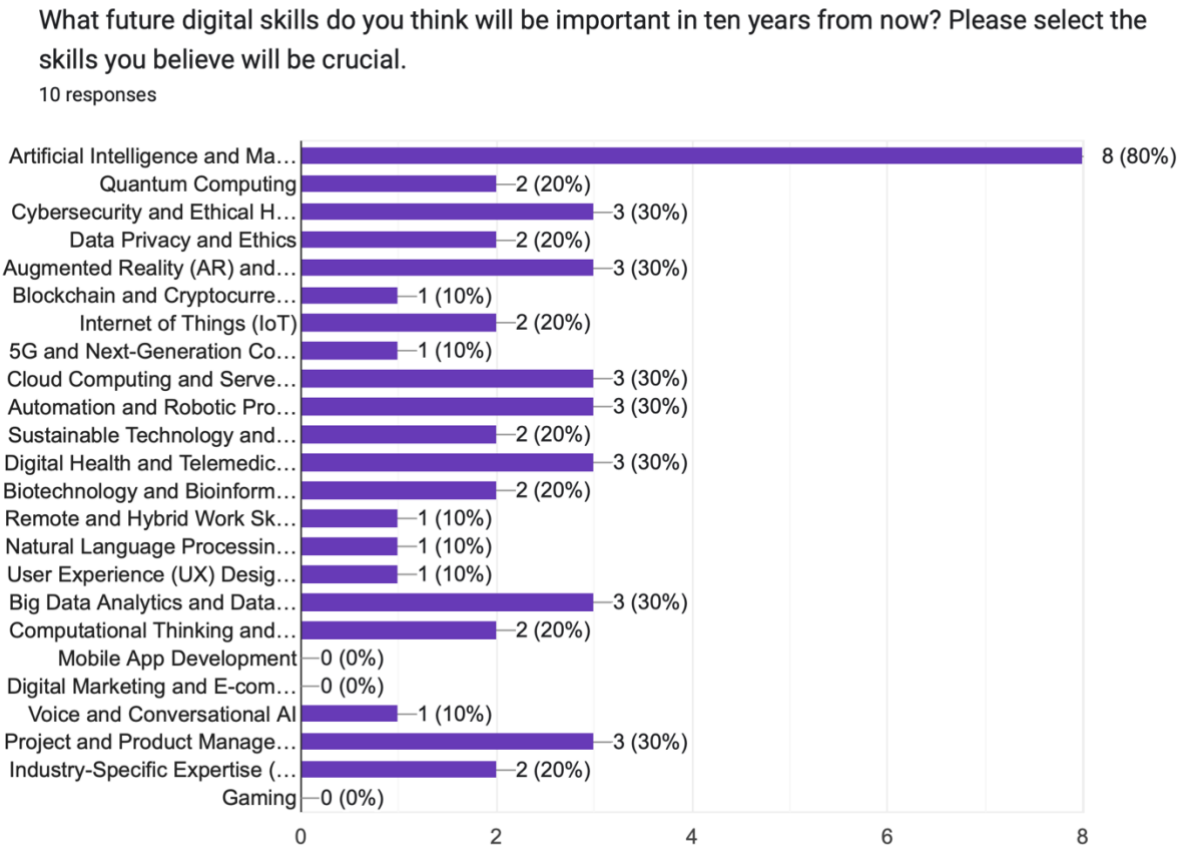

Figure 4.12: Question 12 of Companies' Questionnaire

The IT industry is inherently forward-looking, constantly evolving with the rapid pace of technological innovation. The responses to the survey provide a forecast of the digital skills that industry leaders believe will be crucial a decade from now.

According to the results (*Figure 4.12*), a significant majority, 80% of respondents, anticipate that Artificial Intelligence and Machine Learning will continue to be of paramount importance in the future. This prediction aligns with current trends emphasizing the impact of AI and ML on multiple sectors, from automation to data analysis, but also comes with contradiction with the first question of this questionnaire (*Figure 4.1*), where only 30% of companies seek AI skills on their candidates.

Other skills highlighted by the respondents include Quantum Computing and Cybersecurity, each identified by 30% of the participants. This reflects an understanding

that the frontiers of technology are expanding into quantum realms, and that the security of digital infrastructure will remain a top priority.

Additional areas such as Augmented Reality (AR), Blockchain and Cryptocurrency, and Digital Health and Telemedicine are each noted by 30% of respondents as well, suggesting a vision for a future where digital integration extends beyond traditional computing into more immersive, decentralized, and health-oriented applications.

The emphasis on a diverse range of skills including Cloud Computing, Sustainable Technology, and Big Data Analytics, each cited by 30% of respondents, demonstrates a broad consensus on the multidisciplinary nature of future digital competencies.

4.3 Summary of Findings

The survey conducted across a range of IT companies in Cyprus has brought to light several key findings regarding the current and future state of digital skills within the industry. Here is a summary of the insights:

1. **Demand for Advanced Digital Skills**: There is a high demand for a variety of advanced digital skills, with particular emphasis on Data Analysis, Cybersecurity, Cloud Computing, Artificial Intelligence, and Software Development.
2. **Training and Development**: Companies are heavily investing in ongoing training and development, utilizing online learning platforms and on-the-job training as predominant methods. Internal training programs and collaborations with educational institutions are also significant avenues for employee development.
3. **Assessment Practices**: Regular assessments, including performance evaluations and project outcomes, are common practices for gauging employees' digital skills. Certifications play a notable role in validating skill levels.
4. **Encouragement of Further Education**: A vast majority of companies encourage their employees to pursue additional certifications or training, highlighting the industry's commitment to continuous professional development.
5. **Attraction and Retention**: Attracting and retaining employees with advanced digital skills is a challenge for most companies, emphasizing the competitive nature of the digital talent market.
6. **Alignment with Organizational Needs**: There is a dichotomy in the perceived alignment between employees' digital skills and organizational needs, with half of

the companies reporting moderate alignment and the other half reporting strong alignment.

7. **Resource and Support Needs**: Companies express a need for increased budgeting for training and a wider range of digital skills training programs to enhance their ability to meet the digital skills development needs of their employees.
8. **Anticipated Future Skills**: Looking towards the future, IT companies anticipate that skills in Artificial Intelligence, Machine Learning, Quantum Computing, Cybersecurity, and various other digital technologies will be crucial for success in the industry.

These findings paint a picture of an industry in a digital transformation, acknowledging the need for a robust, skilled workforce that can navigate the challenges and opportunities presented by rapid technological change. The insights provide a foundation for subsequent chapters to explore the alignment between current educational outputs and industry requirements and to recommend strategies for cultivating a resilient, adaptable, and skilled digital workforce in Cyprus.

Chapter 5: Analysis of Advanced Digital Skills in Cypriot IT Employees

5.1 Introduction

In the rapidly evolving domain of information technology, the workforce is not only an observer but also a primary participant and beneficiary of the digital skills landscape. Chapter 5 dives into the insights and perspectives of employees within the Cypriot IT industry, pouring light on their experiences, challenges, and aspirations about advanced digital skills proficiency and development.

As the driving force behind technological innovation and implementation, employees possess firsthand knowledge of the practicalities and demands of advanced digital skills application in the workplace. Their views provide an invaluable counterpart to the perspectives shared by IT companies discussed in Chapter 4.

Through a structured questionnaire, the employees' responses will offer a multidimensional view of the advanced digital skills environment from the vantage point of those who navigate it daily. These insights will contribute to a comprehensive understanding of the digital skills gap and will be pivotal in formulating recommendations for aligning educational efforts with the actual needs of the workforce and the industry at large.

The following sections will present and analyze the data gathered from the employee survey, setting the stage for a discussion that bridges the gap between the needs of the IT workforce and the strategic objectives of the industry's digital transformation journey.

5.2 Presentation of Survey Results

5.2.1 Question 1: Gender

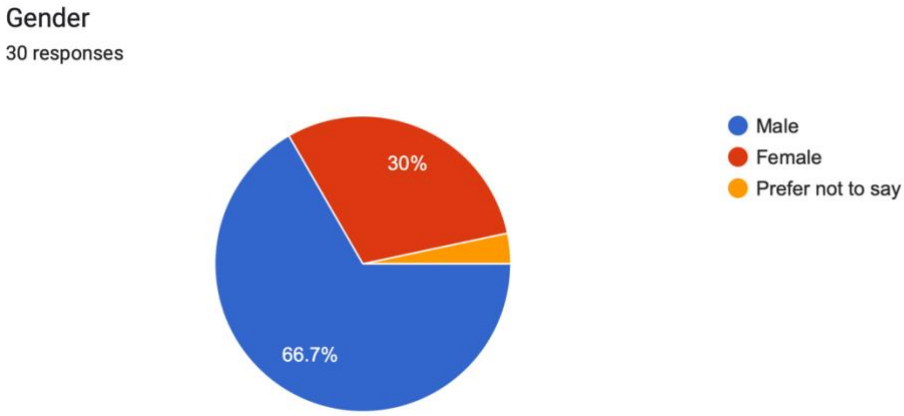

Figure 5.1: Question 1 of Employees Questionnaire

A fundamental aspect of understanding the advanced digital skills landscape within any industry is recognizing the diversity of its workforce. The demographic breakdown of gender among the employees surveyed offers an initial perspective on the representation within the Cypriot IT industry.

Out of the respondents to the survey, the majority, constituting 66.7%, identified as male. Female respondents accounted for 30% of the survey population, reflecting a gender distribution that is typical of the global IT sector, which tends to be male dominated. A small percentage of participants, 3.3%, preferred not to disclose their gender, exercising their right to privacy.

This distribution (*Figure 5.1*) is not only indicative of the current state of gender representation in the industry but also serves as a benchmark against which future trends in diversity and inclusion efforts can be measured.

5.2.2 Question 2: Age

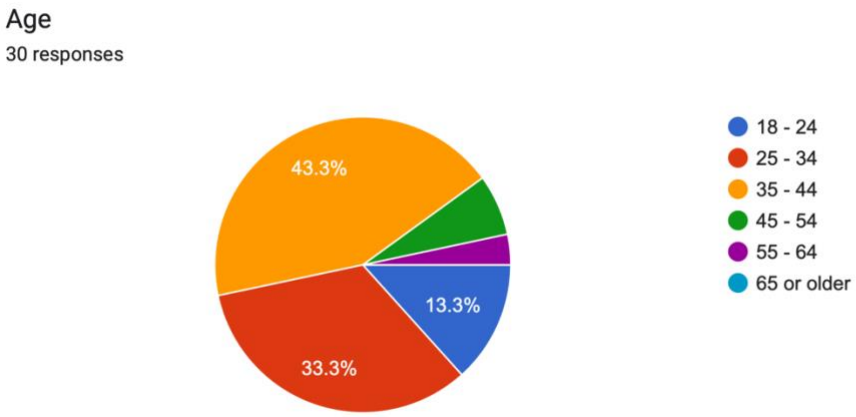

Figure 5.2: Question 2 of Employees Questionnaire

The age distribution among the employees provides a generational snapshot of those currently engaged in the Cypriot IT sector, offering insights into the range of experiences and potentially differing attitudes towards digital skills.

The survey results reveal a diverse age range among the participants (*Figure 5.2*). A plurality of respondents falls within the 25-34 age bracket, accounting for 43.3%, indicative of a workforce that is relatively young and possibly at the early or mid-stages of their careers. This age group is often associated with a high level of familiarity with digital technology, having grown up during the Internet age.

The next largest group, representing 33.3% of respondents, is the 35-44 age bracket, suggesting a strong presence of experienced professionals who may have witnessed the transition into the digital era and adapted accordingly.

Those in the 18-24 age group, likely to be the newest entrants into the job market, make up 13.3% of the responses, while the 45-54 and 55-64 brackets each comprise a smaller segment, at 6.7% and 3.3% respectively. Notably, there were no respondents aged 65 or older.

The generational mix highlighted in the survey is reflective of different levels of digital adaptability and learning needs. Understanding these differences is crucial for developing targeted training programs that are relevant and effective across all age groups.

The data emphasizes the importance of fostering a learning environment that can cater to a multigenerational workforce, ensuring that digital skills development is inclusive and responsive to the varied learning styles and career stages present within the industry.

5.2.3 How many years of professional experience do you have in the IT industry?

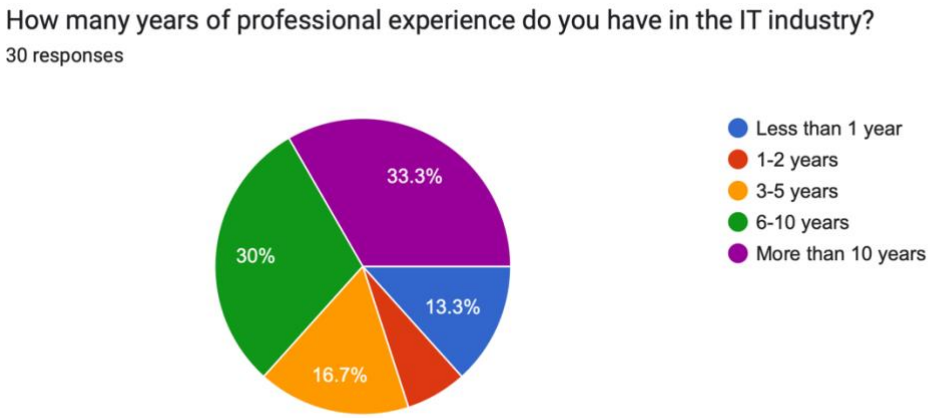

Figure 5.3: Question 3 of Employees Questionnaire

The spectrum of professional experience among IT employees is crucial for understanding the workforce's competency and adaptability in the face of the industry's digital evolution. The survey sheds light on this aspect through the distribution of work experience among the respondents (*Figure 5.3*).

A significant portion of the survey participants, representing 33.3%, have more than 10 years of experience in the IT industry. This group is likely to bring a wealth of knowledge and a depth of understanding to the evolving digital landscape, offering a reservoir of expertise for the industry.

The next prominent segment, constituting 30% of the respondents, has 6-10 years of experience, indicating a strong mid-career presence within the workforce. These professionals have witnessed significant shifts in technology and have had to adapt to these changes throughout their careers.

The 3–5-year experience bracket comprises 16.7% of the employees surveyed, reflecting those who are establishing their careers during a period of rapid digital change. Employees with 1-2 years of experience make up 13.3%, suggesting a steady inflow of

new talent into the industry. Those with less than a year of experience account for 6.7% of the respondents, representing the newest entrants into the field.

The varied levels of experience suggest a dynamic and diverse workforce capable of driving innovation and growth in the Cypriot IT industry. It is essential for organizations to recognize the value each group brings and to tailor training and development initiatives to meet their specific needs.

Understanding the experience distribution is also vital for developing mentorship programs, succession planning, and fostering a culture of knowledge sharing that leverages the strengths of experienced professionals while nurturing the growth of those newer to the field.

5.2.4 Question 4: What department do you currently work in within your company?

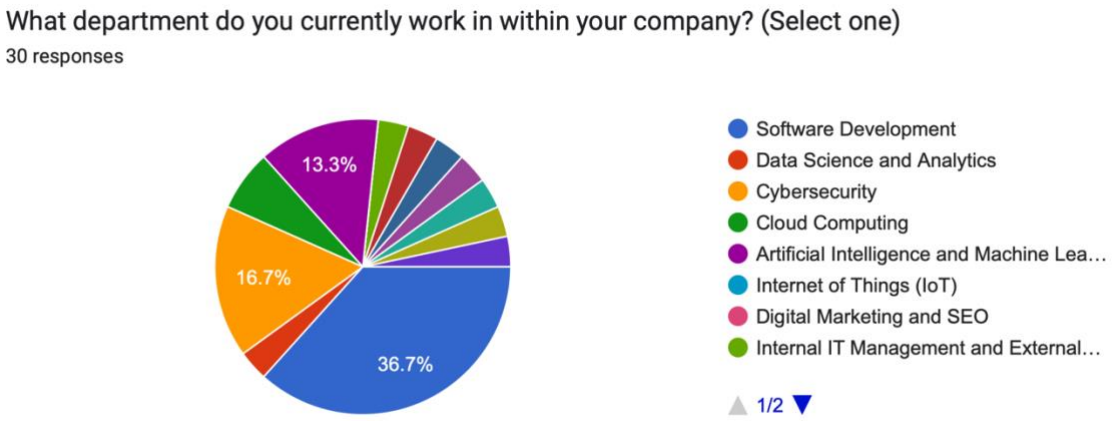

Figure 5.4: Question 4 of Employees Questionnaire

The departmental distribution of employees provides a view of the range of specializations within the IT industry and the various domains that demand digital skills. The survey reveals that employees work across a spectrum of departments, reflecting the multidisciplinary nature of the IT field (*Figure 5.4*).

