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.

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JUNE 2024

NICOSIA – CYPRUS

A thesis submitted for the degree (BSc) of Computer Science

UNIVERSITY OF CYPRUS

DEPARTMENT OF COMPUTER SCIENCE

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.

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The Individual Diploma Thesis was submitted to partially fulfill the requirements for earning a degree in Computer Science from the Department of Computer Science at the University of Cyprus.

June 2024

ACKNOWLEDGEMENTS

I'm incredibly grateful to everyone who has been a part of this diploma thesis journey, marking the end of my studies for my bachelor's degree in Computer Science at the University of Cyprus. Together with my colleague and friend, Christodoulos Mavrides, we explored the fascinating realm of digital transformation in Cyprus.

Fascinated by the evolving landscape of digitalization, we examined advanced digital skills and their significance for higher institutions and organizations in Cyprus. Under the mentorship of Professor Elpida Keravnou-Papailiou, whose unwavering support was crucial throughout this research, we navigated the complexities of our work with confidence and determination.

We designed questionnaires to gather insights from higher education institutions about their digital skills offerings. Concurrently, we engaged with companies to understand their perspectives and requirements from prospective employees. We also researched the history of digitalization in Cyprus and future plans for a new digital era promoting advanced digital skills in the workforce.

Our journey was about discovery and building connections. We listened to educators and industry professionals, gaining invaluable insights into digital skill acquisition and application in the real world. We used the responses to devise a well-structured approach to this problem.

I express sincere appreciation to my supervisor, Professor Elpida Keravnou-Papailiou, for her mentorship and unconditional support. Her guidance was instrumental in shaping our research and helping us overcome challenges.

To the companies, institutes, and individuals who shared their experiences and expertise by answering our questionnaires, I extend heartfelt thanks. And to Christodoulos, whose collaborative spirit made this journey fulfilling, thank you.

As our research findings unfold, we envision a future where education and industry converge, paving the way for a digitally empowered workforce and a thriving economy in Cyprus by educating the future workforce with advanced digital skills.

Keywords: Digital Transformation, Advanced Digital Skills, Higher Education Programs, Cyprus Organizations, Industry Alignment, Workforce, ADS (Advanced Digital Skills)

SUMMARY

In an era where digital transformation is crucial, aligning advanced digital skills taught in higher education with industry needs is critical for economic and technological progress. This diploma thesis, co-authored by myself and Christodoulos Mavrides, explores the advanced digital skills landscape in Cyprus, assessing how well local education programs equip students for the rapidly evolving IT sector.

We identified a gap in the digital skills market in Cyprus, where companies seek advanced skills only partially covered by current curriculums. This mismatch hinders graduates' employability and challenges businesses striving to stay competitive. Our research aimed to analyse this inconsistency and offer insights to bridge the gap between academic offerings and industry demands.

We conducted a detailed research process, using questionnaires as our primary data collection method and gathering information from companies and students. Three distinct questionnaires were designed for higher education institutions, companies with IT departments, and employees. These tools extracted information on the digital skills taught, the skills employers seek, and opportunities for skill enhancement.

Our data analysis revealed both alignment and significant gaps where educational programs fall short of industry expectations. These findings highlight areas for curricular revisions to enhance the relevance and applicability of higher education in the digital domain.

Our research underscores the importance of continuous dialogue and collaboration between institutions and industry. Such partnerships are vital for developing curriculums that are academically sound and aligned with real-world applications and future technological trends.

This diploma thesis critically examines the current state of advanced digital skills in Cyprus, providing a foundation for future adaptations to enhance the harmony between higher education and industry needs. Our findings offer valuable insights for policymakers, educators, and industry leaders, contributing to the discourse on digital education and workforce development, and paving the way for a more digitally competent Cyprus.

ΠΕΡΙΛΗΨΗ

Σε μια εποχή όπου η ψηφιακή ανανέωση είναι κρίσιμη, η ευθυγράμμιση των προχωρημένων ψηφιακών δεξιοτήτων που διδάσκονται στα ανώτατα εκπαιδευτικά ιδρύματα με τις ανάγκες της βιομηχανίας είναι καθοριστική για την οικονομική και τεχνολογική πρόοδο. Αυτή η διπλωματική εργασία, εκπονημένη μαζί με τον Χριστόδουλο Μαυρίδη, εξετάζει κατά πόσο τα τοπικά προγράμματα εκπαίδευσης στην Κύπρο εφοδιάζουν τους φοιτητές με τις δεξιότητες που απαιτούν οι εταιρείες.

Η έρευνά μας αποκάλυψε σημαντικό κενό στην αγορά ψηφιακών δεξιοτήτων στην Κύπρο, όπου οι εταιρείες αναζητούν δεξιότητες που δεν καλύπτονται πλήρως από τα τρέχοντα προγράμματα. Αυτή η διαφορά επηρεάζει την απασχολησιμότητα των αποφοίτων και την ανταγωνιστικότητα των επιχειρήσεων.

Χρησιμοποιήσαμε ερωτηματολόγια για συλλογή δεδομένων από εταιρείες, υπαλλήλους και εκπαιδευτικά ιδρύματα, σχεδιάζοντας τρία ερωτηματολόγια για πληροφορίες σχετικά με τις διδασκόμενες και απαιτούμενες δεξιότητες και τις ευκαιρίες ενίσχυσης δεξιοτήτων στην αγορά εργασίας.

Η ανάλυση των δεδομένων αποκάλυψε τόσο τομείς σύγκλησης όσο και σημαντικά κενά όπου τα εκπαιδευτικά προγράμματα δεν καλύπτουν τις προσδοκίες της βιομηχανίας. Τα ευρήματα υποδεικνύουν τομείς όπου οι αναθεωρήσεις των προγραμμάτων σπουδών μπορούν να βελτιώσουν τη σχετικότητα της εκπαίδευσης.

Η έρευνα τονίζει τη σημασία συνεχούς διαλόγου και συνεργασίας μεταξύ ιδρυμάτων και βιομηχανίας για την ανάπτυξη προγραμμάτων που είναι ακαδημαϊκά ισχυρά και ευθυγραμμισμένα με τις πραγματικές εφαρμογές και τις μελλοντικές τάσεις. Αυτή η ευθυγράμμιση είναι κρίσιμη για την ανάπτυξη ενός εργατικού δυναμικού που προωθεί την καινοτομία και την ψηφιακή μεταμόρφωση.

Αυτή η διπλωματική εργασία προσφέρει θεμέλιο για τη γεφύρωση του χάσματος μεταξύ ακαδημαϊκών ιδρυμάτων και βιομηχανίας, παρέχοντας διορατικότητες για πολιτικούς, εκπαιδευτικούς και ηγέτες της βιομηχανίας. Με την ανάδειξη των υπαρχόντων κενών και τις στοχευμένες συστάσεις, συμβάλλει στη συζήτηση για την ψηφιακή εκπαίδευση και την ανάπτυξη του εργατικού δυναμικού, διαμορφώνοντας τον δρόμο για μια πιο ψηφιακά ικανή και ανταγωνιστική Κύπρο.