Most of the respondents at 36.7%, work in Software Development, suggesting that this area is a significant hub of activity within the Cypriot IT industry. Employees involved in Software Development are often at the forefront of creating and implementing digital solutions, highlighting the critical need for robust programming and system design skills.

The second-largest group, constituting 16.7% of the respondents, is in the field of Cybersecurity. This indicates the growing importance of security in the industry after the recent cyber threats.

Another significant topic of work is Artificial Intelligence and Machine Learning, represented by 13.3% of the employees surveyed. The prominence of these departments underscores the increasing demand for advanced skills that can navigate the complexities of intelligent systems.

Smaller segments of the workforce are engaged in domains such as the Internet of Things (IoT), Digital Marketing and SEO, Internal IT Management, External IT Services, Data Science and Analytics and Cloud Computing reflecting a wide array of skills and knowledge areas present within the industry.

The diversity in departmental roles suggests varied digital skills requirements and training needs. It also points to the potential for interdisciplinary collaboration, with innovation often occurring at the intersection of these varied fields.

Understanding where employees are positioned within the company landscape can guide targeted professional development and help ensure that each department's specific advanced digital skills requirements are met, contributing to the overall digital competence of the organization.

5.2.5 Question 5: How satisfied are you with the advanced digital skills training and development opportunities provided by your company?

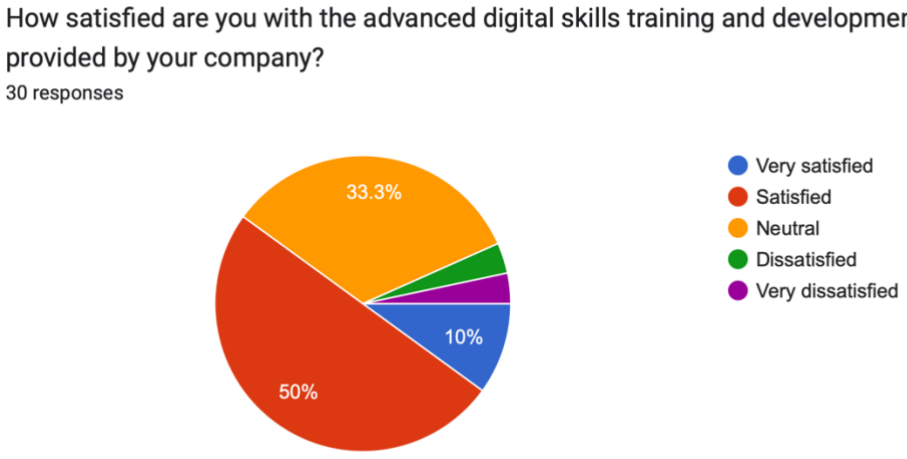

Figure 5.5: Question 5 of Employees Questionnaire

An essential factor in the growth and retention of a skilled workforce is the provision of effective training and development opportunities. The employees surveyed have shared their levels of satisfaction regarding the advanced digital skills training provided by their companies, which is critical feedback for any organization aiming to enhance its human capital (*Figure 5.5*).

Half of the respondents express satisfaction with the training opportunities available to them, indicating that these initiatives are meeting their expectations to a certain extent. This suggests that the programs offered are relevant and beneficial, helping employees to advance their skills and meet the demands of their roles.

However, a notable 33.3% of the employees report feeling neutral, revealing an area where there is room for improvement in terms of training relevance, quality, or accessibility. This sentiment suggests that while some training may be available, it may not fully resonate with the employees' perceived needs or aspirations.

A smaller segment of 6.6% indicates dissatisfaction, which could reflect a mismatch between the training provided and the specific skills employees feel they need to develop. This highlights a potential gap in the training offerings that companies may need to address.

The remaining 10% who report being very satisfied represent a segment for whom the training opportunities are well-aligned with their professional growth objectives. This level of satisfaction is indicative of training programs that are not only available but also of high quality and well-targeted to the employees' career paths.

Understanding employee satisfaction with advanced digital skills training is crucial for organizations to tailor their professional development programs effectively. It is a key metric that can influence employee engagement, productivity, and retention, and it is indicative of the potential for future growth within the company and the industry.

5.2.6 Question 6: Are you encouraged to pursue additional training or certifications in advanced digital skills by your employer?

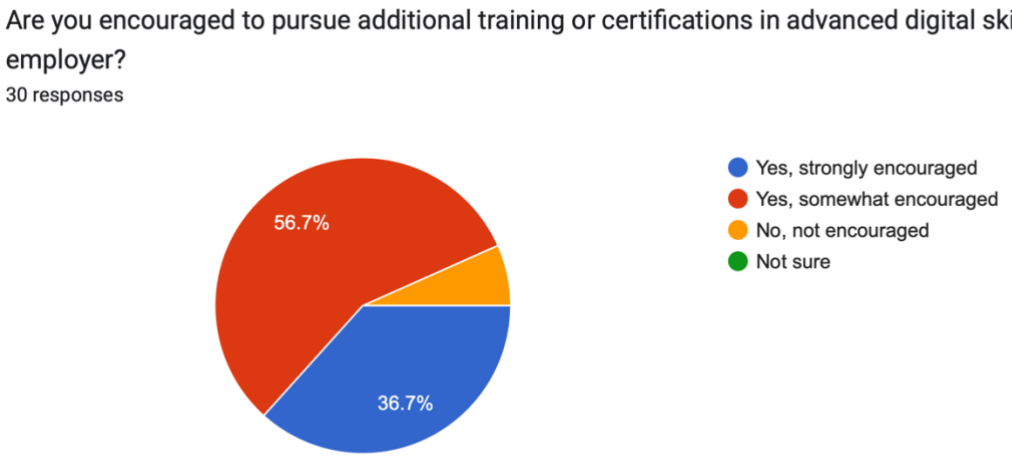

Figure 5.6: Question 6 of Employees Questionnaire

The advancement of advanced digital skills is a continual process, and the encouragement from employers can be a significant motivator for employees to engage in further training and certification. The survey responses give us a clear picture of how employees perceive the level of encouragement they receive from their employers (*Figure 5.6*).

Most of the employees, 56.7%, report that they are somewhat encouraged to pursue additional training in advanced digital skills. This indicates that while there is some support from employers, it may not be as robust or as active as it could be. Employers who somewhat encourage further training might provide information about available resources or occasionally sponsor training events but may not have a structured program or incentives in place.

A substantial segment, 36.7%, feel strongly encouraged by their employers to continue developing their advanced digital skills. This suggests an environment where there is likely active promotion of professional growth opportunities, possibly including financial support, time allowances, or a structured professional development path.

However, 6.7% of respondents are not satisfied with the level of encouragement they receive, which may indicate a lack of clear communication regarding the company's stance on professional development or inconsistency in how support is provided.

Support for continued learning and development is essential not just for the growth of individual employees, but for the sustainability and competitiveness of the company as a

whole. It highlights the necessity of clear and consistent communication about training policies and the value of establishing a culture that actively encourages and facilitates ongoing professional development.

5.2.7 Question 7: Do you believe that your current advanced digital skills are adequate for your job role?

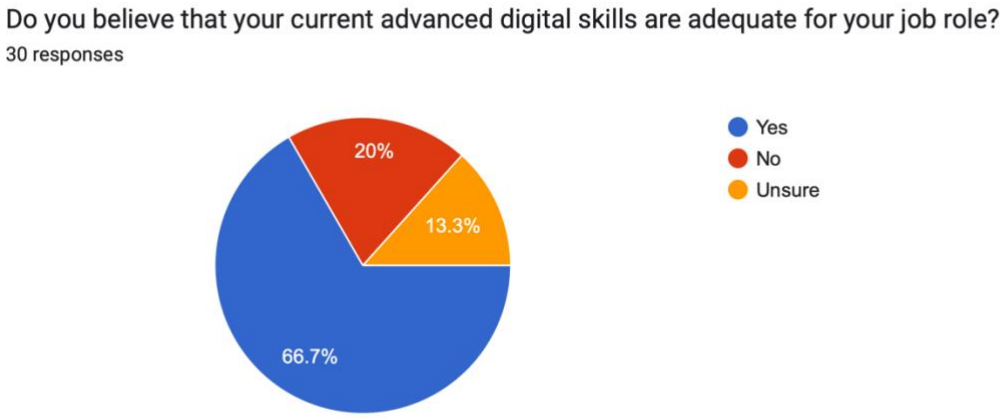

Figure 5.7: Question 7 of Employees Questionnaire

An employee's self-assessment of their skill set provides valuable insight into their confidence and perceived competence in their job role. The survey addressed this by asking employees whether they believe their current advanced digital skills are adequate for their job roles (*Figure 5.7*).

A strong majority of the respondents, 66.7%, believe that their digital skills are adequate for their current job role. This confidence suggests that the existing training programs and on-the-job experience are effectively equipping employees with the skills they need to perform their duties.

However, 20% of the employees do not feel that their digital skills are sufficient, indicating areas where the training may be lacking or where the pace of technological change has outstripped the skill development process.

The remaining 13.3% of respondents are unsure about the adequacy of their digital skills. This uncertainty could stem from a lack of clarity regarding job role expectations, a

rapidly changing technology landscape, or a perceived gap in their skills portfolio that they are not yet able to fully identify or articulate.

These findings are critical for organizations as they suggest a need for regular skills audits, clear communication of job role requirements, and perhaps more personalized training paths that allow employees to keep pace with the industry's demands. It highlights the importance of providing opportunities for skill enhancement that are accessible and relevant to all employees, regardless of their current confidence level.

5.2.8 Question 8: How do you prefer to learn and improve your advanced digital skills?

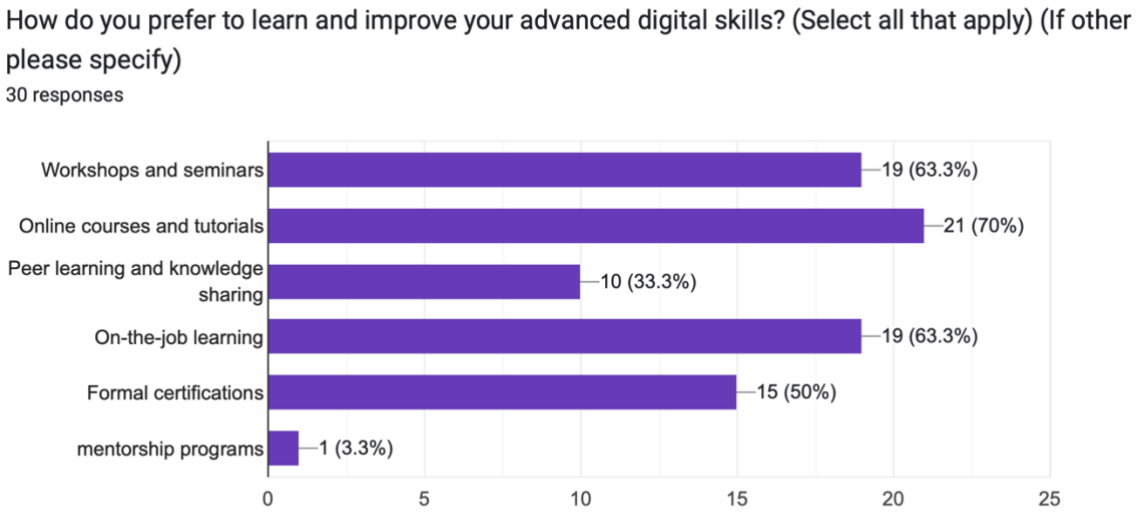

Figure 5.8: Question 8 of Employees Questionnaire

Tailoring training and development programs to align with employee preferences can greatly enhance their effectiveness. The survey asked employees about their preferred methods for learning and improving their advanced digital skills, yielding diverse responses (*Figure 5.8*).

Most employees, 70%, favour online courses and tutorials, indicating a strong preference for self-paced and accessible learning modalities that can be tailored to individual schedules and learning styles.

Workshops and seminars are also popular, with 63.3% of employees appreciating these more structured and interactive learning experiences. The same percentage of respondents

value on-the-job learning, which suggests that practical, hands-on experience is considered equally important for skill acquisition.

Formal certifications are preferred by half of the respondents, underscoring the importance of recognized qualifications that can validate an employee's skill level and support their career progression.

Peer learning and knowledge sharing are preferred by 33.3% of the workforce, highlighting the role of collaborative learning environments in professional development.

Interestingly, mentorship programs are less favoured, with only 3.3% of employees selecting this option. This could suggest that while mentorship is valuable, it may be underutilized or not as accessible within the current organizational structures.

The data reflects a trend towards flexible and varied learning opportunities, with a particular emphasis on those that offer autonomy and practical application. It indicates that employees in the IT industry may benefit from a hybrid approach to training that combines the immediacy and relevance of on-the-job learning with the depth and structure of formal coursework.

5.2.9 Question 9: Have you faced any barriers or challenges in acquiring advanced digital skills in your current role?

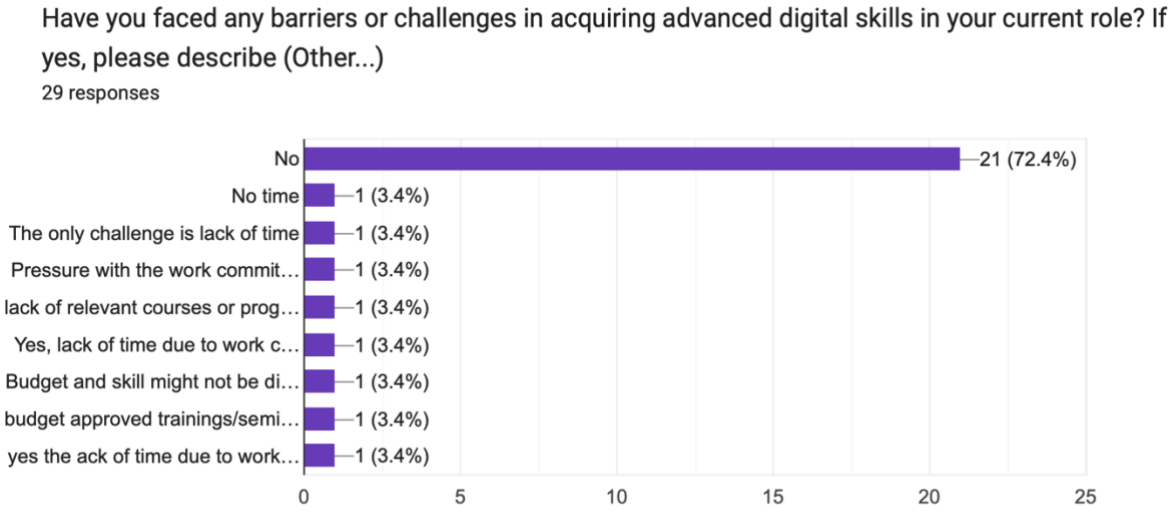

Figure 5.9: Question 9 of Employees Questionnaire

For employees to stay abreast of rapid technological advancements, overcoming obstacles in skill acquisition is essential. The survey asked employees about the barriers they face when trying to improve or acquire advanced digital skills (*Figure 5.9*).

Most employees, 72.4%, do not report significant barriers, which suggests that they have the access, resources, or opportunities needed to develop their advanced digital skills. This indicates a positive environment where employees feel supported in their professional growth.

However, a recurring theme among the responses is the challenge of time constraints. Several employees cite the lack of time due to work commitments as a primary barrier, reflecting a common issue where the pressures of job responsibilities limit the capacity to engage in additional training.

Other barriers mentioned, though less frequently, include the lack of relevant courses or programs, the misalignment of budget and skills, and difficulties in getting budget approvals for training or seminars. These responses point to structural challenges within organizations that may impede the accessibility and suitability of professional development opportunities.

The data emphasizes the need for organizations to address time management and work-life balance to facilitate continuous learning. It also suggests that there is an opportunity to reassess and possibly restructure the provision of learning resources and support, ensuring they align with the employees' needs and the company's strategic goals.

5.2.10 Question 10: How would you rate the overall workplace environment and culture in terms of promoting advanced digital skills development?

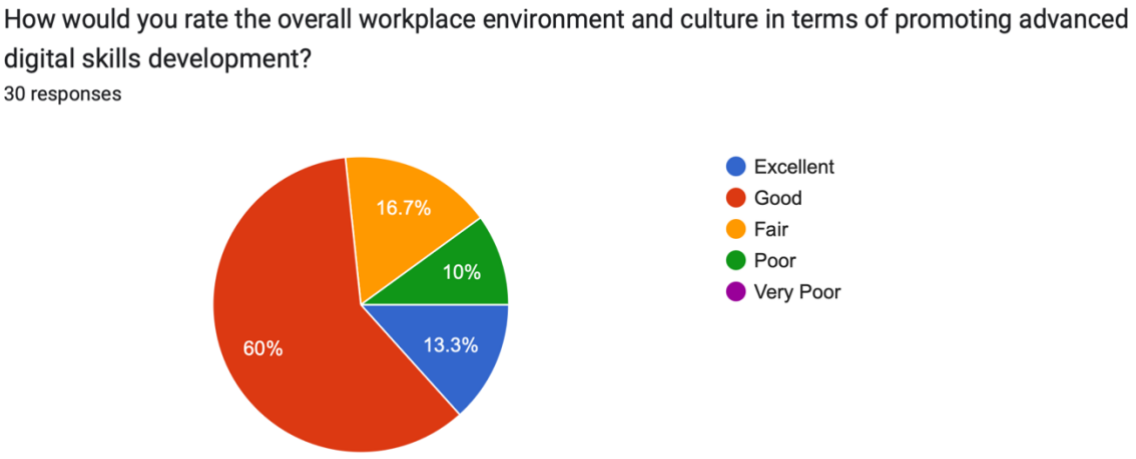

Figure 5.10: Question 10 of Employees Questionnaire

The culture and environment of a workplace are significant factors in the promotion and adoption of advanced digital skills. Understanding how employees rate these aspects offers insight into how conducive the current atmosphere is for professional growth and development (*Figure 5.10*).

Most of the respondents, 60%, rate the workplace environment and culture as good in terms of promoting advanced digital skills development. This positive rating suggests that many employees feel supported and find that there are mechanisms and attitudes in place that encourage their growth in digital competencies.

Nevertheless, 16.7% view the environment as only fair, indicating that while some support structures may be in place, there may be room for improvement to make the culture more encouraging and supportive of digital skill enhancement.

A small portion of the employees, 13.3%, believe that the workplace environment and culture are excellent, which signifies a strong, proactive support system that highly values continuous learning and skills development.

However, the survey also uncovers that 10% of the employees find the support for digital skill development to be poor. This perception points to significant gaps in the workplace environment that could hinder the effective promotion of skill acquisition and growth.

The feedback provided by employees highlights the importance of a nurturing environment that actively promotes and values the development of advanced digital skills. It also calls attention to the need for organizational leaders to create and sustain a culture that supports continuous professional development as a critical component of workplace satisfaction and innovation.

5.2.11 Question 11: Are you satisfied with the advanced digital skills education you received at your university?

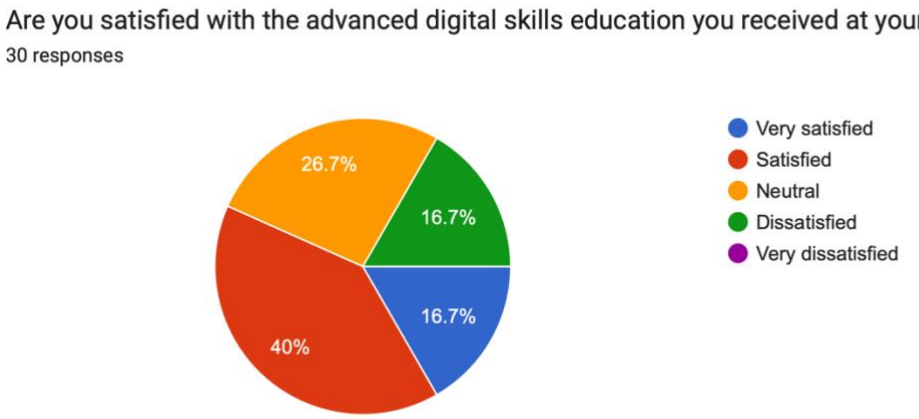

Figure 5.11: Question 11 of Employees Questionnaire

The foundation of an individual's digital skills often begins with their formal education. The survey asked IT employees about their satisfaction with the advanced digital skills education they received at their universities (*Figure 5.11*).

A plurality of respondents, 40%, feel neutral about the digital skills education they received, which may suggest that while their university education provided a base level of digital competence, it may not have been fully comprehensive or up to date with industry needs.

Satisfaction is reported by 26.7% of the employees, indicating that a significant number found their university education to be beneficial in equipping them with the necessary digital skills for their career. However, the same proportion of respondents are dissatisfied, pointing to a possible disconnect between academic programs and the practical demands of the IT industry.

A smaller segment, 16.7%, are very satisfied with their digital skills education from university. This level of satisfaction signifies that their educational experience was highly relevant and effective in preparing them for the challenges of their current roles.

The diverse levels of satisfaction with university education in digital skills underscore the importance of continuous curriculum updates and industry-academia collaboration to ensure that higher education remains relevant in a fast-paced digital economy. The

responses also highlight the need for post-university training and development to bridge any gaps between academic preparation and real-world job requirements.

5.2.12 Question 12: If you feel that something is missing or could have been improved in your university's education on digital skills, please specify the areas or topics you believe were lacking.

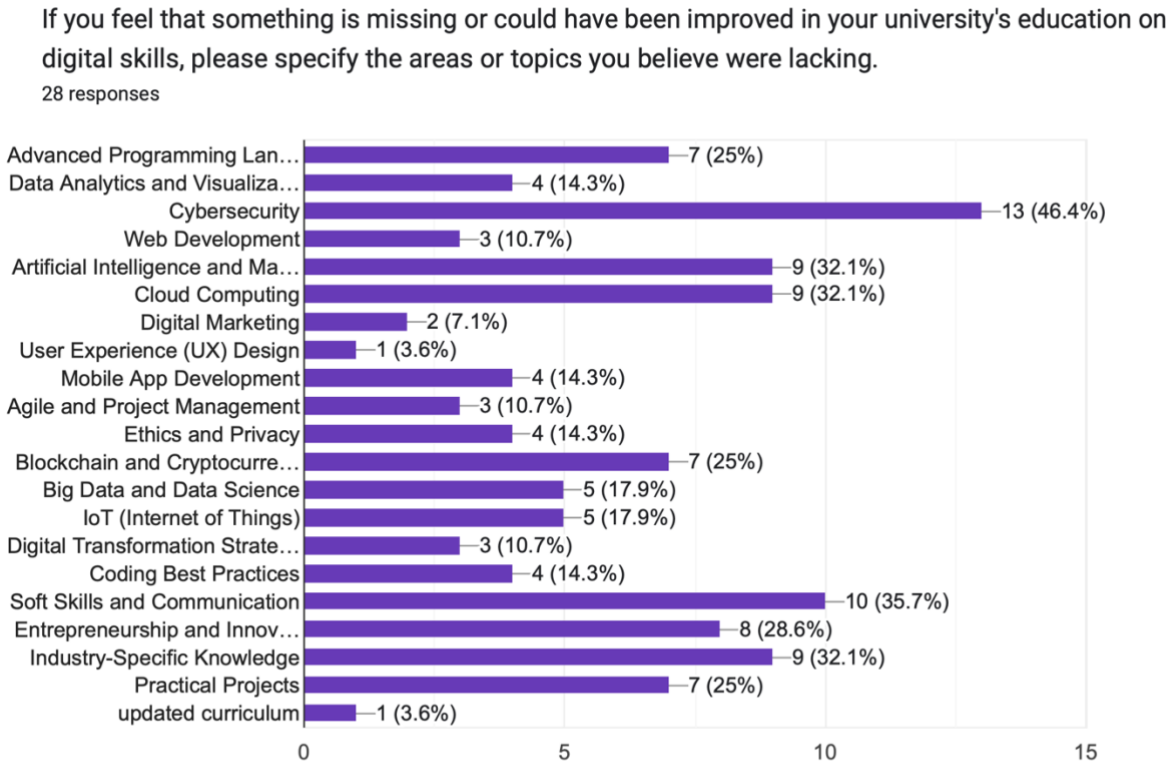

Figure 5.12: Question 12 of Employees Questionnaire

The feedback from IT professionals about their university education reveals specific areas where they perceive gaps or opportunities for enhancement in their digital skills training (*Figure 5.12*).

The most significant area highlighted for improvement is Cybersecurity, with 46.4% of respondents identifying it as lacking. This underscores the rising importance of security in the digital realm and suggests that educational institutions may need to deepen their focus on this critical area.

Soft Skills and Communication come second with 35.7% of responders voting as lacking. This shows gaps on basic computer skills a topic we are not covering in this thesis.

Artificial Intelligence and Machine Learning, Cloud Computing as well as Industry-Specific knowledge, were each cited by 32.1% of the participants, indicating that these emerging areas are seen as increasingly relevant to the IT landscape.

Advanced Programming Languages were also pointed out by 25% of the employees, suggesting a need for more in-depth programming education to meet the demands of complex software development in the industry.

Big Data and Data Science, as well as IoT (Internet of Things), were mentioned by 17.9% of employees, reflecting the growing significance of these domains in the industry.

Practical projects and updated curriculum were each noted by 25% and 3.6% of respondents, respectively, indicating a call for more hands-on, experiential learning and a curriculum that evolves in alignment with industry advancements.

Ethics and Privacy, Coding Best Practices, and the rest were also areas where improvements were desired, reflecting the multifaceted nature of the skills needed in today's IT professionals.

The insights provided by IT employees regarding their academic experiences highlight critical areas where higher education can evolve to better prepare students for the challenges of the modern digital economy. It also underscores the importance of lifelong learning and ongoing professional development to supplement academic training.

5.2.13 Question 13: Do you believe that your university adequately prepared you for the demands of the IT industry in terms of advanced digital skills?

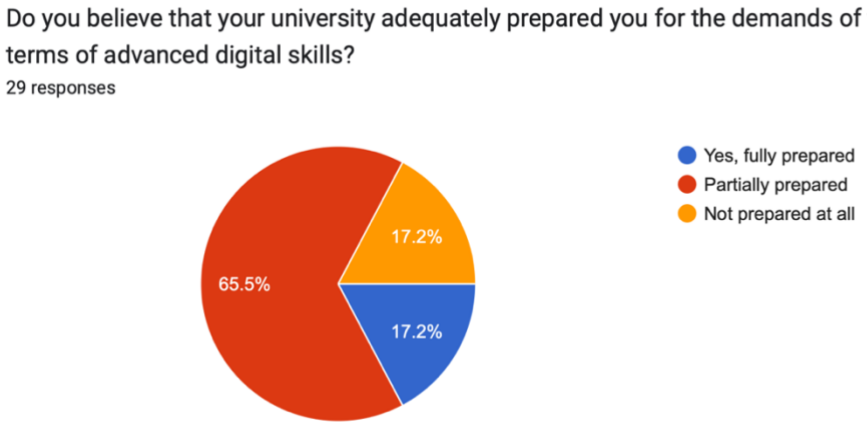

Figure 5.13: Question 13 of Employees Questionnaire

The preparedness of employees as they enter the workforce is a crucial indicator of the effectiveness of their university education in equipping them with advanced digital skills. This survey question gauged employees' opinions on their readiness to meet the demands of the IT industry (*Figure 5.13*).

A significant majority, 65.5% of the respondents, feel that their university education only partially prepared them for the demands of the IT industry. This suggests that while they received some foundational knowledge, there may have been gaps in their education that required them to seek further training or on-the-job learning to fully meet the industry's needs.

Additionally, 17.2% believe that their university education did not prepare them at all, highlighting a concerning disconnect between academic programs and the practical requirements of the IT field.

Conversely, another 17.2% feel fully prepared by their university education, indicating that their academic experience was comprehensive and well-aligned with what they encountered in their professional roles.

The feedback points to the necessity for universities to constantly update their curricula to keep pace with the rapid developments in digital technology and to foster stronger ties with the IT industry to ensure that graduates are entering the workforce with the necessary skills.

5.2.14 Question 14: Are there any specific advanced digital skills or knowledge areas that you wish your university had covered more comprehensively?

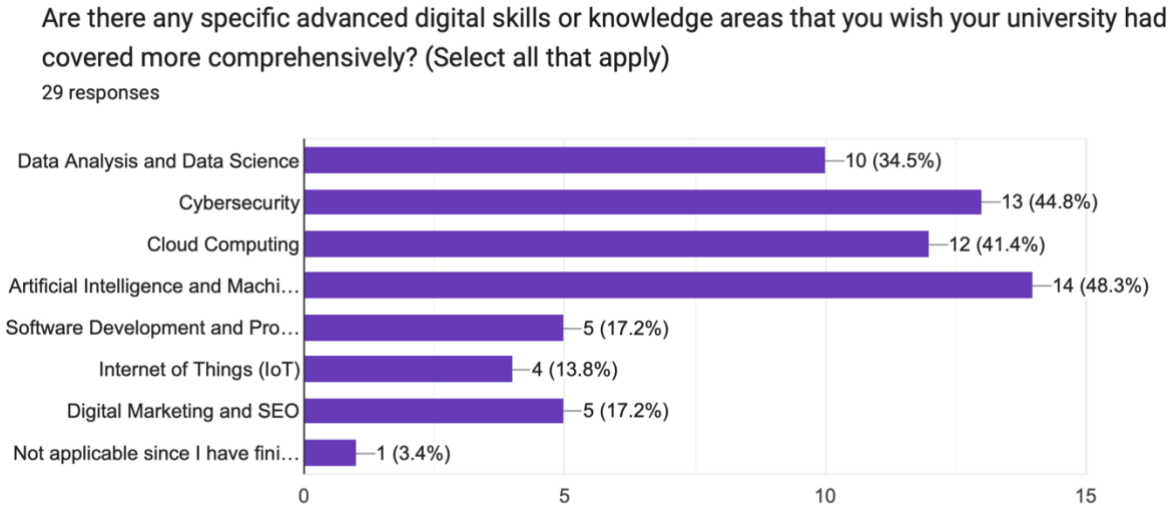

Figure 5.14: Question 14 of Employees Questionnaire

Academic institutions must align their offerings with the evolving needs of the IT industry. The survey sought to identify specific areas where employees felt their education could have been more comprehensive (*Figure 5.14*).

The highest demand for improved coverage was in the field of Artificial Intelligence and Machine Learning, with 48.3% of employees identifying it as an area needing more depth. This reflects the significant impact AI and ML are expected to have across all sectors of the economy.

Cybersecurity and Cloud Computing were each cited by over 40% of respondents, emphasizing the critical need for robust security measures and cloud infrastructure management skills in the modern digital landscape.

Data Analysis and Data Science were also highlighted by 34.5% of the employees, signalling the importance of data proficiency in today's data-driven decision-making processes.

Software Development and Programming, IoT (Internet of Things), and Digital Marketing and SEO were mentioned by 17.2% to 13.8% of the respondents, respectively,

indicating these as key competencies that professionals in the IT industry are expected to possess.

Only a small percentage, 3.4%, felt that this question was not applicable to them, possibly indicating that they had completed their education recently or felt satisfied with the coverage of digital skills in their university curriculum.

5.2.15 Question 15: How do you perceive the gap, if any, between the skills you acquired in your university education and the skills demanded by your current job in the IT industry?