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Chapter 1

Introduction

1.1 Introduction to the topic of the diploma thesis

The rise of the digital era has brought significant changes, integrating technology deeply into everyday life and business. Cyprus, with its growing IT sector, stands at a pivotal moment. The alignment—or lack thereof—between the digital skills provided by higher education and those needed in the business world is crucial and merits thorough investigation. In this thesis, jointly carried out by me and my fellow student Christodoulos, we explore how effectively Cypriot higher education equips students with the advanced digital skills required by local businesses, thus the title "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."

1.1.1 Importance of Advanced Digital Skills in the Global Context

W focused on a noticeable gap between the digital skills that organizations in Cyprus need and what local universities and colleges offer. This mismatch affects not only the job opportunities available to graduates but also the growth and competitiveness of companies in the digital sector [1][2]. We aim to comprehensively evaluate the level of advanced digital skills in Cyprus by comparing what educational institutions teach to what the industry requires, to understand how wide this gap is.

1.1.2 Specific Challenges and Opportunities in Cyprus

Moreover, this diploma thesis investigates the broader effects of this skills gap, particularly how it limits the Cypriot workforce's capacity to meet the needs of a digital economy. We also investigate how government and educational policies shape the digital skills scene, with a focus on programs aimed at building a digitally proficient workforce [3][4]. The European Commission's digital strategy for Cyprus and the national recovery and resilience plans will serve as a backdrop for assessing how well current educational strategies are working [5][6].

In our research, we employed a detailed methodology that involved conducting surveys to gather data from three main groups: higher education institutions, businesses with IT departments, and their employees. This method provided us with a thorough

understanding of the digital skills landscape in Cyprus, helping us identify both the discrepancies and similarities between what academic programs offer and what the industry needs.

Therefore, this diploma thesis not only records the current level of advanced digital skills in Cyprus but also suggests ways to enhance future curriculums and policies. By pinpointing the specific skills that are in high demand but not adequately covered by educational programs, we aim to provide actionable recommendations that could influence the future of education. The goal is to build a robust digital skills pipeline that not only boosts the career opportunities of graduates but also drives the Cypriot economy forward in the digital age.

As Cyprus navigates the challenges of digital transformation, this diploma thesis contributes to an important dialogue on how to best prepare the next generation of professionals for success in a digital world. This introduction lays the groundwork for a detailed examination of the advanced digital skills landscape in Cyprus, setting the stage for the deeper analysis that will follow in this diploma thesis.

1.2 Background of the Study

The digital revolution has fundamentally reshaped the landscape of the global economy, introducing new paradigms in how businesses operate and compete. This shift has placed a premium on advanced digital skills, turning them into a critical asset for individuals and organizations alike. In Cyprus, a country striving to enhance its digital infrastructure and competencies, the need to align educational outputs with industry requirements has never been more pronounced.

1.2.1 Evolution of Digital Technologies in Cyprus

This research is conducted in the context of a developing digital environment in Cyprus. While the nation has made steps in integrating digital technologies across various sectors, a gap persists between the digital skills taught in educational institutions and those demanded by the workforce [7][8]. This discrepancy not only limits the employability of graduates but also constrains the growth potential of businesses reliant on digital expertise.

1.2.2 Analysis of Cyprus' National Digital Strategies

The Government of Cyprus, recognizing the importance of digital proficiency, has launched initiatives aimed at bolstering the digital capabilities of its citizens and workforce. The Cyprus National Digital Strategy 2020-2025 and the Recovery and Resilience Plan outline the country's ambitions to foster a digitally skilled population that can navigate the challenges and opportunities of the digital age [2][4]. These strategic documents underscore the commitment to transforming Cyprus into a competitive, digital economy.

1.2.3 Comparison of Cyprus' Digital Transformation with Regional Trends

However, despite these policy frameworks, a tangible alignment between the skills imparted by higher education and the needs of the digital economy remains abstract. Reports and studies highlight a disconnect, pointing to a potential mismatch between the curricula offered by educational institutions and the dynamic requirements of the digital market [9][10]. This misalignment raises concerns about the efficacy of current educational programs in preparing students for the digital workforce.

In response to this challenge, this study aims to provide a granular analysis of the state of advanced digital skills in Cyprus, examining the offerings of higher education institutions considering industry demands. By conducting surveys and interviews with universities, companies, and employees, we seek to map the landscape of digital competencies, identifying areas of overlap and divergence.

The significance of this research lies in its potential to inform curriculum development and policymaking. By pinpointing the specific digital skills that are in high demand yet underrepresented in academic settings, the study aims to offer insights that can guide the evolution of educational programs towards greater relevance and responsiveness to market needs. Moreover, the study contributes to a broader understanding of digital transformation in Cyprus, shedding light on the role of education in equipping individuals with the skills necessary to thrive in a digitized economy. It addresses the critical question of how Cyprus can bridge the digital skills gap, ensuring that its workforce is poised to meet the demands of the future.

The background of this study paints a picture of a nation at a crossroads, eager to harness the potential of digital technologies but grappling with the challenge of aligning

educational outputs with market realities. Our research aims to navigate this complex landscape, offering evidence-based recommendations to propel Cyprus towards a digitally proficient future.

1.3 Statement of the Problem

In the dynamic digital landscape, the demand for advanced digital skills such as Data Analysis, Digital Marketing, Cybersecurity, Cloud Computing, Artificial Intelligence (AI), Advanced Robotics, ICT Specialists, and Semiconductors Skills is surging in Cyprus [26]. However, a pressing issue is the potential disconnect between these market needs and the advanced digital skills being imparted by the country's higher education institutions. The rapid pace of digital innovation may outstrip the speed at which academic curricula are updated, leading to a possible skills gap. This misalignment could result in a scenario where graduates, despite their academic qualifications, might not possess the practical, in-demand skills that local businesses require. This diploma thesis seeks to delve into this critical issue, emphasizing the need for a robust alignment between education and industry to ensure a thriving digital economy in Cyprus.

1.3.1 Identifying the Skills Mismatch: Education vs. Industry Demands

The problem arises when there's a noticeable gap between the digital skills that higher education institutions in Cyprus offer and what the market demands. This misalignment poses significant challenges, not only limiting the career prospects of graduates but also potentially stifling the growth of businesses and the broader economy.

1.3.2 Consequences of the Skills Gap on Cyprus' Economic Growth

The significance of advanced digital skills cannot be overstated. They are the driving force behind innovation, efficiency, and competitiveness in a digitalized global market. For Cyprus, a country with ambitions to strengthen its position in the digital domain, ensuring that its future workforce is well-equipped with these skills is paramount. However, evidence suggests that the current educational offerings may not be fully aligned with industry needs, leading to a skills gap that could hinder the nation's digital transformation efforts [11][12].

This discrepancy between the skills taught and the skills needed is not unique to Cyprus but is a global challenge that has been exacerbated by the rapid pace of technological advancement [13][14]. As digital technologies permeate every sector, the ability to adapt

and continuously update one's skill set becomes crucial. The problem in Cyprus, highlighted by various reports and studies, is the apparent lag in updating educational curricula to reflect the latest digital competencies sought by employers [15][16].

1.3.3 Projections of Future Skills Needs in the Digital Economy

Moreover, the evolving nature of digital roles means that what was considered advanced a few years ago may now be foundational, underscoring the need for educational programs to not only cover current advanced skills but also to anticipate future trends. The digital skills gap, if not addressed, risks creating a scenario where Cypriot organizations are unable to leverage new technologies effectively due to a lack of skilled personnel, and graduates find themselves ill-prepared for the demands of the modern workplace [17][18].

Considering this, our study aims to delve into the root causes of this skills gap, examining the extent to which current higher education programs in Cyprus are equipped to meet the evolving demands of the digital economy. By identifying the specific areas of misalignment, the research seeks to highlight the critical areas where interventions are needed, whether in the form of curriculum updates, increased industry-academia collaboration, or policy reforms aimed at enhancing digital education and training.

The problem of the digital skills gap is not just an educational issue but a broader economic and societal one, with implications for employment, productivity, and innovation in Cyprus in general and not only in the local businesses. Addressing this gap is essential for preparing a workforce capable of driving digital transformation and ensuring that Cyprus can fully capitalize on the opportunities presented by the digital age.

1.4 Purpose of the study

The primary aim of this study is to qualify the gap between the advanced digital skills that companies in Cyprus need and what universities and higher education systems currently provide, and to make suggestions for bridging this gap. This gap represents a critical challenge, as it affects not only the employability of graduates but also the competitiveness and innovation capacity of businesses operating in the digital landscape. By closely examining this disparity, the study seeks to offer actionable insights that could lead to meaningful changes in the curriculums of higher education institutions, ensuring they are more aligned with the real-world demands of the digital economy.

The study is designed to serve multiple purposes:

1. *Identify Specific Skills Gaps*: Through comprehensive research from many sources about the current problem of advanced digital skills in Cyprus, including surveys from academia, industry, and the workforce, this study aims to pinpoint the specific advanced digital skills that are in high demand by companies but are not adequately covered by current educational programs [19][20].

2. *Enhance Curriculum Relevance*: The insights gained from this research are intended to inform curriculum development within universities and higher education institutions. By identifying the missing links between education and industry needs, the study advocates for the integration of relevant digital skills into academic programs, making them more pertinent to the evolving job market [21][22].

3. *Foster Industry-Academia Collaboration*: The study underscores the importance of closer cooperation between educational institutions and the business sector. Such partnerships can lead to more dynamic curriculums that are responsive to technological advancements and market demands, thereby enhancing the quality of digital education and training [23][24].

4. *Inform Policy and Decision-Making*: By highlighting the current state of digital skills education in Cyprus and its alignment with industry requirements, the study aims to provide policymakers with evidence-based recommendations. These recommendations can guide strategic decisions to support digital skills development, including funding, policy reforms, and initiatives aimed at promoting digital literacy and advanced competencies [25].

Ultimately, the purpose of this study is not just to document existing gaps but to act as a catalyst for change, inspiring a shift towards more responsive and forward-looking digital skills education in Cyprus. By doing so, it aims to prepare a workforce that is not only adept at navigating the current digital landscape but also capable of driving innovation and growth in the digital era.

As we conclude our introduction to the digital transformation landscape in Cyprus, we pave the way to a deeper exploration in Chapter 2: Current Status on Advanced Digital Skills in Cyprus. This chapter delves into the existing skills landscape, assessing how well the local workforce is equipped to meet the demands of a rapidly evolving digital

economy. It will explore the alignment, or lack thereof, between the skills provided by educational institutions and those demanded by the market. We will also consider the impact of these skills on business operations and the broader economic environment in Cyprus, setting the stage for a thorough analysis of the digital readiness of both individuals and organizations across the country.

Chapter 2

Current Status on Advanced Digital Skills in Cyprus

2.1 Brief History of Digital Transformation in Cyprus

Cyprus' journey towards digital transformation mirrors the global trend of integrating digital technologies into all areas of life, reshaping how societies operate and businesses compete. This journey began in earnest in the early 21st century, as the country started to embrace the internet and digital communication, laying the groundwork for the digital economy. Over the years, Cyprus has made significant strides in digital infrastructure, expanding internet access, and fostering a tech-savvy population.

2.1.1 Early Adoption and Development of Digital Infrastructure

Cyprus has shown progress in the realm of digital skills, yet it remains below the EU average when it comes to advanced digital competencies. As of the 2022 Digital Economy and Society Index (DESI), only 21% of Cypriots possess advanced digital skills, which is significantly lower than the EU average of 26%. This indicates a pressing need for the country to enhance its digital literacy, particularly at higher skill levels. Despite this, Cyprus does exhibit a stronger foundation in basic content creation skills, with 60% of the population equipped with at least fundamental abilities, closely approaching the EU average of 66%. The proportion of ICT specialists in the workforce also falls short of the EU benchmark, with Cyprus at 3.9% compared to the EU's 4.5%1. Moreover, the gender gap in ICT specialization persists, with women representing 19% of ICT specialists, mirroring the EU average. These figures underscore the critical necessity for Cyprus to bolster its digital education and training initiatives to cultivate a digitally proficient workforce capable of meeting the demands of a rapidly evolving digital economy [26].

2.1.2 Strategic Initiatives and Roadmaps

The pivotal moment came with the launch of the "Cyprus National Digital Strategy 2020-2025" by the European Commission, which set a clear roadmap for the country's digital transformation. This strategy aimed to enhance digital skills, promote digital innovation, and ensure that digital technologies permeate all sectors of the economy as well as promote the advanced digital skills to a wider range of people [2]. It marked a commitment to not only improving the digital skills of the general populace but also ensuring that these skills are aligned with the needs of the modern workplace.

The strategy outlines a multi-faceted approach that involves closer collaboration between academia, government, and the private sector. Key initiatives include the integration of industry-specific digital skills into academic curricula and promoting continuous professional development through digital upskilling and reskilling platforms. A central component is the development of a digital-friendly ecosystem that encourages innovation and entrepreneurship, particularly in the ICT sector, supported by investments in digital infrastructure to ensure broad access to high-speed internet. This infrastructure is crucial for the effective implementation of cutting-edge technologies in educational and business environments. The strategy also emphasizes the importance of adapting educational programs to meet emerging industry needs, particularly in advanced technologies like AI, cybersecurity, and data analytics, ensuring that the workforce is equipped for current and future challenges. This comprehensive approach aims to transform Cyprus into a digitally empowered society with a resilient, competitive economy that bridges the gap between education and industry, fostering a knowledge-based economy that is well-aligned with global digital trends [2].

2.1.3 Role of Educational and Government Programs

In parallel, initiatives like the Human Resource Development Authority of Cyprus' programs on "Acquisition of Digital Skills" have been instrumental in upskilling the workforce and preparing it for the digital challenges of the future [1]. These initiatives reflect a broader recognition of the importance of digital literacy and advanced digital skills as key drivers of economic growth and competitiveness.