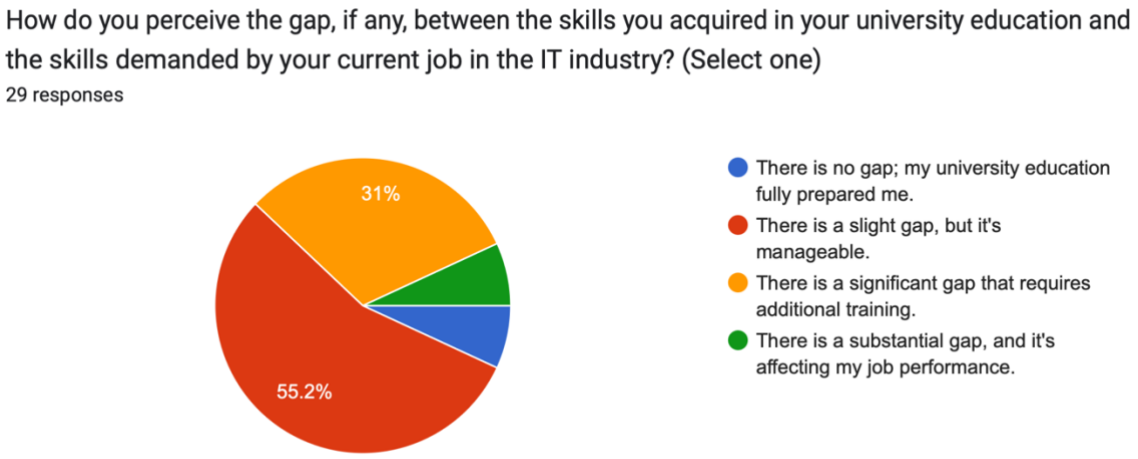

Figure 5.15: Question 15 of Employees Questionnaire

A critical component of workforce development is understanding the extent of the skills gap that employees perceive between their university education and the demands of their current job roles in the IT industry (*Figure 5.15*).

A significant 55.2% of respondents acknowledge that there is a slight gap between their acquired skills and job demands, but it's manageable. This perception suggests that while the university education provided a solid foundation, there is still a need for continued learning and skill refinement on the job.

A further 31% feel that there is a substantial gap that is affecting their job performance, indicating a more pressing need for additional training and support to meet current job requirements effectively.

A smaller proportion, 6.9%, view this gap as significant and one that requires additional training. This group likely recognizes the importance of further professional development to fully meet the expectations and evolving demands of their roles.

Interestingly, 6.9% of the respondents feel that there is no gap and feel that their education fully prepared them for their current professional job needs.

The data underscores the need for educational institutions and employers to work collaboratively to minimize this gap by ensuring that academic programs are responsive to industry trends and that professional development opportunities are available to enhance employees' skills post-graduation.

5.2.16 Question 16: How confident do you feel in your ability to adapt to new digital technologies and tools in your job?

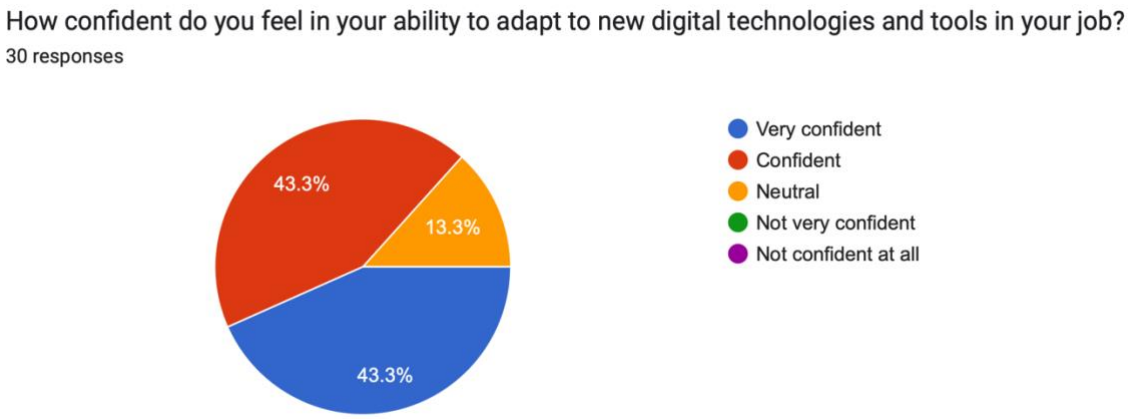

Figure 5.16: Question 16 of Employees Questionnaire

In an industry characterized by constant innovation, an employee's ability to adapt to new digital technologies is crucial. The survey assessed how confident employees feel about their adaptability in this dynamic environment (*Figure 5.16*).

Nearly half of the respondents, 43.3%, report feeling very confident in their ability to adapt to new digital technologies and tools in their jobs. This suggests a high degree of agility and a proactive stance towards continuous learning among these employees.

Another 43.3% feel confident, although not to the same extent, which still indicates a positive outlook on their capability to handle technological changes effectively.

A smaller portion, 13.3%, remain neutral, neither confident nor unconfident. This may point to a recognition of the challenges associated with keeping pace with rapid technological advancements, perhaps highlighting a need for more support or training.
Notably, there are no responses in the categories of 'Not very confident' or 'Not confident at all,' which implies that, overall, the employees surveyed have a generally positive view of their ability to adapt to new technologies.
The findings indicate that the IT workforce in Cyprus generally perceives themselves as capable and ready to embrace new digital technologies. This adaptability is an asset to the IT industry, which thrives on the continuous adoption and implementation of cutting-edge technologies.

5.2.17 Question 17: How do you think the demand for specific digital skills will change in your industry in the next 3-5 years?

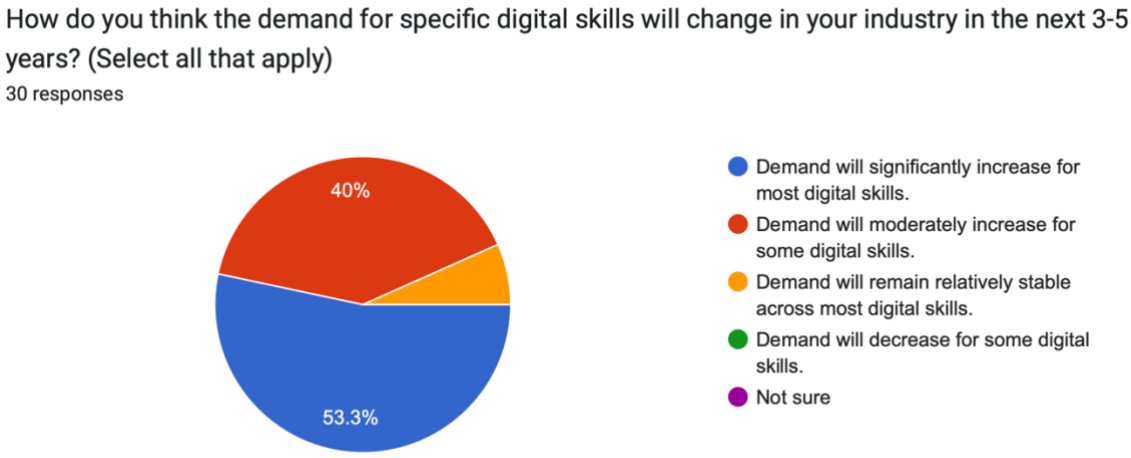

Figure 5.17: Question 17 of Employees Questionnaire

The technology landscape is not static, and anticipating shifts in skill demand is crucial for individuals and organizations alike. The survey tapped into employees' perspectives on how they foresee the demand for digital skills changing in the IT industry over the next 3-5 years (*Figure 5.17*).
A significant portion, 53.3%, believe that the demand for most digital skills will significantly increase. This expectation likely reflects the pace at which digital technology is advancing and its pervasive impact across all sectors.

Another 40% of respondents anticipate a moderate increase in demand for some advanced digital skills. This suggests a belief in the continual but uneven growth of demand for various skill sets, influenced by specific industry trends and technological innovations.

A small percentage, 6.7%, predicts that demand will remain relatively stable, indicating a belief in the endurance of current skill sets or possibly a plateauing in the rate of technological change in certain areas.

None of the respondents think that demand for digital skills will decrease, which underscores the widely held view of the critical and growing importance of digital proficiency in the industry.

The consensus that digital skills will continue to be in high demand underlines the need for ongoing skill development and agile adaptation in educational and professional settings. It also emphasizes the importance of forward-looking training programs that can pre-emptively address future skill requirements.

5.2.18 Question 18: What future digital skills do you think will be important in ten years from now? Please select the skills you believe will be crucial.

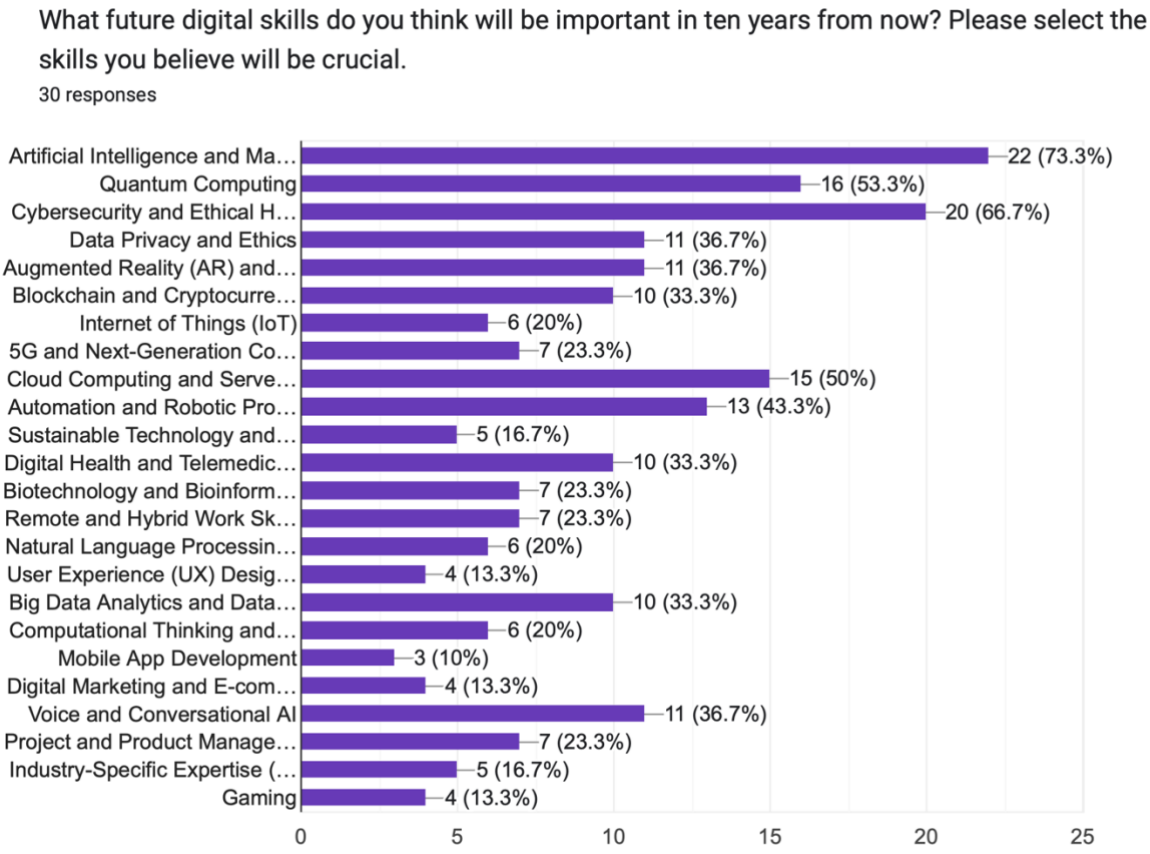

Figure 5.18: Question 18 of Employees Questionnaire

A forward-looking perspective is key in an industry driven by innovation. The employees were asked to consider which digital skills will be important in ten years, giving us a glimpse into the future skills landscape as envisaged by those currently in the field (*Figure 5.18*).

The skill most frequently cited as crucial for the future is Artificial Intelligence and Machine Learning, with 73.3% of respondents recognizing its enduring and growing importance. This is closely followed by Quantum Computing and Cybersecurity and Ethical Hacking, each selected by 53.3% and 66.7% of the participants, respectively, reflecting the anticipation of a greater need for advanced computing capabilities and heightened security measures.

Cloud Computing and Server Architecture are also seen as increasingly important, with half of the respondents acknowledging this area.

Automation and Robotic Projects were sighted with 43.3% of the respondents, identifying an increase in the automation projects. Similarly, Data Privacy and Ethics and Augmented Reality (AR) and Virtual Reality (VR) are identified by 36.7% of employees, indicating a concern for responsible data use and immersive technologies.

Further advanced skills such as Big Data Analytics and Data Management, Digital Health and Telemedicine, and Biotechnology and Bioinformatics are seen as important by over 30% of those surveyed, highlighting the expected impact of digital skills across diverse sectors.

The responses clearly reflect an expectation for a broadening and deepening of digital skills requirements across the IT industry. The emphasis on diverse and emerging technologies signals that employees anticipate a need for continuous learning and adaptability to stay relevant and competitive.

5.3 Summary of Findings

Chapter 5 has elucidated the perspectives of employees in the Cypriot IT industry, offering a comprehensive view of their experiences with digital skills development. Here are the summarized findings:

1. **Satisfaction with Training**: Most employees are satisfied with the advanced digital skills training provided by their companies, yet a notable portion see room for improvement.
2. **Encouragement for Professional Growth**: Employees generally feel encouraged to pursue further training, suggesting that companies are supportive of continuous learning.
3. **Self-Assessed Skill Adequacy**: Most employees believe their digital skills are adequate for their job roles, but some acknowledge a need for further skill development.
4. **Preferred Learning Methods**: Online courses and tutorials are preferred for learning new skills, followed by workshops, seminars, and on-the-job training.
5. **Barriers to Skill Acquisition**: Time constraints due to work commitments emerge as a common barrier to acquiring new digital skills.

6. **Workplace Environment for Skill Development**: Most employees rate their workplace environment as conducive to digital skill development, though some see potential for improvement.
7. **University Education Alignment**: Employees feel that their university education only partially prepared them for the demands of the IT industry, indicating areas for academic program enhancement.
8. **Desired Academic Improvements**: Specific gaps in university education, such as in Cybersecurity and AI, have been highlighted, signalling the need for curriculum updates.
9. **Confidence in Technological Adaptability**: Employees express confidence in their ability to adapt to new digital technologies, a positive sign for individual and organizational agility.
10. **Predictions on Skill Demand**: There is a strong belief that the demand for digital skills will significantly increase, particularly in AI, Quantum Computing, and Cybersecurity.
11. **Vision for Future Skills**: Looking ahead, employees foresee Artificial Intelligence and Machine Learning, along with other emerging technologies, as critical skills for the next decade.

Chapter 5 has painted a picture of an IT workforce that is largely satisfied and optimistic, yet cognizant of the challenges and gaps in skills development. The insights gained from the employees' perspectives are invaluable in shaping a responsive and effective approach to digital skills cultivation that aligns with the anticipated future of the IT industry.

Chapter 6: Analysis of Advanced Digital Skills in Cypriot Institutes

6.1 Introduction

Chapter 6 pivots to an institutional lens, examining the advanced digital skills landscape within Cypriot educational and training institutes. The responses from these institutes provide an authoritative perspective on the state of digital education, the effectiveness of training programs, and the alignment of curriculum with industry demands.

Educational and training institutes serve as the bedrock for developing a digitally competent workforce. Their strategies, programs, and perspectives on digital skills are critical in shaping a workforce that is responsive to the needs of the IT industry. Through a carefully structured survey, this chapter collates and analyzes the views of these institutes, revealing insights into their role in cultivating the next generation of IT professionals.

By analyzing the responses from institutes, Chapter 6 will provide a critical analysis of the readiness of educational programs to meet the challenges of the digital future and will propose areas where institutes can enhance their offerings to better serve the evolving demands of the IT industry.

The following sections will present the findings from the institute survey, dissecting their implications for education policy, program development, and strategic industry partnerships.