The "Cyprus Recovery and Resilience Plan," endorsed by the European Commission, further underscores the country's dedication to digital transformation. It allocates significant resources towards digitalizing public services, boosting digital skills, and fostering a digital-friendly business environment [4]. This plan is part of a wider European effort to recover from the economic impacts of the COVID-19 pandemic, with digital transformation at its core.

2.1.4 Supporting Digital Economy Through Research and Innovation

Research centers such as the KIOS Research and Innovation Center of Excellence have been pivotal in advancing Cyprus’s digital transformation. By fostering partnerships with industry leaders and academic institutions, KIOS has positioned itself at the vanguard of digital innovation and research, significantly contributing to the development of the

country's digital ecosystem [6]. A notable initiative is KIOS's collaboration with 15 organizations aimed at accelerating digital transformation across various sectors in Cyprus. This partnership focuses on enhancing advanced digital skills through targeted training programs and practical workshops, designed to bridge the gap between current educational outputs and industry needs. These programs are particularly concentrated on equipping professionals with skills in emerging technologies such as the Internet of Things (IoT), artificial intelligence (AI), and cybersecurity, which are critical for the modernization of industries ranging from telecommunications to healthcare and public safety. By aligning its research objectives with the national digital strategy, KIOS not only enhances Cyprus' research capacity but also ensures that the workforce is well-prepared to meet the challenges of a rapidly evolving digital landscape [6].

CYENS, formerly known as RISE, is crucial to the digital transformation efforts in Cyprus, enhancing the nation's economic competitiveness and resilience through cutting-edge technology and research. A joint venture between the three public universities of Cyprus, University of Cyprus, Cyprus University of Technology and the Open University of Cyprus, the Municipality of Nicosia, and two renowned international partners, the Max Planck Institute for Informatics, Germany, and the University College London, United Kingdom, CYENS focuses on interactive media, smart systems, and emerging technologies [28][29]. It plays a significant role in projects such as creating Nicosia's digital twin, enhancing digital literacy and accessibility among businesses and the public sector through the DiGiNN hub collaboration, and spearheading initiatives like the RISE IMET conference on the digital transformation of museums and heritage sites. This hub integrates support from major local and international stakeholders, accelerating digital adoption and fostering innovative collaborations across various sectors [30][31][32].

2.1.5 Challenges in Education and Industry Alignment

However, despite these efforts, challenges remain in fully aligning the educational system with the rapidly changing demands of the digital economy. Reports and studies, including the ICT Cyprus Report 2021 by the Cyprus Computer Society, highlight ongoing gaps in the digital skills provided by higher education institutions and those required by the industry [16]. These gaps underline the need for continuous adaptation and collaboration between the educational sector, the government, and the private sector to ensure that Cyprus's workforce is equipped for the digital age.

According to the IDC report (see Figure 1), Cyprus' IT market has progressively embraced advanced technologies, facilitated by government strategies and investment in digital infrastructure like broadband and 5G [16].

As a result, this evolution is marked by a steady increase in IT spending, with the IT services segment growing notably due to the heightened focus on digital skills in cybersecurity, cloud computing, and software development [16]. The COVID-19 pandemic further accelerated this shift, as companies rapidly adopted remote working technologies and cloud services to maintain operations, which in turn increased the demand for relevant skills. Educational institutions and government initiatives have been critical in this transition, aiming to bridge the gap between the skills taught and the industry's needs. However, despite these efforts, there remains a notable skills gap, particularly in areas such as cloud technology and data analytics, driven by the rapid pace of technological change and the slow response of educational curricula to these market dynamics [16].

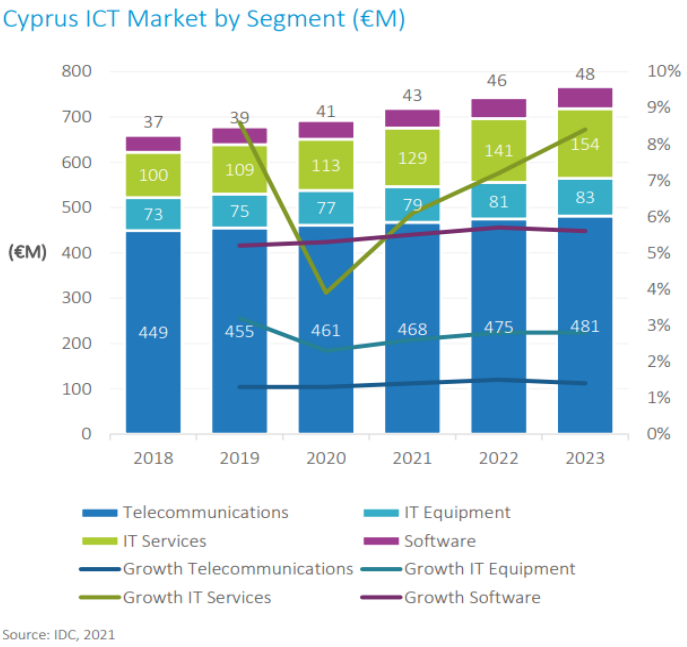

Figure 1: Cyprus ICT Market by Segment ,IDC, 2021

The history of digital transformation in Cyprus is marked by significant achievements and ongoing efforts towards creating a digitally enabled society and economy. The strategic initiatives and plans set forth by both the national government and the European Commission, coupled with the contributions of research institutions and the private sector, underscore a collective commitment to digital progress. Yet, the journey is far from complete, with the alignment of education and industry needs posing a significant challenge that this study aims to address.

2.2 Impact of Digital Transformation on Businesses and Education in Cyprus

2.2.1 Enhancing Business Competitiveness Through Digital Skills

Digital transformation in Cyprus has significantly influenced both the business sector and the educational landscape. For businesses, the shift towards digitalization has opened new avenues for innovation, operational efficiency, and market expansion. Companies are increasingly reliant on advanced digital skills to leverage technologies such as big data analytics, cloud computing, and cybersecurity, which are essential for staying competitive in today's fast-paced digital economy [5][19]. The development of a supercomputer by ASBIS in collaboration with Lenovo exemplifies the technological strides being made within the country, underscoring the growing importance of high-level digital competencies in driving technological advancement and business growth [19].

2.2.2 Adapting Educational Curricula for Digital Demands

On the educational front, the digital transformation has prompted a reevaluation of curriculums and teaching methodologies. The increasing demand for advanced digital skills in the workforce has highlighted the need for educational institutions to adapt and align their programs with the evolving requirements of the digital age [15].

In addition, Cyprus is also taking significant steps to enhance advanced digital skills. The government has launched a new call for proposals under the Digital Europe Program. This includes specialized education programs in key digital areas such as Artificial Intelligence (AI), blockchain, robotics, quantum, and High-Performance Computing (HPC), provided by networks of higher education institutions, research centers, and businesses. These programs aim to develop advanced digital skills that are crucial for the digital transformation of businesses.

Furthermore, the Digital Education Action Plan (2021 – 2027) is another initiative that aims to enhance the digital skills of citizens and businesses, as well as the skills required for the digital transformation. This plan supports the development of digital skills and skills for the digital transformation and ‘resets’ education and training in Europe for the digital age [27].

These efforts reflect the commitment of Cyprus to adapt its educational curricula to meet the advanced digital demands of businesses in the country. By doing so, they are not only

preparing their students for the digital age but also ensuring that their workforce remains competitive in the global digital marketplace [27].

2.2.3 Government's Role in Digital Skills Enhancement

Furthermore, the "Cyprus National Digital Strategy 2020-2025" and the "Cyprus Recovery and Resilience Plan" emphasize the government's commitment to enhancing digital skills among the populace and integrating digital technologies into the education system [2][4]. These strategies aim to ensure that the workforce is equipped with the necessary digital competencies to thrive in a digitized economy and that educational institutions become catalysts for digital innovation.

The impact of digital transformation on education also extends to the development of digital literacy programs and the incorporation of digital tools in teaching and learning processes. The "Digital Skills Frameworks and Programs" document by the World Bank and the "DigComp 2.2: The Digital Competence Framework for Citizens" provide comprehensive frameworks for understanding and developing digital competencies, which are increasingly being integrated into educational curricula in Cyprus [3][20].

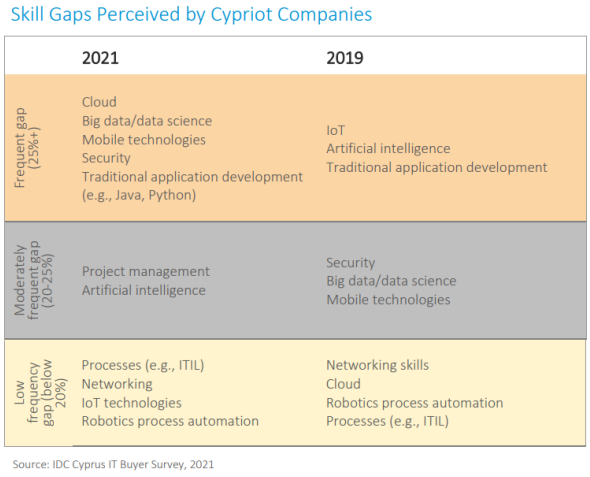

Figure 2: IDC Cyprus Buyer Survey, 2021

However, despite these positive developments, challenges persist. The "ICT Cyprus Report 2021" (see Figure 2) highlights a gap between the digital skills taught in educational institutions and those required by the industry, indicating that more needs to be done to fully align educational outputs with market needs [16]. This skills gap can hinder the ability of businesses to fully capitalize on digital opportunities and may limit the employability of graduates in the digital economy.

The "Digitalization in Europe 2021-2022" report (see Figure 3) reveals several key insights. Cyprus is notably proactive in its investments in software and data, achieving a high score of 68 on the EIBIS Corporate Digitalization Index for this category, surpassing the European Union average of 54 (see Figure 3). Despite this, the overall adoption of advanced digital technologies in Cyprus is slightly below the European average, with 46% of Cypriot firms integrating these technologies compared to the EU average of 49% [27]. This suggests that while Cyprus is committed to funding digital infrastructure, the application of such technologies in business operations could be further enhanced. Additionally, Cyprus' score of 48 in strategic business monitoring indicates a potential area for improvement in integrating digital strategies more effectively into business practices. This analysis underscores the necessity for Cyprus to not only continue investing in digital skills and infrastructure but also to enhance the practical application of these technologies to fully leverage their benefits and align more closely with Europe's digital frontrunners.

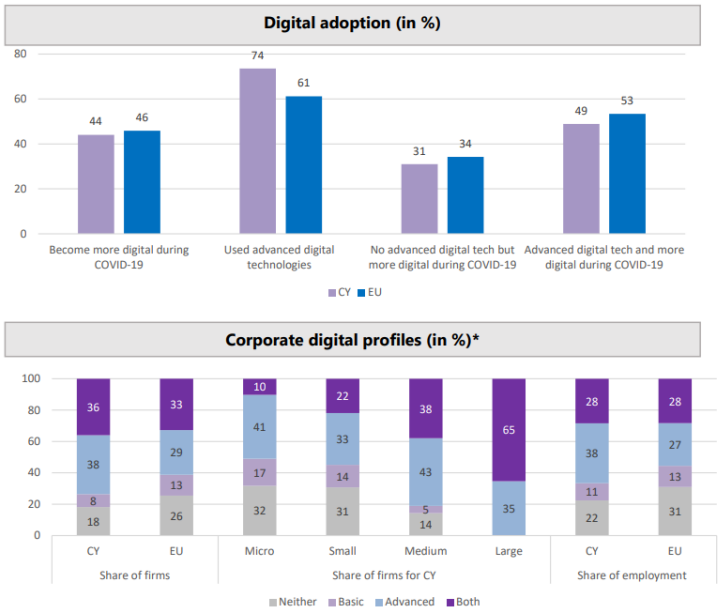

Figure 3: Digital Adoption of Cyprus, Digitalization in Europe 2021-2022

2.3 Government and Educational Initiatives to Improve Digital Skills in Cyprus

2.3.1 National Strategies and Plans

To enhance digital skills in Cyprus, both the government and educational institutions have launched various initiatives. These efforts aim to ensure that the Cypriot workforce is equipped with the necessary digital competencies to navigate and thrive in the digital era.

As discussed before, the "Cyprus National Digital Strategy 2020-2025," outlined by the European Commission, is a cornerstone initiative demonstrating the government's commitment to digital transformation. This strategy aims to foster a digitally competent society and economy by enhancing digital skills across all levels of the population,

ensuring that the workforce is ready for the challenges and opportunities presented by the digital age [2].

2.3.2 Leveraging EU Funds for Digital Capability

In support of this strategy, the "Cyprus Recovery and Resilience Plan" provides a comprehensive roadmap for leveraging EU funds to bolster the country's digital capabilities. This plan includes significant investments in digital infrastructure, such as the deployment of Very High-Capacity Networks (VHCN) to improve connectivity. It also focuses on the digitalization of public services to enhance the online interaction between public authorities and citizens. Furthermore, the plan introduces initiatives specifically designed to enhance digital education and training across all population groups, thereby fostering a skilled and adaptable workforce.

To further advance digital skills, the plan outlines strategies for upskilling and reskilling the workforce, particularly in emerging digital technologies. It emphasizes the importance of integrating digital literacy into the education system, from early childhood education to higher education. The plan also includes measures to support small and medium-sized enterprises (SMEs) in adopting digital tools and processes, which is crucial for their competitiveness and innovation. Additionally, it aims to address the digital divide by ensuring that disadvantaged groups have access to digital training and resources.