6.2 Presentation of Survey Results

6.2.1 Question 1: Type of Institution

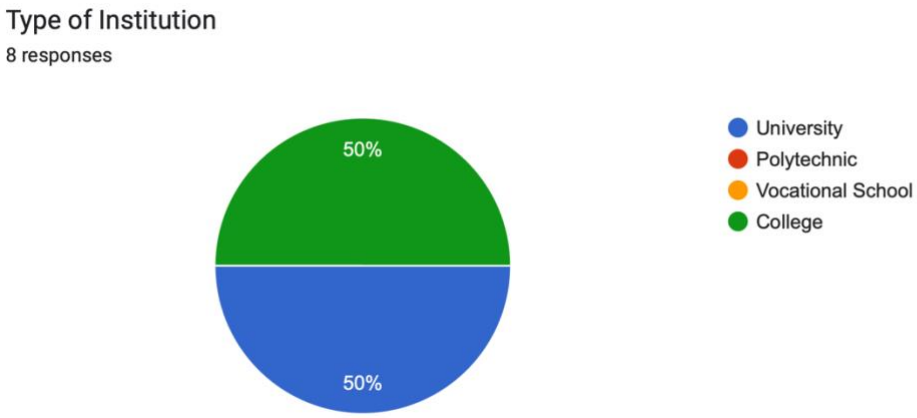

Figure 6.1 Question 1 of the Institutes Questionnaire

The survey started by categorizing the types of institutions contributing to Cyprus's advanced digital skills landscape (*Figure 6.1*). Responses were received from two main types of institutions: universities and colleges, each constituting 50% of the respondents. This equal representation offers a balanced view of the higher education sector's approach to digital skills training.

The presence of universities indicates a contribution from institutions that traditionally offer a broad spectrum of bachelor's, master's, and doctoral programs, often combining theoretical and research-oriented approaches with practical applications.

Colleges, on the other hand, might provide more specialized or applied training programs, possibly focusing on specific skill sets relevant to immediate industry needs.

6.2.2 Question 2: Number of Students Enrolled

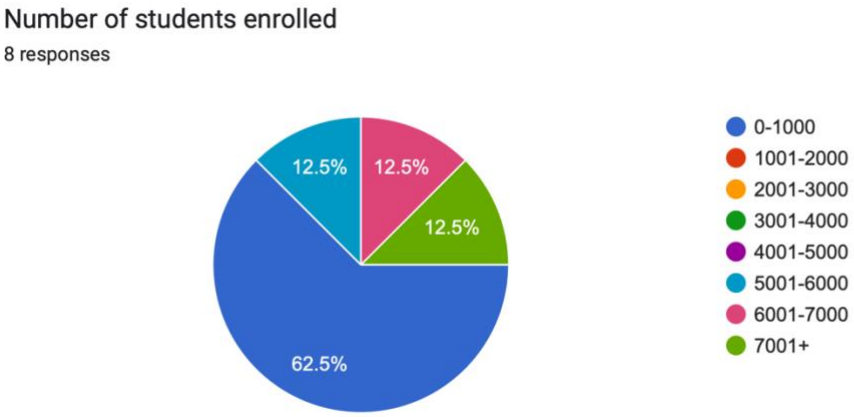

Figure 6.2 Question 2 of the Institutes Questionnaire

Understanding the scale of educational institutions, as measured by student enrolment, is important in gauging the potential impact and reach of their digital skills training programs (*Figure 6.2*).

A significant majority of the institutions, at 62.5%, have a student population of 0-1000. This smaller scale may offer a more personalized or focused approach to advanced digital skills education, potentially allowing for tailored training and closer interaction between students and faculty.

The remaining responses are distributed across various enrolment sizes, with 12.5% of institutions having 5001-6000 students, another 12.5% with 6001-7000 students, and the final 12.5% enrolling more than 7000 students. These differing scales suggest a variety of training environments, from more intimate settings to large-scale operations capable of influencing significant portions of the workforce.

Thus, covering institutes of all sizes and qualities.

6.2.3 Question 3: Does your institution offer courses specifically focused on advanced digital skills/technologies?

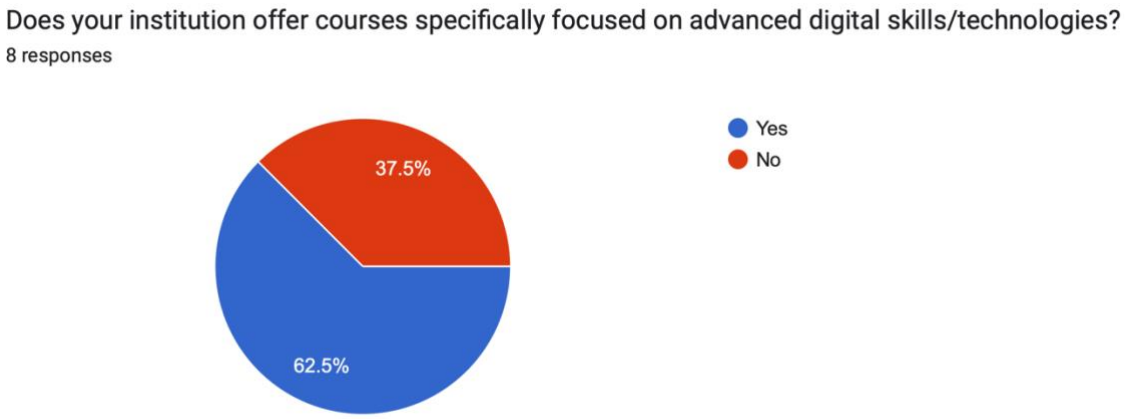

Figure 6.3 Question 3 of the Institutes Questionnaire

One of the key indicators of how well educational institutions are adapting to the evolving tech landscape is whether they offer specific courses focused on advanced digital skills (*Figure 6.3*).

Most of the surveyed institutions, 62.5%, confirm that they offer courses specifically focused on advanced digital skills and technologies. This suggests a proactive approach in integrating contemporary digital skills into their curricula, which is crucial for preparing students to meet current and future technological challenges.

However, 37.5% of the institutions do not offer such courses, highlighting a potential gap in the educational offerings. This absence may reflect limitations in resources, expertise, or a lag in curriculum updates relative to rapidly advancing technology sectors.

The presence or absence of these specialized courses is critical for ensuring that students are industry-ready upon graduation. For those institutions not currently offering such courses, this might indicate a need for strategic investments in developing curricula that address emerging technologies and skills gaps identified by industry leaders. Also, we can see how much the education sector of Cyprus cares about digitalization and advancement on digital skills.

6.2.4 Question 4: If yes, please list the main courses related to digital skills

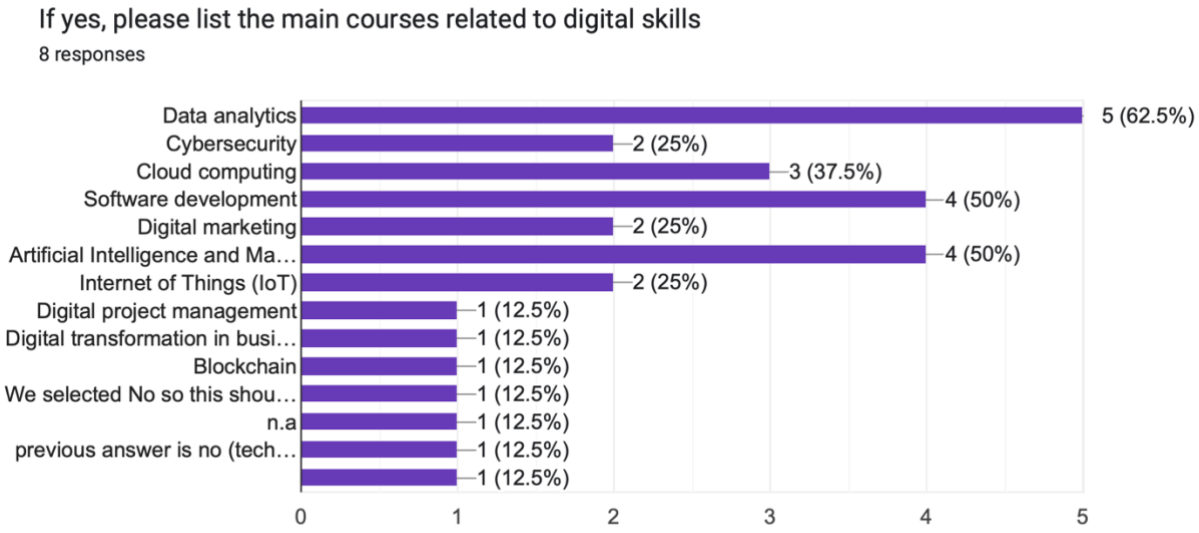

Figure 6.4 Question 4 of the Institutes Questionnaire

The surveyed institutions listed the main courses related to advanced digital skills that they offer, providing insight into the areas of emphasis in their curricula (*Figure 6.4*). The data reveals several key focus areas:

- **Data Analytics and Cloud Computing** are the most frequently offered courses, mentioned by 62.5% and 37.5% of the institutions respectively. This reflects the significant demand for skills in managing, interpreting, and storing vast amounts of data in the cloud.
- **Cybersecurity** is another crucial area, with 25% of institutions offering courses on this topic, underscoring the growing importance of security in digital environments.
- **Software Development** and **Artificial Intelligence and Machine Learning** courses are provided by 50% of the institutions, indicating a strong emphasis on developing programming skills and understanding AI technologies.
- **Digital Marketing** and **Internet of Things (IoT)** are also represented, each by 25% of the institutions, highlighting a diverse range of digital skills that are being integrated into educational programs.

These courses reflect a broad spectrum of digital skills, from technical capabilities like cloud computing and AI to more applied skills such as digital marketing and project

management. The diversity in course offerings is indicative of a comprehensive approach to preparing students for a variety of roles within the digital economy.

6.2.5 Question 5: How often is the curriculum updated to reflect current digital trends and needs?

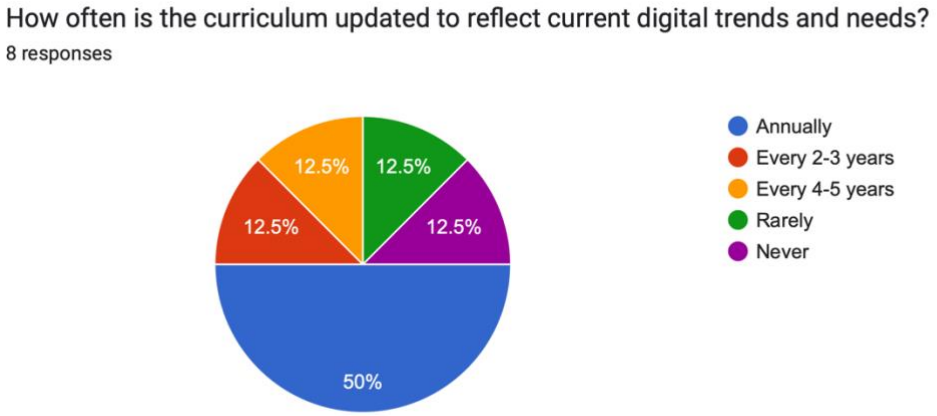

Figure 6.5 Question 5 of the Institutes Questionnaire

One of the most important aspects of an educational institution's effectiveness in the digital age is its ability to update its curriculum regularly to incorporate new technologies and methodologies (*Figure 6.5*).

A substantial 50% of the responding institutions update their curriculum annually, indicating a proactive approach to keeping educational content relevant and timely. This frequency ensures that students are learning the most current technologies and practices, which is essential in a field as dynamic as IT.

Another 12.5% of institutions update their curriculum every 2-3 years. This somewhat less frequent update cycle might still be adequate, depending on the depth of the changes implemented and the areas of focus.

Similarly, 12.5% update every 4-5 years, which may raise concerns about the currency of the skills and knowledge provided, given the rapid pace of technological change.

Interestingly, 12.5% of institutions rarely update their curriculum, and another 12.5% never do, which is alarming. These institutions risk falling significantly behind in

providing their students with relevant skills, potentially impacting their graduates' employability and the institution's reputation.

The frequency of curriculum updates is a critical indicator of an institution's commitment to delivering cutting-edge education. It reflects their understanding of the importance of staying aligned with industry developments, which is essential for preparing students to be effective contributors in the workforce.

6.2.6 Question 6: Do you have partnerships with tech companies or organizations to enhance the digital skills training?

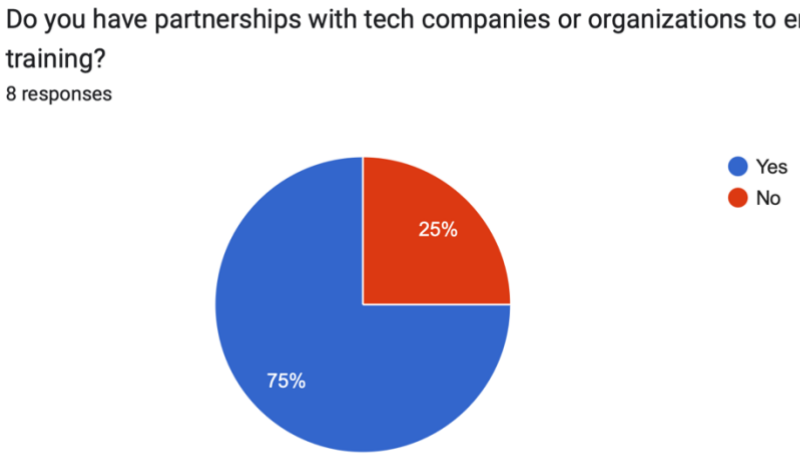

Figure 6.6 Question 6 of the Institutes Questionnaire

Collaboration between educational institutions and technology companies is a key factor in aligning academic programs with real-world industry demands. This question surveyed the prevalence of such partnerships among Cypriot institutions (*Figure 6.6*).

A significant majority, 75% of the institutions, report having partnerships with tech companies or organizations to enhance digital skills training. This high rate of collaboration suggests a strong link between education providers and industry, facilitating a practical, hands-on approach to learning that prepares students more effectively for the workforce.

These partnerships might include guest lectures, internship opportunities, joint research projects, and curriculum development input from industry professionals, which can provide students with exposure to current technologies and business practices.

Conversely, 25% of the institutions do not have such partnerships. This lack of collaboration may represent missed opportunities for these institutions to provide contextually relevant and practically oriented education, potentially making their students less prepared for immediate integration into the tech workforce.

The data highlights the importance of these collaborations as a bridge between theoretical knowledge and practical application, ensuring that educational programs keep pace with technological advancements and industry needs.

6.2.7 Question 7: If you answered 'Yes' to the previous question, how do these partnerships benefit your institution?

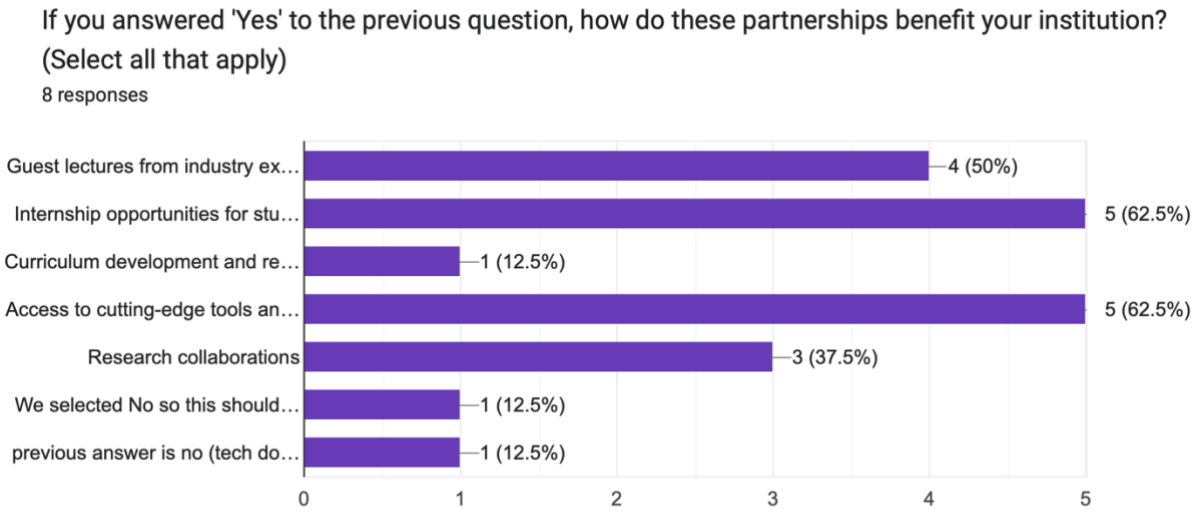

Figure 6.7 Question 7 of the Institutes Questionnaire

Institutions that have established partnerships with tech companies enjoy various benefits that directly enhance their educational offerings and student experiences (Figure 6.7).

The survey highlights several key benefits:

- **Internship Opportunities for Students (62.5%)**: The most commonly reported benefit, internships provide students with practical experience, helping them apply classroom learning in real-world settings, which enhances their job readiness and employability.
- **Access to Cutting-edge Tools and Technologies (62.5%)**: Partnerships often grant institutions access to the latest tools and technologies, which can

significantly enrich the learning experience and ensure that the curriculum remains current.

- **Guest Lectures from Industry Experts (50%)**: Guest lectures can offer students fresh insights and up-to-date knowledge directly from industry leaders, contributing to a more dynamic and informed educational environment.
- **Research Collaborations (37.5%)**: These collaborations help foster innovation and academic inquiry, aligning academic research with industry needs and trends.
- **Curriculum Development and Revision (12.5%)**: Input from industry partners can be vital in updating and tailoring curriculum content to meet the changing demands of the tech industry, although this appears to be less commonly cited among the surveyed institutions.

These benefits demonstrate the multifaceted value of industry partnerships, from enhancing educational content to providing students with the necessary tools and real-world exposure.

6.2.8 Question 8: How confident are you that graduates from your institution are well-equipped with the digital skills required by organizations in Cyprus?

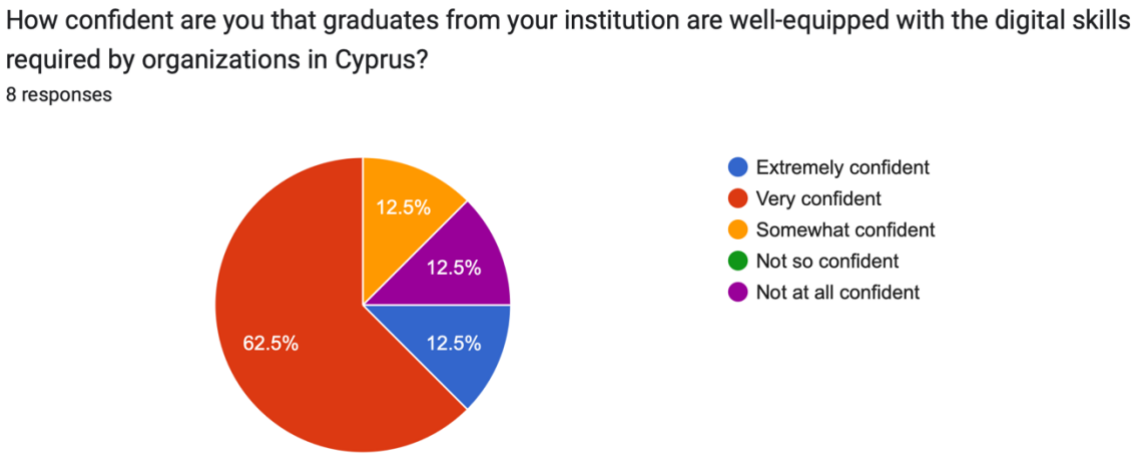

Figure 6.8 Question 8 of the Institutes Questionnaire

Understanding how confident educational institutions are about their graduates' digital skills provides insight into the perceived effectiveness of their training programs (*Figure 6.8*).

Most of the institutions, 62.5%, express being very confident that their graduates are well-equipped with the digital skills required by organizations in Cyprus. This strong confidence suggests that these institutions believe their curricula and teaching methodologies effectively prepare students for the professional demands they will face.

However, 12.5% of the institutions are only somewhat confident, indicating a recognition of potential shortcomings in their programs or perhaps an awareness of the rapidly evolving nature of digital skills which may outpace curriculum updates.

A smaller segment, also 12.5%, is not so confident, reflecting concerns about the adequacy of their educational offerings in fully preparing students for the workforce.

Lastly, 12.5% are extremely confident, which represents a high level of assurance in the relevance and comprehensiveness of their training programs.

This varied level of confidence underscores the need for ongoing evaluation and adaptation of digital skills training programs to ensure they remain aligned with industry requirements. Institutions with lower confidence levels may need to reassess their curricula, teaching methods, and industry collaboration efforts to enhance the effectiveness of their training.

6.2.9 Question 9: What challenges does your institution face in providing up-to-date digital skills training?

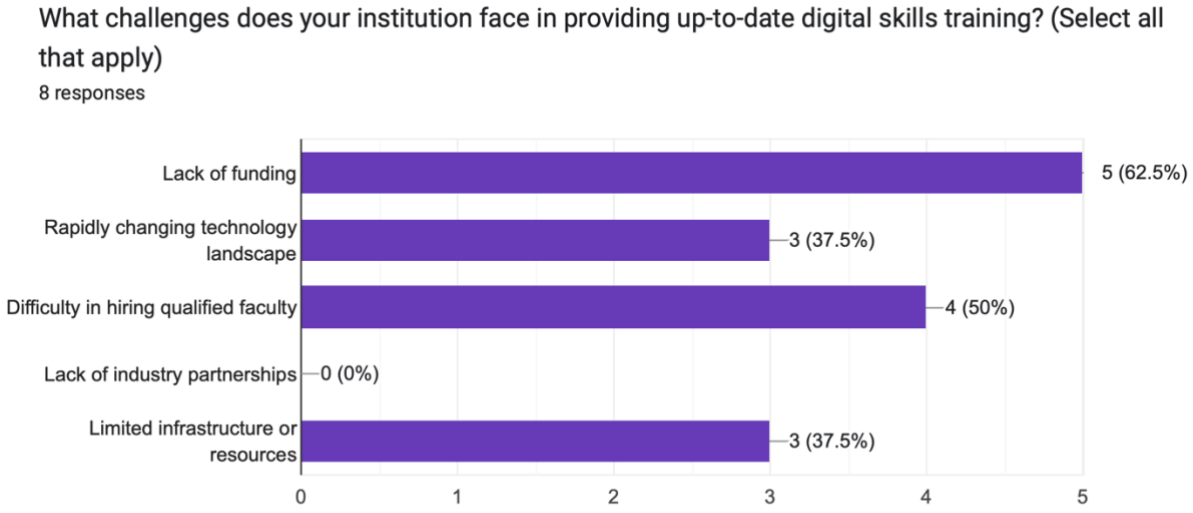

Figure 6.9 Question 9 of the Institutes Questionnaire

This part of the survey asked institutions about the specific challenges they encounter in offering current and effective digital skills training (*Figure 6.9*).

The most frequently cited challenge is the **lack of funding**, reported by 62.5% of the institutions. Funding constraints can significantly impact the ability of institutions to update technology, resources, and even to attract and retain qualified faculty.

The **difficulty in hiring qualified faculty** is another major challenge, noted by 50% of the respondents. This issue reflects the broader global competition for talent in technology fields, where industry often offers more lucrative opportunities than academia.

Rapidly changing technology landscape is seen as a challenge by 37.5% of institutions. Keeping pace with continual advancements in technology requires constant curriculum updates and ongoing professional development for faculty, which can be difficult to manage.

Limited infrastructure or resources were also mentioned by 37.5% of the institutions. This could include inadequate facilities, labs, or access to the latest software and tools needed to provide cutting-edge training.

Interestingly, no institutions cited a lack of industry partnerships as a challenge, which might indicate that those who engage in partnerships find them beneficial enough to mitigate some of the other challenges.

These challenges highlight the critical areas where institutions need support, whether in the form of increased funding, better resources, or strategies to attract and retain top teaching talent. Addressing these challenges is essential for ensuring that educational programs can adequately prepare students for the digital economy.

6.2.10 Question 10: Are there any specific digital skills or areas you believe need more emphasis in the future?

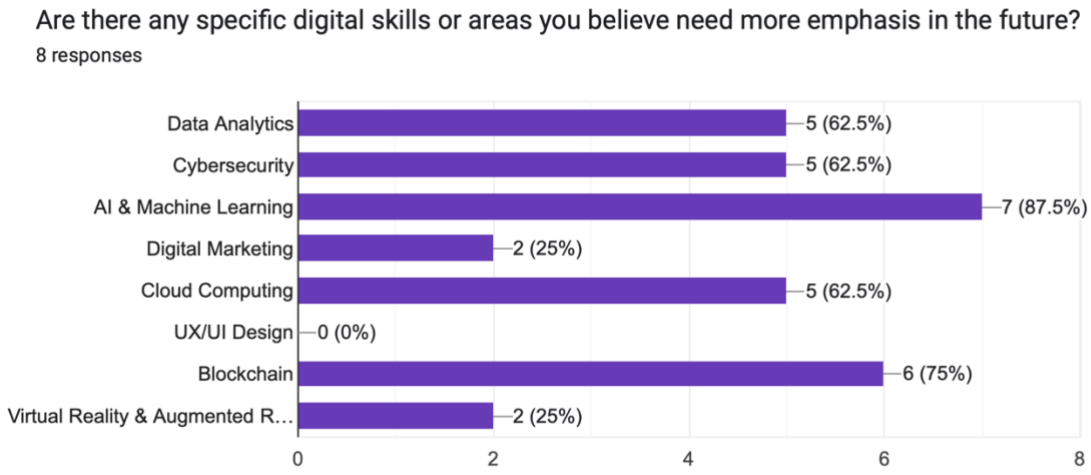

Figure 6.10 Question 10 of the Institutes Questionnaire

The responses to this survey question provide critical feedback on which digital skills areas are perceived as needing more focus in educational programs to meet future demands (*Figure 6.10*).

- **AI & Machine Learning**: Highlighted by 87.5% of the institutions, this area stands out as a priority, reflecting its growing importance across various sectors. The emphasis on AI and machine learning underscores the need for programs that not only teach the technical aspects but also the ethical and practical applications of these technologies.
- **Blockchain**: Identified by 75% of institutions, blockchain technology is recognized for its potential beyond cryptocurrencies, such as in securing digital transactions and streamlining supply chains.
- **Data Analytics and Cloud Computing**: Both areas are noted by 62.5% of respondents. The focus on data analytics aligns with the increasing need for data-driven decision-making skills, while cloud computing skills are essential as more organizations move their operations online and into cloud environments.
- **Cybersecurity**: Also marked by 62.5% of institutions, the emphasis on cybersecurity training is critical in an era where digital security threats are increasingly prevalent and complex.

- **Digital Marketing and Virtual Reality & Augmented Reality**: Each of these received less emphasis but was still noted by 25% of the respondents. These areas represent niche but growing fields that combine technical skills with creative and strategic applications.

These findings indicate a clear direction for the evolution of digital skills training, highlighting the need for an adaptive curriculum that incorporates emerging technologies and addresses the current and anticipated needs of the industry.

6.2.11 Question 11: What future digital skills do you think will be important in ten years from now? Please select the skills you believe will be crucial

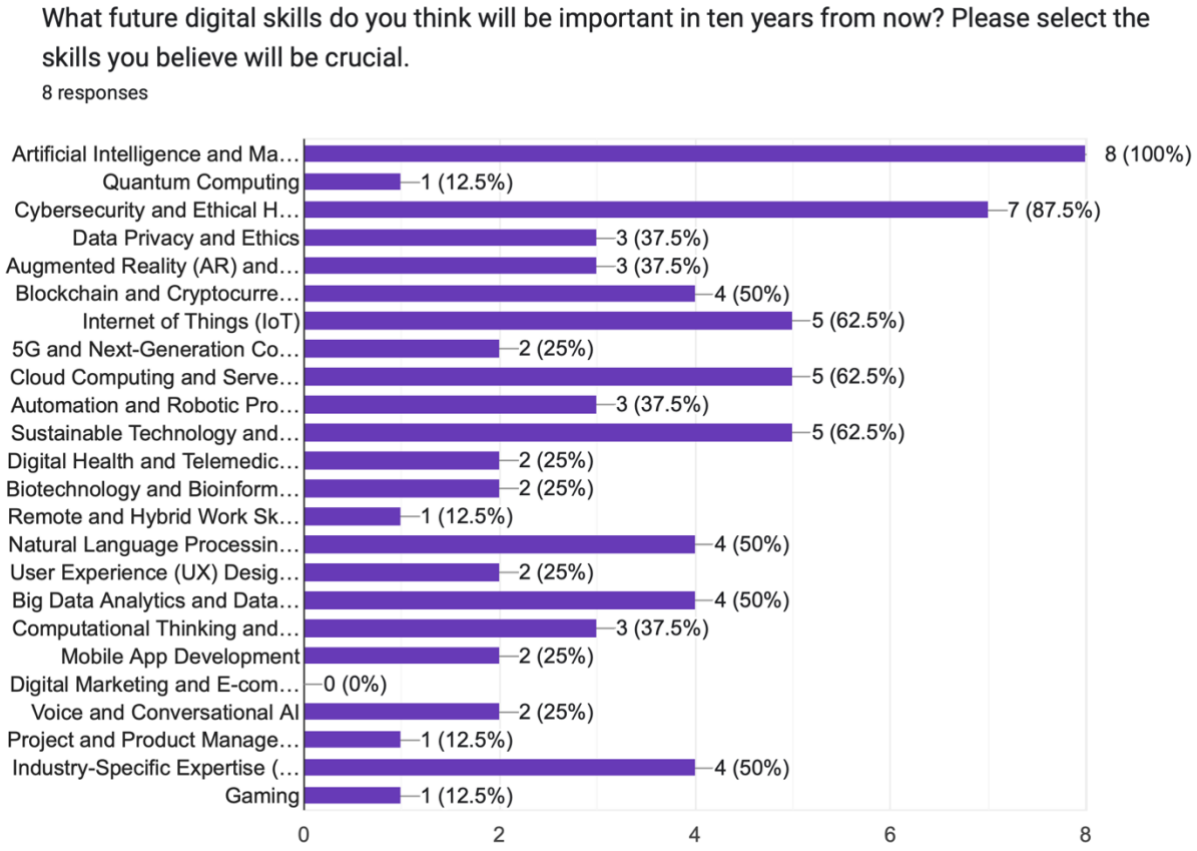

Figure 6.11 Question 11 of the Institutes Questionnaire

Institutions provided their insights on which digital skills they believe will be crucial for success in the next decade (*Figure 6.11*).

- **Artificial Intelligence and Machine Learning**: Unanimously recognized by all respondents, indicating a widespread agreement on the critical importance of AI and ML in the future landscape of technology.
- **Cybersecurity and Ethical Hacking**: Highlighted by 87.5% of institutions, reflecting the increasing awareness of and need for robust security measures in an ever-more-connected world.
- **Blockchain and Cryptocurrency**: Noted by 50% of respondents, suggesting significant anticipation of their continued impact on various sectors, not just financial services.
- **Internet of Things (IoT)**: Recognized by 62.5% of the respondents, indicating a strong belief in the growing connectivity of devices and its implications across industries.
- **Cloud Computing and Server Architecture**: Also acknowledged by 62.5% of institutions, underscoring the ongoing shift towards cloud-based solutions and the need for expertise in managing and architecting these environments.
- **Big Data Analytics and Data Management**: Viewed as crucial by 50% of respondents, reflecting the ongoing importance of data-driven decision-making and the ability to interpret vast amounts of data.

Interestingly, areas like Digital Marketing and Gaming were less frequently noted, which might reflect a more specialized or niche application compared to the broader impact of technologies like AI and cybersecurity.

These predictions not only highlight the areas where institutions expect to see significant demand but also indicate where they might focus their curriculum development efforts to prepare students for future challenges.

6.3 Summary of Findings

Chapter 6 provided an in-depth analysis of how Cypriot educational institutions approach digital skills training. Here are the summarized key findings:

1. **Diversity of Institutions**: The survey revealed an equal representation between universities and colleges, indicating a broad range of institutions involved in digital skills education.

2. **Student Enrolment**: Most institutions have smaller student bodies (0-1000 students), which might allow for more personalized and focused digital skills training.
3. **Offering of Digital Skills Courses**: 62.5% of institutions offer courses specifically focused on advanced digital skills, such as AI, machine learning, and cybersecurity, highlighting an emphasis on current and emerging technologies.
4. **Curriculum Updates**: Half of the institutions update their curriculum annually, demonstrating a commitment to keeping educational offerings relevant to rapidly changing technology landscapes.
5. **Industry Partnerships**: 75% of institutions have partnerships with tech companies, which help enhance the digital skills training through practical exposure and access to current technologies.
6. **Challenges Faced**: The most significant challenges include lack of funding and difficulty in hiring qualified faculty, affecting the institutions' ability to provide cutting-edge digital skills training.
7. **Confidence in Graduates' Skills**: Most institutions are very confident that their graduates are well-equipped for the digital demands of the workforce in Cyprus, suggesting effectiveness in their educational approaches.
8. **Future Skills Focus**: Institutions anticipate a need for increased emphasis on AI, blockchain, and data analytics in their future curricula to meet the expected skills demand.
9. **Skills Predicted as Crucial**: Looking ahead, AI and cybersecurity are seen as the most crucial skills for the next decade, underscoring the need for strategic educational planning in these areas.