2.3.3 Upskilling Through Human Resource Programs

The Human Resource Development Authority of Cyprus has been instrumental in driving forward the agenda for digital skill acquisition. Through various programs, the authority aims to upskill and reskill the Cypriot workforce, ensuring that individuals have access to the training needed to develop advanced digital skills [1]. These programs are tailored to meet the evolving demands of the job market, ensuring that the skills taught are directly relevant to the needs of businesses.

2.3.4 Academic Contributions to Digital Skills Development

Educational institutions in Cyprus are also playing a pivotal role in this digital upskilling effort. Universities and higher education institutions are increasingly integrating digital skills into their curriculums, recognizing the importance of these competencies for student employability and success. For instance, the introduction of the AI master's program at the University of Cyprus and elective courses at the University of Nicosia like Blockchain

are prime examples of how curriculums in higher education institutions are adapting to include new advanced digital skills, reflecting the evolving needs of the digital economy.

Furthermore, initiatives like the "Digital Skills Frameworks and Programs" by the World Bank and the "DigComp 2.2: The Digital Competence Framework for Citizens" provide comprehensive frameworks for understanding and developing digital competencies. These frameworks serve as valuable resources for educational institutions in designing curricula that align with international standards and best practices in digital education [3][20].

Collaboration between academia and industry is another key aspect of these initiatives. The KIOS Research and Innovation Center of Excellence, for example, collaborates with various organizations to accelerate digital transformation in Cyprus. By fostering partnerships between educational institutions and the private sector, KIOS contributes to the development of an ecosystem that supports innovation and skills development [6].

2.4 Gap Between Industry Needs and Educational Offerings

2.4.1 Identifying the Skills Mismatch

In Cyprus, the evolving digital landscape presents a significant challenge: the gap between the advanced digital skills demanded by industries and those offered by educational institutions. This discrepancy not only impacts the employability of graduates but also the ability of businesses to innovate and grow in a digital-centric market.

2.4.2 Response to Technological Advancements

Industry needs are rapidly changing, with companies requiring skills in areas like cybersecurity, data analytics, artificial intelligence, and cloud computing to stay competitive [5][19]. These skills enable businesses to leverage new technologies, enhance their operations, and offer innovative services. The demand for such advanced competencies is echoed in initiatives like the development of a supercomputer by ASBIS in collaboration with Lenovo, showcasing the high-tech aspirations of Cypriot companies [19].

2.4.3 Reports and Studies in Highlighting Discrepancies

However, educational institutions are struggling to keep pace with these industry demands. While there is a clear effort to integrate digital skills into curriculums, there remains a noticeable lag in updating courses to reflect the latest technological

advancements and industry needs. This delay in curriculum adaptation contributes to the skills gap, leaving graduates underprepared for the digital challenges they will face in the workplace.

The "ICT Cyprus Report 2021" accentuates the significant gap between the digital competencies taught in educational institutions and those required by the industry, highlighting a disconnection that threatens the alignment necessary for economic growth and innovation [16]. This sentiment is echoed by the "European Skills and Jobs Survey," which stresses the critical need for closing this skills gap to empower the workforce effectively [13]. The IDC report further explores this discrepancy, notably within the IT services sector, which has seen substantial growth driven by heightened demands for advanced digital skills such as cybersecurity, cloud computing, and software development.

Despite efforts to enhance educational curriculums, there is a marked lag in incorporating necessary skills rapidly enough to meet industry needs. This misalignment is particularly evident in emerging technology areas, where the rapid pace of innovation outstrips the static nature of traditional education models. The report provides a detailed analysis which illustrates the challenges Cypriot companies face in 2021, prominently featuring the skills gap [16].

2.4.4 Strategies to Close the Gap

Cyprus is actively working to close the gap between advanced digital skills offered in education and those demanded in the industry, fostering a competitive and innovative economy. Central to this strategy, as outlined in the "Digital Strategy 2020-2025" document, is the development of a robust digital infrastructure, alongside the modernization of educational curricula to integrate cutting-edge digital skills like AI, machine learning, and blockchain technology [2]. This approach is complemented by initiatives to upgrade research and educational facilities, which will support the hands-on training necessary for students to excel in a digital-first job market. Additionally, there is a push towards enhancing digital literacy across all levels of the workforce, ensuring that current employees are not left behind in the rapidly evolving technological landscape. The strategy aims not only to supply the domestic labor market with adequately skilled professionals but also to attract digital businesses to Cyprus by showcasing a highly skilled and adaptable workforce [4]. This comprehensive approach ensures that Cyprus

not only meets the current digital demands but is also prepared for future technological advancements.

The "Digital Skills Frameworks and Programs" by the World Bank and the "DigComp 2.2: The Digital Competence Framework for Citizens" offers comprehensive frameworks for digital skill development [3][20]. These resources can guide educational institutions in designing curricula that better align with industry needs, but the adoption and implementation of such frameworks in educational programs are critical to bridging the skills gap.

In response to the widening gap between the advanced digital skills provided by educational institutions and those demanded in the industry, Cyprus has taken strategic steps outlined in its future digital strategy. Cyprus aims to update and adapt its educational curricula to better align with current industry demands [20]. This includes fostering a deeper integration of digital skills that are crucial for the modern workforce, such as data analytics, cybersecurity, and cloud computing. To support this, there is an ongoing emphasis on enhancing teacher training, developing new learning materials, and integrating digital competence across all levels of education [20]. Furthermore, the strategy highlights the importance of continuous learning and professional development to ensure that the current workforce can adapt to rapidly changing technological landscapes. This approach is supported by initiatives that encourage lifelong learning and the upskilling of existing employees to prevent skill obsolescence.

The gap between industry needs and educational offerings in Cyprus regarding advanced digital skills is a pressing issue. Bridging this gap requires a concerted effort from educational institutions, the government, and the private sector to ensure that curricula are responsive to the rapidly evolving digital landscape. By aligning educational programs with industry demands, Cyprus can better prepare its workforce for the challenges and opportunities of the digital economy.

At the conclusion of this chapter, which detailed the current status of advanced digital skills in Cyprus and their impact on local businesses and the broader economy, we now transition to Chapter 3: Methodology. This chapter outlines the research methods employed to gather and analyze the data critical to understanding the alignment between Cyprus's educational offerings and the digital skills demands of the workforce. We will

explore the survey and interview techniques utilized, the selection criteria for participants, and the analytical frameworks applied to interpret the findings. This methodological foundation is essential for ensuring the reliability and validity of the research outcomes discussed in subsequent chapters.

Chapter 3

Methodology

The methodology of this diploma thesis is centered around using questionnaires as the primary tool for collecting data from three key groups: companies, higher education institutions, and employees within those companies in Cyprus. This approach aims to gather comprehensive insights into the current state of advanced digital skills, identifying the gap between industry needs and educational offerings.

3.1 Research Design

The study adopts a mixed-methods approach, leveraging both quantitative and qualitative data gathered through structured questionnaires. This design allows for a broad quantitative analysis of trends and patterns, as well as a deeper qualitative understanding of the contexts and nuances behind the data. This approach is particularly effective in exploring the multifaceted nature of digital skills in the workforce and education sector.