Chapter 7 Discussion - Comparative Analysis of Survey Results

7.1 Introduction

This chapter provides a comparative analysis of the perspectives shared by educational institutions, employees, and companies regarding digital skills training. The aim is to identify alignments and discrepancies among these groups that can inform targeted improvements in digital skills education and workforce development strategies. Also, this way, it is possible to extract some ways to minimize the existing skills gap between the workforce and the industry.

7.2 Comparison 1: Institutes vs. Employees

7.2.1 Course Offerings and Perceived Adequacy

- **Institutes**: According to the survey, a notable majority of educational institutions reported offering courses specifically focused on advanced digital skills, such as AI, machine learning, and cybersecurity. This suggests a proactive approach by institutes to integrate cutting-edge technologies into their curricula, aiming to prepare students for the digital challenges they will face in the workforce.
- **Employees**: While many employees felt their education had adequately prepared them for their current job roles, there remains a significant proportion who believe more comprehensive training is needed. Employees particularly noted gaps in newer and rapidly evolving areas like AI, machine learning, and data science. This discrepancy between the course offerings and the perceived adequacy of training highlights a potential misalignment between educational outputs and real-world application demands.

7.2.2 Confidence in Skill Levels

- **Institutes**: Educational institutions expressed high confidence in their graduates' abilities to meet the digital skill demands of the job market, suggesting that the curricula are thought to be effectively equipping students with necessary competencies.

- **Employees**: On the other hand, employees, while generally confident in their ability to adapt to new technologies, acknowledged challenges in keeping pace with the rapid advancement of technology. This indicates a potential gap in ongoing learning and development post-graduation, where employees may require additional training to stay current with industry developments.

7.2.3 Future Skills Focus

Institutes and Employees: There is a notable agreement on the increasing importance of AI and machine learning, with both groups recognizing these as critical areas for future development. However, while institutes are also focusing on blockchain technology, employees place greater emphasis on the immediate applicability of skills like cloud computing and data analytics. This suggests that while institutes may be preparing students for future technologies, there is also a need to ensure that training is immediately applicable and beneficial for current market needs.

7.2.4 Emerging Trends and Adaptation

Both educational institutions and employees recognize the importance of adapting to emerging trends. Institutes are taking steps to update their curricula annually or every few years to incorporate new technologies. However, employees indicate that these updates may not be sufficient or fast enough to keep up with industry changes, highlighting the need for continuous professional development and possibly more frequent curriculum revisions.

7.2.5 Perceived Skills Gap:

- **Institutes**: Institutes tend to believe that their training programs align well with the needs of the industry. However, they acknowledge challenges such as resource limitations and difficulty in hiring qualified faculty, which may prevent them from fully meeting market demands.
- **Employees**: Employees perceive a more noticeable skills gap between their education and current job demands. They identify gaps specifically in areas like AI, cybersecurity, and advanced data analytics, noting that their university

education sometimes only partially prepared them for the rapid pace of change in the IT industry.

7.2.6 Barriers to Skill Development

- **Institutes**: Resource constraints, including lack of funding and difficulty in hiring specialized faculty, were seen as primary barriers to offering up-to-date digital skills training.
- **Employees**: For employees, barriers such as time constraints, work commitments, and lack of organizational support for continuous learning were more prominent. These differences highlight the multifaceted challenges involved in keeping up with emerging technology trends.

7.2.7 Training Satisfaction and Alignment:

- **Institutes**: Most institutes were confident in the alignment between their training programs and industry needs, often citing strong partnerships with tech companies to bolster this alignment.
- **Employees**: Although many employees expressed satisfaction with their training programs, there was still notable dissatisfaction with how well their education matched their job requirements. Some felt only partially prepared, underscoring the need for continuous skill upgrades.

7.2.5 Summary

This detailed comparison between the perspectives of institutes and employees reveals both alignments and areas of divergence in perceptions of digital skills training. While institutes believe they are effectively preparing students, employees suggest that the pace of technological change and the practical applicability of learned skills could be better addressed. This calls for a more dynamic approach to curriculum development, closer industry-academia collaboration, and enhanced focus on lifelong learning to bridge the gap between education and practical job market requirements.

7.3 Comparison 2: Institutes vs. Companies

7.3.1 Industry Collaboration

- **Institutes**: A significant proportion of educational institutions reported having partnerships with tech companies, which they view as beneficial for enhancing their digital skills training. These partnerships often involve guest lectures, internship opportunities, and collaborative projects, which can provide practical experiences for students and keep the curriculum aligned with industry needs.
- **Companies**: From the companies' perspective, the value of graduates often hinges on their practical experience and how well their education matches current industry standards. Companies favour graduates from institutions with robust industry links, as these students are perceived to be better prepared to enter the workforce and contribute immediately. Companies may perceive a lack of such partnerships as a gap, leading to a preference for hiring from institutions that demonstrate strong industry connections.

7.3.2 Skills Gap and Training Needs

- **Institutes**: While institutes are aware of and actively working to address skills gaps by updating their curricula and forming industry partnerships, they often face challenges such as funding limitations and the pace of technological changes, which can impede their ability to offer the most current training.
- **Companies**: Companies tend to view the skills gap more critically, often because they experience the direct impact of these gaps on productivity and innovation. They emphasize the need for continuous learning opportunities and upskilling, particularly in rapidly evolving fields like cybersecurity, AI, and cloud computing, to ensure employees remain competitive in the digital economy.

7.3.3 Challenges in Skill Development

- **Institutes**: The primary challenges highlighted by educational institutions include the lack of funding, difficulty in hiring qualified faculty, and the rapidly changing technology landscape. These factors can hinder the institutions' ability to consistently offer cutting-edge training and may slow the rate at which curricula are updated.
- **Companies**: For companies, the challenges are more about how the skills being taught in educational institutions translate into real-world applications.

Companies are concerned with ensuring that the training employees receive is practical, up-to-date, and comprehensive enough to cover the diverse skills required in modern IT roles.

7.3.4 Expectations for Future Skills

- **Institutes**: Educational institutions are somewhat proactive in anticipating future skills needs, as evidenced by their inclusion of emerging technologies like blockchain and advanced data analytics in their curricula.
- **Companies**: Companies often have immediate and pragmatic expectations for skills that can be applied directly to current projects and challenges. They look for education programs to not only cover future technologies but also to provide a strong foundation in current technologies that are driving business today.

7.3.5 Summary

The comparison between institutes and companies in terms of digital skills training reveals a complex interplay of expectations, perceived effectiveness, and actual needs. While institutes are working towards integrating advanced technologies and forming partnerships, there remains a gap in terms of how effectively these efforts meet company expectations, particularly in areas like real-world applicability and the pace of curriculum updates.

To bridge these gaps, there needs to be an ongoing dialogue between educational institutions and companies, along with a flexible approach to curriculum design that allows for rapid incorporation of new technologies and methods. This would help ensure that educational programs not only prepare students for future trends but also equip them with the skills needed in the present-day workforce.

7.4 Comparison 3: Companies Vs Employees

This chapter synthesizes the key findings from Alexandros' research, comparing the perspectives of companies and employees on advanced digital skills demand, training practices, and employee engagement. The analysis reveals crucial insights into alignment issues between corporate policies and the practical needs of employees, highlighting a

gap in strategic planning and the actual impact of training programs on workforce readiness.

7.4.1 Skills Demand and Preparedness

Companies in Cyprus emphasize high-demand skills such as Data Analysis, Cybersecurity, Cloud Computing, and Software Development to maintain a competitive edge. Employees recognize these skills as vital but express concerns about preparedness, particularly regarding emerging technologies like AI and Machine Learning. A perceived lack of training depth or practical applicability in these fields leaves employees feeling underprepared despite companies' assurances of robust training efforts.

7.4.2 Training Practices and Employee Perceptions

Corporate training programs are diverse, including internal workshops and external learning platforms, supported by financial assistance. Despite these measures, employees often feel that training programs are not frequent or tailored enough to meet the fast-paced evolution of technological trends. They seek training that is directly relevant to their job roles and career aspirations.

7.4.3 Skills Assessment Practices

Skills assessments are conducted semi-annually to identify gaps and training needs. While these assessments align with strategic goals, employees feel that they can be stressful and sometimes too frequent. They also express a need for assessments that are more personalized and relevant to their career trajectories and immediate job responsibilities.

7.4.4 Future Skills Preparation

Companies project skills in AI, Cybersecurity, and Cloud Computing as crucial for future competitiveness and proactively incorporate them into training. However, employees still express anxiety over their readiness, advocating for training programs that are comprehensive and agile enough to adapt to emerging tech demands.

7.4.5 Employee Engagement and Satisfaction

Corporate strategies focus on aligning training with strategic goals and enhancing engagement through financial incentives and learning opportunities. While many

employees appreciate these initiatives, others cite inadequacies like lack of alignment with specific job requirements and insufficient access to advanced training. The inconsistency in satisfaction levels suggests a need for more tailored and responsive strategies.

7.5 Strategies to Bridge the Digital Skills Gap

The survey results highlight a critical need for educational institutions and companies to collaboratively bridge the digital skills gap to enhance workforce readiness and innovation in Cyprus. First, educational institutions should increase their engagement with industry leaders to ensure that curriculum development is closely aligned with current and emerging industry demands. This can be facilitated through regular advisory panels consisting of industry experts who can provide real-time feedback and guidance on curriculum relevancy. Additionally, expanding internship and co-op programs can provide students with practical experience and help them apply theoretical knowledge in real-world settings, thus improving their job readiness upon graduation. Institutions should also prioritize the agility of their course offerings, with provisions for modular and updatable content that can quickly integrate new technologies and methods as they emerge. Lastly, both educational institutions and companies could benefit from investing in lifelong learning and continuous professional development programs, ensuring that the current workforce can continually update their skills in line with technological advancements. Together, these strategies can create a robust ecosystem where education and industry collaboratively foster a digitally competent and agile workforce.

Chapter 8 Conclusion

8.1 Summary of Research Findings

This diploma thesis has thoroughly investigated the alignment between the advanced digital skills required by the IT industry in Cyprus and the education provided by tertiary institutions. The primary findings indicate a significant gap between the digital skills demanded by employers and those taught in educational settings. Employers across Cyprus have emphasized a growing need for competencies in areas such as cybersecurity, cloud computing, and data science—skills that are not adequately covered in current educational curricula.

Our research across various stakeholders—companies, employees, and educational institutions—highlights that while there is confidence in fundamental IT education, there is a pressing need for inclusion of advanced digital skills that are critical to navigating today's rapidly evolving technological landscape. The discrepancy in skills not only affects the employability of graduates but also impacts the competitive edge of the Cypriot economy in the global market.

8.2 Practical Implications

The findings from this research have significant implications for curriculum designers and policymakers in education. There is a clear need for an overhaul of the current curricular frameworks to incorporate advanced digital skills that are synchronous with the demands of the IT industry. Such reforms will not only enhance the employability of graduates but will also equip them to contribute effectively to the digital economy.

For IT companies, there is a necessity to invest in training and development programs that bridge these skills gaps. Partnerships with educational institutions can facilitate the development of specialized training programs tailored to the immediate needs of the industry.

8.3 Recommendations for Future Research

This study opens several avenues for further research. Future studies could explore the effectiveness of specific educational reforms and training programs in bridging the skills

gap. Longitudinal studies could assess the career trajectories of graduates who benefit from revamped curricula versus those who do not.

Additionally, comparative studies involving other regions with similar economic structures could provide deeper insights into global trends in digital skills education and its impact on economic development.

8.4 Limitations of the Study

This research acknowledges certain limitations, including the sample size and the geographic concentration of the survey participants, which may not represent all sectors of the Cypriot IT industry comprehensively, and that not all participants graduated form Cypriot Institutions. The rapidly changing nature of digital technology also means that the findings may require regular updates to remain relevant.

Chapter 9 References

[1] Human Resource Development Authority of Cyprus. "Acquisition of Digital Skills." https://shorturl.at/pDHX5 [accessed on 28/02/2024].

[2] European Commission. "Cyprus National Digital Strategy 2020-2025." https://digital-skills-jobs.europa.eu/en/actions/national-initiatives/national-strategies/cyprus-national-digital-strategy-2020-2025 [accessed on 05/11/2023].

[3] World Bank. "Digital Skills Frameworks and Programs." . https://documents1.worldbank.org/curated/en/562351611824219616/pdf/Digital-Skills-Frameworks-and-Programs.pdf [accessed on 14/01/2024].

[4] European Commission. "Cyprus Recovery and Resilience Plan. https://commission.europa.eu/business-economy-euro/economic-recovery/recovery-and-resilience-facility/country-pages/cyprus-recovery-and-resilience-plan_en [accessed on 03/10/2023].

[5] Soft Surge. "Digital Transformation: How is Cyprus Going Digital in 2022? https://soft-surge.com/digital-transformation-how-is-cyprus-going-digital-in-2022/ [accessed on 22/09/2023].

[6] KIOS Research and Innovation Center of Excellence. "KIOS Joins Forces with 15 Organizations to Accelerate the Digital Transformation of Cyprus. https://www.kios.ucy.ac.cy/kios-joins-forces-with-15-organizations-to-accelerate-the-digital-transformation-of-cyprus/. [accessed on 15/12/2023]

[7] RAND Corporation. "Digital Skills in the European Union. https://www.rand.org/content/dam/rand/pubs/research_reports/RRA1500/RRA1533-1/RAND_RRA1533-1.pdf. [accessed on 16/02/2024]

[8] Revistia. "The Importance of Digital Skills in the Modern Workplace. https://revistia.com/files/articles/ejef_v2_19/Folea.pdf. [accessed on 01/09/2023]

[9] International Telecommunication Union. "Digital Skills Assessment Guidebook. https://academy.itu.int/sites/default/files/media2/file/20-00227_1f_Digital_Skills_assessment_Guidebook_%2028%20May%202020.pdf. [accessed on 07/02/2024]

[10] Cyprus Computer Society. "Digital Strategy 2020-2025. https://www.dmrid.gov.cy/dmrid/research.nsf/all/927EA351714F99EDC22587CE0028C090/$file/Digital%20Strategy%202020-2025.pdf?openelement. [accessed on 25/01/2024]

[11] Cedefop. "European Skills and Jobs Survey." https://www.cedefop.europa.eu/en/projects/european-skills-and-jobs-survey-esjs [accessed on 12/2/2024].

[12] Cyprus Computer Society. "ICT Cyprus Report 2021." https://ccs.org.cy/assets/uploads/IDC%20Report/ICT%20CYPRUS%20REPORT%202021.pdf [accessed on 9/1/2024].

[13] Human Resource Development Authority of Cyprus. "Digital Cyprus Industry Digital Potential 2018." https://www.anad.org.cy/wps/wcm/connect/hrda/bb70fb20-c084-4053-aa2d-c5a987c93952/Accenture-Digital-Cyprus-Industry-Digital-Potential-2018-LowR.pdf?MOD=AJPERES [accessed on 18/2/2024].

[14] Cyprus Profile. "Technology & Start-Ups Sector." https://www.cyprusprofile.com/sectors/technology-start-ups [accessed on 9/4/2024].

[15] EIT Deep Tech Talent Initiative. "Courses for Deep Tech for all Europe." https://www.eitdeeptechtalent.eu/courses/#|template_layout_7763c213fcc8464f357d79a

d97c13878=no_image|t.country_7763c213fcc8464f357d79ad97c13878=159
[accessed on 20/4/2024].

[16] Digitalisation in Europe 2021-2022: Evidence from the EIB Investment Survey
[accessed on 20/4/2024].

[17] "The State of the Digital Skills Gap in 2023" https://www.elev8me.com/insights/closing-the-digital-skills-gap-insights-for-2023
[accessed on 20/4/2024].

Appendix A: Companies Questionnaire

"Digital Transformation: Exploring the Advanced Digital Skills required by Cyprus organizations and the extent to which these are covered by the local higher education programs."