3.2 Data Collection Methods

3.2.1 Questionnaire Development

Questionnaires were developed for each target group, tailored to extract specific information relevant to their experiences and perspectives on advanced digital skills. A total of 120 companies, along with their employees, and 30 institutions were solicited to respond to the questionnaires:

- **Companies**: The questionnaire for companies focused on identifying the specific advanced digital skills they seek in their employees, the challenges they face in finding skilled talent, and their views on the adequacy of current educational programs in meeting their needs [16][19].
- **Higher Education Institutions**: The questionnaire for educational institutions aimed to gather information on the advanced digital skills curriculums currently offered, any planned updates to these curriculums, and the institutions' engagement with the industry to ensure the relevance of their programs [15][21].
- **Employees**: The questionnaire for company employees sought to understand their current level of digital skills, the training opportunities available to them, and their perceptions of the gaps in their digital education [14][24].

3.2.2 Distribution and Administration

The distribution method involved using online survey tools to facilitate easy access and efficient collection of responses. These tools also allowed for the handling of a large volume of data securely and anonymously, ensuring participant privacy and data integrity [16][21].

3.3 Data Analysis Techniques

3.3.1 Quantitative Analysis

Data from the questionnaires were analysed using online tools for quantitative responses and content analysis for open-ended qualitative responses. The quantitative analysis identified trends and commonalities across responses, while the qualitative analysis delved into detailed insights and narratives that support or contrast with the quantitative findings [3][10].

Open-ended responses were analysed using content analysis to identify common themes and patterns. This involved organizing the data into categories and themes that emerged from the responses.

3.4 Ethical Considerations

3.4.1 Participant Confidentiality

Ethical guidelines were strictly followed, ensuring the anonymity and confidentiality of all participants. Informed consent was obtained from all participants, with an assurance that the data collected would be used solely for the purposes of this research.

Clear, concise, and jargon-free informed consent forms were used to ensure that participants fully understood the purpose of the research and the use of the data collected. They were also informed of their right to withdraw from the study at any point without penalty [24].

3.5 Limitations

3.5.1 Sampling Limitations

While efforts were made to ensure a representative sample, the convenience sampling method may introduce biases that could affect the generalizability of the results. Future research could consider using stratified random sampling to better represent the population [13].

3.5.2 Response Bias

Response bias could affect the validity of the data, especially in self-report measures. To counteract this, the questionnaires were carefully designed to be neutral and to encourage honesty without leading the participant to a particular answer [7][13].

3.6 Expected Outcomes

It is anticipated that the study will elucidate the mismatch between the digital skills provided by educational institutions and those demanded by the industry, providing empirical evidence to support targeted improvements in curriculum design and policymaking. This could ultimately enhance the employability of graduates and the competitiveness of businesses in Cyprus.

Following the detailed exploration of methodologies used in our study presented in Chapter 3, we now turn to Chapter 4: Companies on Advanced Digital Skills. This chapter delves into the corporate perspective, examining how companies within Cyprus are integrating and leveraging advanced digital skills to enhance their competitiveness and innovation capabilities. We will analyze the strategies that firms employ to train and develop their workforce, the challenges they face in this digital upskilling journey, and the successes they have achieved. This analysis will provide a deeper understanding of the role that corporate initiatives and workplace cultures play in the broader ecosystem of digital skills development.

Chapter 4

Research 1 – Companies on Advanced Digital Skills

Chapter 4 delves into the current landscape of advanced digital skills within companies operating in Cyprus. This analysis explores how businesses perceive and integrate these skills, focusing on their strategic approaches to training, skill utilization, and future planning. By examining how companies manage and prioritize digital skills development, this chapter seeks to uncover the broader impact on the industry's competitiveness and innovation capacity. Through interviews and survey data from key stakeholders, we aim to provide a comprehensive view of how companies are responding to the ever-evolving digital demands of the modern marketplace.

4.1 Presentation of survey results

4.1.1 Identifying Key Skills

Primary Advanced Digital Skills Sought by Companies

In the rapidly evolving technological landscape of Cyprus, companies place a significant emphasis on various advanced digital skills when hiring for their IT departments. The survey data reveals that skills in **Data Analysis and Data Science**, **Cybersecurity**, **Cloud Computing**, and **Software Development** are particularly valued (see Figure 4). This diversity in skills demand mirrors the multifaceted challenges and opportunities presented by digital transformation across industries. Companies recognize the critical role these skills play in data-driven decision-making, securing online and cloud-based platforms, and developing scalable and efficient software solutions. These skills are foundational to driving innovation and maintaining competitive advantage in a digital-first world.

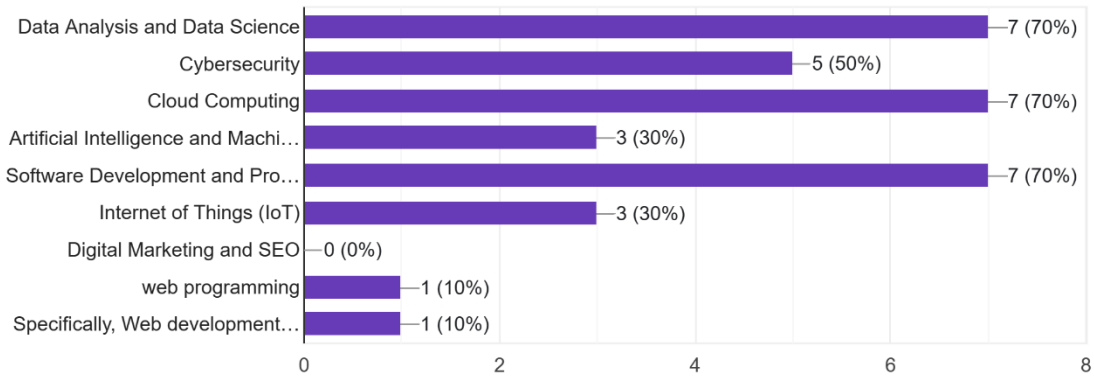

Figure 4: What are the primary advanced digital skills you seek in candidates when hiring your IT department? (Select all that apply)

4.1.2 Training and Development Strategies

Ongoing Training and Development

Our findings indicate that companies are committed to the continuous enhancement of their IT employees' capabilities through structured training programs. The predominant methods include **internal training programs**, **external workshops**, and **online learning platforms** (see Figure 5). This approach not only helps in keeping the skills of existing employees up to date but also in cultivating a learning culture that adapts to new technologies and methodologies. These are essential for companies aiming to leverage the latest technological advancements and improve their operational efficiencies.