Purpose of the Survey for Companies

This survey is designed to gather
valuable insights into the digital skills landscape within your organization. Your feedback will assist
us in understanding the current skillsets of your employees, their learning preferences, and areas where additional
support may be needed. The aim is to enhance your HR and training initiatives, ensuring that your workforce is well-equipped with the advanced digital skills required to
excel in their roles and contribute to your company's growth. Thank you for your cooperation in this important
endeavor.

Department of Computer Science - University of Cyprus

What are the primary advanced digital skills you seek in candidates when hiring for your IT department? (Select all that apply) *

- [ ] Data Analysis and Data Science
- [ ] Cybersecurity
- [ ] Cloud Computing
- [ ] Artificial Intelligence and Machine Learning
- [ ] Software Development and Programming
- [ ] Internet of Things (IoT)
- [ ] Digital Marketing and SEO
- [ ] Other: _____

How do you provide ongoing training and development for your IT employees in advanced digital skills? (Select all that apply) *

- [ ] Internal training programs
- [ ] External workshops and courses
- [ ] Collaboration with educational institutions
- [ ] Online learning platforms
- [ ] On-the-job training
- [ ] Offering mentorship or coaching programs
- [ ] Recognizing and rewarding skill development
- [ ] Other: _____

How do you assess the advanced digital skills of your IT employees? *

- [ ] Performance evaluations
- [ ] Certifications
- [ ] Regular skills assessments
- [ ] Project outcomes
- [ ] Other: _____

Do you encourage IT employees to pursue additional certifications or training in advanced digital skills? If yes, how?(Other...) *

- ○ No
- ○ Yes
- ○ Other: _____

How often do you conduct skills assessments or evaluations for your employees to gauge their digital skills proficiency? *

- ○ Annually
- ○ Semi-annually
- ○ Quarterly
- ○ Rarely
- ○ Never

Do you provide financial support or incentives for employees who pursue further education or certifications in digital skills? *

- ◯ Yes
- ◯ No

Have you identified gaps in the field of Advanced Digital Skills from your employees?

- ☐ Yes, gaps in Data Analysis and Data Science skills
- ☐ Yes, gaps in Cybersecurity skills
- ☐ Yes, gaps in Cloud Computing skills
- ☐ Yes, gaps in Artificial Intelligence and Machine Learning skills
- ☐ Yes, gaps in Software Development and Programming skills
- ☐ Yes, gaps in Internet of Things (IoT) skills
- ☐ Yes, gaps in Digital Marketing and SEO skills
- ☐ Yes, gaps in other digital skills (please specify)
- ☐ No, we have not observed any significant gaps
- ☐ Not sure
- ☐ Other: _____

How would you rate the alignment between the digital skills of your current workforce and the evolving needs of your organization? *

- ○ Strong alignment
- ○ Moderate alignment
- ○ Limited alignment
- ○ No alignment
- ○ Not sure

How do you currently identify the digital skills needs within your organization? (Select all that apply) *

- [ ] Employee self-assessments
- [ ] Managerial feedback
- [ ] Performance evaluations
- [ ] Skills gap analysis
- [ ] Industry benchmarks and trends
- [ ] Other: _____

Have you encountered any challenges in attracting or retaining employees with advanced digital skills in your industry? *

- ◯ Yes, challenges in attracting candidates with the required digital skills.
- ◯ Yes, challenges in retaining employees with advanced digital skills.
- ◯ Yes, both attracting and retaining employees with advanced digital skills.
- ◯ No, we have not encountered challenges in this regard.
- ◯ Not sure

What additional resources or support would assist your HR department in better addressing the digital skills development needs of your employees and the company as a whole? *

- [ ] Increased budget for training and development programs.
- [ ] Access to a wider range of digital skills training courses and platforms.
- [ ] Collaborations with external training providers or educational institutions.
- [ ] Establishment of mentorship or coaching programs for skill development.
- [ ] Development of in-house training content and resources.
- [ ] Implementation of a skills assessment and tracking system.
- [ ] Enhanced recognition and rewards for skill development efforts.
- [ ] Support for employees pursuing certifications or further education.
- [ ] Regular skills gap analysis and reporting.
- [ ] Other: _____

What future digital skills do you think will be important in ten years from now? * Please select the skills you believe will be crucial.

- [ ] Artificial Intelligence and Machine Learning
- [ ] Quantum Computing
- [ ] Cybersecurity and Ethical Hacking
- [ ] Data Privacy and Ethics
- [ ] Augmented Reality (AR) and Virtual Reality (VR)
- [ ] Blockchain and Cryptocurrency
- [ ] Internet of Things (IoT)
- [ ] 5G and Next-Generation Connectivity
- [ ] Cloud Computing and Serverless Architecture
- [ ] Automation and Robotic Process Automation (RPA)
- [ ] Sustainable Technology and Green IT
- [ ] Digital Health and Telemedicine
- [ ] Biotechnology and Bioinformatics
- [ ] Remote and Hybrid Work Skills
- [ ] Natural Language Processing (NLP)
- [ ] User Experience (UX) Design and Human-Centered Design
- [ ] Big Data Analytics and Data Science
- [ ] Computational Thinking and Problem-Solving
- [ ] Mobile App Development
- [ ] Digital Marketing and E-commerce
- [ ] Voice and Conversational AI
- [ ] Project and Product Management
- [ ] Industry-Specific Expertise (e.g., FinTech, HealthTech)
- [ ] Gaming
- [ ] Other: _____

Appendix B Employees Questionnaire

“Digital Transformation: Exploring the Advanced Digital Skills required by Cyprus organizations and the extent to which these are covered by the local higher education programs.”

Your Feedback Matters: Your Responses Are Anonymous

This survey is designed to gather valuable insights into the digital skills landscape within your organization. Your feedback will assist us in understanding the current skillsets of your employees, their learning preferences, and areas where additional support may be needed. The aim is to enhance your HR and training initiatives, ensuring that your workforce is well-equipped with the advanced digital skills required to excel in their roles and contribute to your company's growth. Thank you for your cooperation in this important endeavor.

Department of Computer Science - University of Cyprus

Gender

- ○ Male
- ○ Female
- ○ Prefer not to say

Age

- ○ 18 - 24
- ○ 25 - 34
- ○ 35 - 44
- ○ 45 - 54
- ○ 55 - 64
- ○ 65 or older

How many years of professional experience do you have in the IT industry?

- ○ Less than 1 year
- ○ 1-2 years
- ○ 3-5 years
- ○ 6-10 years
- ○ More than 10 years

What department do you currently work in within your company? (Select one)

- ◯ Software Development
- ◯ Data Science and Analytics
- ◯ Cybersecurity
- ◯ Cloud Computing
- ◯ Artificial Intelligence and Machine Learning
- ◯ Internet of Things (IoT)
- ◯ Digital Marketing and SEO
- ◯ Other: _____

How satisfied are you with the advanced digital skills training and development opportunities provided by your company?

- ◯ Very satisfied
- ◯ Satisfied
- ◯ Neutral
- ◯ Dissatisfied
- ◯ Very dissatisfied

Are you encouraged to pursue additional training or certifications in advanced digital skills by your employer?

- ◯ Yes, strongly encouraged
- ◯ Yes, somewhat encouraged
- ◯ No, not encouraged
- ◯ Not sure

Do you believe that your current advanced digital skills are adequate for your job role?

- ◯ Yes
- ◯ No
- ◯ Unsure

How do you prefer to learn and improve your advanced digital skills? (Select all that apply) (If other please specify)

- ☐ Workshops and seminars
- ☐ Online courses and tutorials
- ☐ Peer learning and knowledge sharing
- ☐ On-the-job learning
- ☐ Formal certifications
- ☐ Other: _____

Have you faced any barriers or challenges in acquiring advanced digital skills in your current role? If yes, please describe (Other...)

- ☐ No
- ☐ Other: _____

How would you rate the overall workplace environment and culture in terms of promoting advanced digital skills development?

- ◯ Excellent
- ◯ Good
- ◯ Fair
- ◯ Poor
- ◯ Very Poor

Are you satisfied with the advanced digital skills education you received at your university?

- ◯ Very satisfied
- ◯ Satisfied
- ◯ Neutral
- ◯ Dissatisfied
- ◯ Very dissatisfied

If you feel that something is missing or could have been improved in your university's education on digital skills, please specify the areas or topics you believe were lacking.

- [ ] Advanced Programming Languages
- [ ] Data Analytics and Visualization
- [ ] Cybersecurity
- [ ] Web Development
- [ ] Artificial Intelligence and Machine Learning
- [ ] Cloud Computing
- [ ] Digital Marketing
- [ ] User Experience (UX) Design
- [ ] Mobile App Development
- [ ] Agile and Project Management
- [ ] Ethics and Privacy
- [ ] Blockchain and Cryptocurrency
- [ ] Big Data and Data Science
- [ ] IoT (Internet of Things)
- [ ] Digital Transformation Strategies
- [ ] Coding Best Practices
- [ ] Soft Skills and Communication
- [ ] Entrepreneurship and Innovation
- [ ] Industry-Specific Knowledge
- [ ] Practical Projects
- [ ] Other: _____

Do you believe that your university adequately prepared you for the demands of the IT industry in terms of advanced digital skills?

- ◯ Yes, fully prepared
- ◯ Partially prepared
- ◯ Not prepared at all

Are there any specific advanced digital skills or knowledge areas that you wish your university had covered more comprehensively? (Select all that apply)

- ☐ Data Analysis and Data Science
- ☐ Cybersecurity
- ☐ Cloud Computing
- ☐ Artificial Intelligence and Machine Learning
- ☐ Software Development and Programming
- ☐ Internet of Things (IoT)
- ☐ Digital Marketing and SEO
- ☐ Other: _____

How do you perceive the gap, if any, between the skills you acquired in your university education and the skills demanded by your current job in the IT industry? (Select one)

- ◯ There is no gap; my university education fully prepared me.
- ◯ There is a slight gap, but it's manageable.
- ◯ There is a significant gap that requires additional training.
- ◯ There is a substantial gap, and it's affecting my job performance.

How confident do you feel in your ability to adapt to new digital technologies and tools in your job?

- ◯ Very confident
- ◯ Confident
- ◯ Neutral
- ◯ Not very confident
- ◯ Not confident at all

How do you think the demand for specific digital skills will change in your industry in the next 3-5 years? (Select all that apply)

- ◯ Demand will significantly increase for most digital skills.
- ◯ Demand will moderately increase for some digital skills.
- ◯ Demand will remain relatively stable across most digital skills.
- ◯ Demand will decrease for some digital skills.
- ◯ Not sure

What future digital skills do you think will be important in ten years from now? * Please select the skills you believe will be crucial.

- [ ] Artificial Intelligence and Machine Learning
- [ ] Quantum Computing
- [ ] Cybersecurity and Ethical Hacking
- [ ] Data Privacy and Ethics
- [ ] Augmented Reality (AR) and Virtual Reality (VR)
- [ ] Blockchain and Cryptocurrency
- [ ] Internet of Things (IoT)
- [ ] 5G and Next-Generation Connectivity
- [ ] Cloud Computing and Serverless Architecture
- [ ] Automation and Robotic Process Automation (RPA)
- [ ] Sustainable Technology and Green IT
- [ ] Digital Health and Telemedicine
- [ ] Biotechnology and Bioinformatics
- [ ] Remote and Hybrid Work Skills
- [ ] Natural Language Processing (NLP)
- [ ] User Experience (UX) Design and Human-Centered Design
- [ ] Big Data Analytics and Data Science
- [ ] Computational Thinking and Problem-Solving
- [ ] Mobile App Development
- [ ] Digital Marketing and E-commerce
- [ ] Voice and Conversational AI
- [ ] Project and Product Management
- [ ] Industry-Specific Expertise (e.g., FinTech, HealthTech)
- [ ] Gaming
- [ ] Other: _____

Appendix C Institutes Questionnaire

“Digital Transformation: Exploring the Advanced Digital Skills required by Cyprus organizations and the extent to which these are covered by the local higher education programs.”

Your Feedback Matters: Your Responses Are Anonymous

We value your input, and we want to ensure that you feel comfortable sharing your thoughts. Please be assured that all survey responses are completely anonymous, and your identity will not be linked to your answers. We encourage you to provide your honest feedback to help us better understand and address your needs and experiences. Thank you for your participation.

This survey is designed to gather
valuable insights into the digital skills landscape within your organization. Your feedback will assist
us in understanding the current skillsets of your employees, their learning preferences, and areas where additional
support may be needed. The aim is to enhance your HR and training initiatives, ensuring that your workforce is well-equipped with the advanced digital skills required to
excel in their roles and contribute to your company's growth. Thank you for your cooperation in this important
endeavor.

Department of Computer Science - University of Cyprus

Type of Institution *

- ◯ University
- ◯ Polytechnic
- ◯ Vocational School
- ◯ College
- ◯ Other: _____

Number of students enrolled *

- ◯ 0-1000
- ◯ 1001-2000
- ◯ 2001-3000
- ◯ 3001-4000
- ◯ 4001-5000
- ◯ 5001-6000
- ◯ 6001-7000
- ◯ 7001+

Does your institution offer courses specifically focused on advanced digital skills/technologies? *

- ◯ Yes
- ◯ No

If yes, please list the main courses related to digital skills *

- [ ] Data analytics
- [ ] Cybersecurity
- [ ] Cloud computing
- [ ] Software development
- [ ] Digital marketing
- [ ] Artificial Intelligence and Machine Learning
- [ ] Internet of Things (IoT)
- [ ] Digital project management
- [ ] Other: _____

How often is the curriculum updated to reflect current digital trends and needs? *

- ◯ Annually
- ◯ Every 2-3 years
- ◯ Every 4-5 years
- ◯ Rarely
- ◯ Never

Do you have partnerships with tech companies or organizations to enhance the digital skills training? *

- ◯ Yes
- ◯ No

If you answered 'Yes' to the previous question, how do these partnerships benefit your institution? (Select all that apply) *

- [ ] Guest lectures from industry experts
- [ ] Internship opportunities for students
- [ ] Curriculum development and review
- [ ] Access to cutting-edge tools and technologies
- [ ] Research collaborations
- [ ] Other: _____

How confident are you that graduates from your institution are well-equipped with the digital skills required by organizations in Cyprus? *

- ○ Extremely confident
- ○ Very confident
- ○ Somewhat confident
- ○ Not so confident
- ○ Not at all confident

What challenges does your institution face in providing up-to-date digital skills training? (Select all that apply) *

- [ ] Lack of funding
- [ ] Rapidly changing technology landscape
- [ ] Difficulty in hiring qualified faculty
- [ ] Lack of industry partnerships
- [ ] Limited infrastructure or resources
- [ ] Other: _____

Are there any specific digital skills or areas you believe need more emphasis in the future? *

- [ ] Data Analytics
- [ ] Cybersecurity
- [ ] AI & Machine Learning
- [ ] Digital Marketing
- [ ] Cloud Computing
- [ ] UX/UI Design
- [ ] Blockchain
- [ ] Virtual Reality & Augmented Reality
- [ ] Other: _____

What future digital skills do you think will be important in ten years from now? * Please select the skills you believe will be crucial.

- [ ] Artificial Intelligence and Machine Learning
- [ ] Quantum Computing
- [ ] Cybersecurity and Ethical Hacking
- [ ] Data Privacy and Ethics
- [ ] Augmented Reality (AR) and Virtual Reality (VR)
- [ ] Blockchain and Cryptocurrency
- [ ] Internet of Things (IoT)
- [ ] 5G and Next-Generation Connectivity
- [ ] Cloud Computing and Serverless Architecture
- [ ] Automation and Robotic Process Automation (RPA)
- [ ] Sustainable Technology and Green IT
- [ ] Digital Health and Telemedicine
- [ ] Biotechnology and Bioinformatics
- [ ] Remote and Hybrid Work Skills
- [ ] Natural Language Processing (NLP)
- [ ] User Experience (UX) Design and Human-Centered Design
- [ ] Big Data Analytics and Data Science
- [ ] Computational Thinking and Problem-Solving
- [ ] Mobile App Development
- [ ] Digital Marketing and E-commerce
- [ ] Voice and Conversational AI
- [ ] Project and Product Management
- [ ] Industry-Specific Expertise (e.g., FinTech, HealthTech)
- [ ] Gaming
- [ ] Other: _____