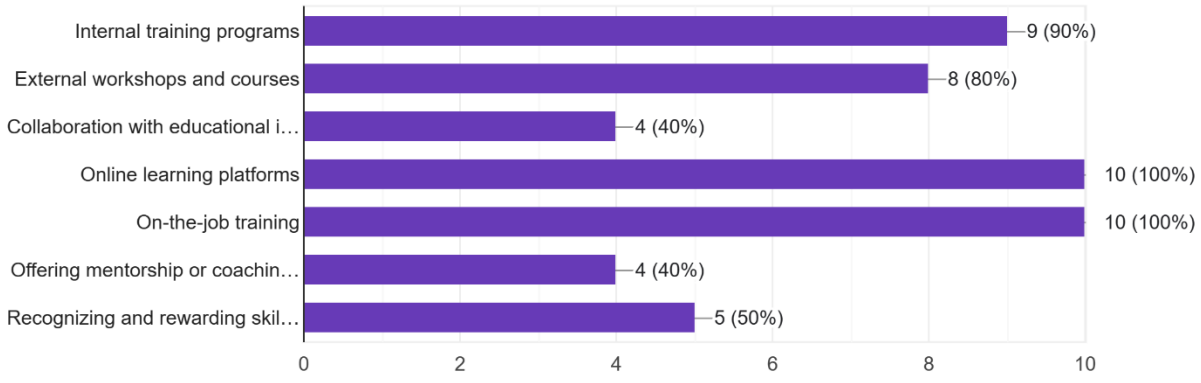

Figure 5: How do you provide ongoing training and development for your IT employees in advanced digital skills? (Select all that apply)

Encouragement for Additional Certifications

It is evident from the survey that there is a strong encouragement for IT employees to pursue additional certifications or training in advanced digital skills (see Figure 6).

Companies often support these endeavors through financial assistance or paid leave, demonstrating a commitment to employee development. This not only enhances the skill set within the company but also boosts employee morale and job satisfaction by supporting their professional growth.

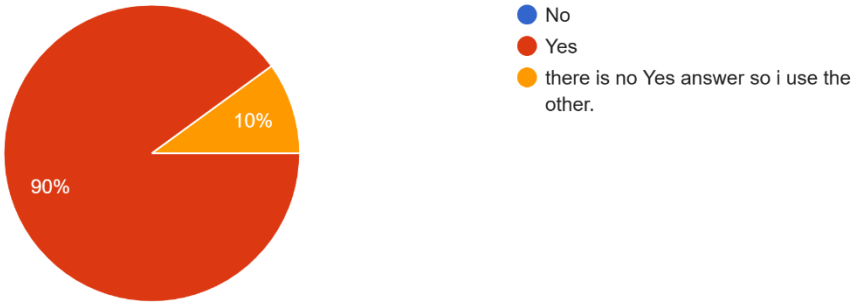

Figure 6: Do you encourage IT employees to pursue additional certifications or training in advanced digital skills? If yes, how? (Other...)

Frequency of Skills Assessments

Regular assessment of skills is a common practice among companies, with many conducting evaluations on a semi-annual basis (see Figure 7). This regularity helps in maintaining a workforce that is proficient in the latest digital technologies and methodologies, thereby ensuring that the company remains at the cutting edge of technological advancement. It also aids in planning further educational programs and identifying urgent training needs.

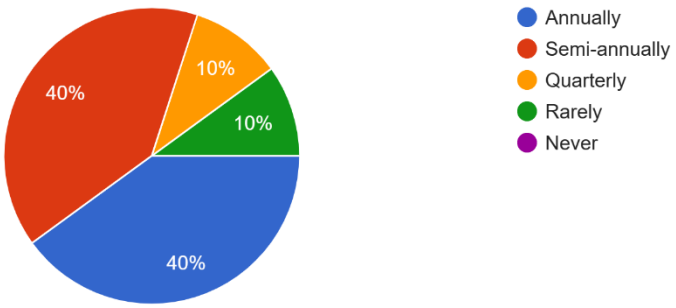

Figure 7: How often do you conduct skills assessments or evaluations for your employees to gauge their digital skills proficiency?

4.1.3 Support and Resources

Financial Support for Further Education

Our research highlights a significant trend among companies to provide financial support or incentives for employees seeking further education or certifications in digital skills (see Figure 8). This support manifests in various forms, such as tuition reimbursement, scholarships, or bonus structures. By investing in their employees' education, companies not only enrich their skill pool but also enhance loyalty and reduce turnover rates.

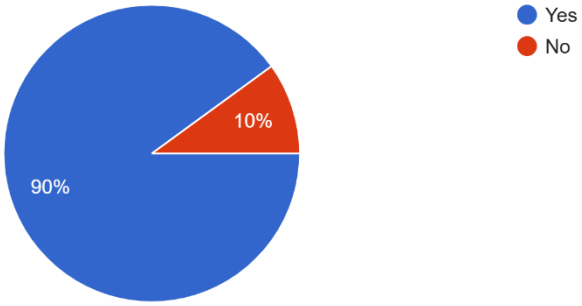

Figure 8: Do you provide financial support or incentives for employees who pursue further education or certifications in digital skills?

Additional Resources for HR Departments

Respondents indicated that additional resources such as **increased budgets for training and development**, access to a **wider range of training materials**, and better **strategic planning tools** could significantly enhance HR capabilities in addressing digital skills development (see Figure 9). These resources would enable HR departments to design more effective training programs and better support the strategic goals of the organization.

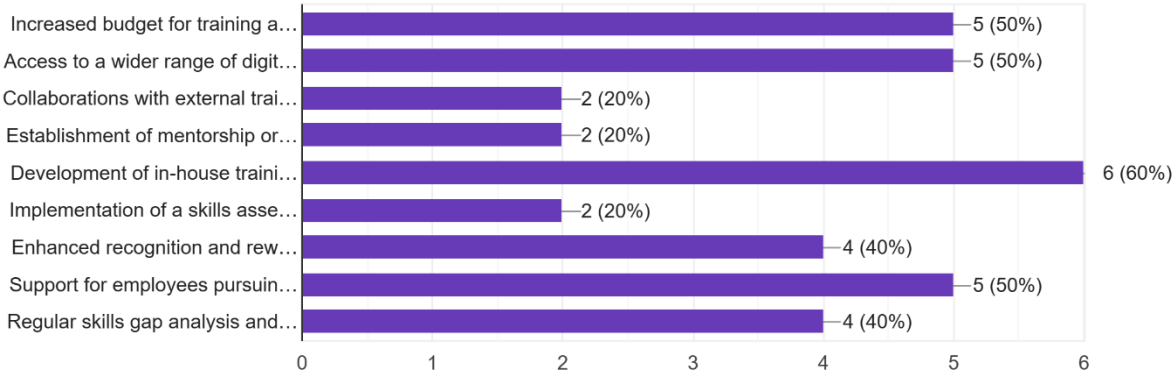

Figure 9: What additional resources or support would assist you HR department in better addressing the digital skills development needs of your employees and the company as a whole?

4.1.4 Skill Assessment and Alignment

Assessment of Advanced Digital Skills

To ensure that their IT workforce meets the high standards required for today's digital challenges, companies utilize a variety of methods to assess the advanced digital skills of their employees. These include **regular skills assessments, project outcomes**, and **performance evaluations** (see Figure 10). Such assessments are crucial for identifying skill gaps and areas for improvement, ensuring that employees can effectively contribute to the company's objectives and projects with high proficiency and accuracy.

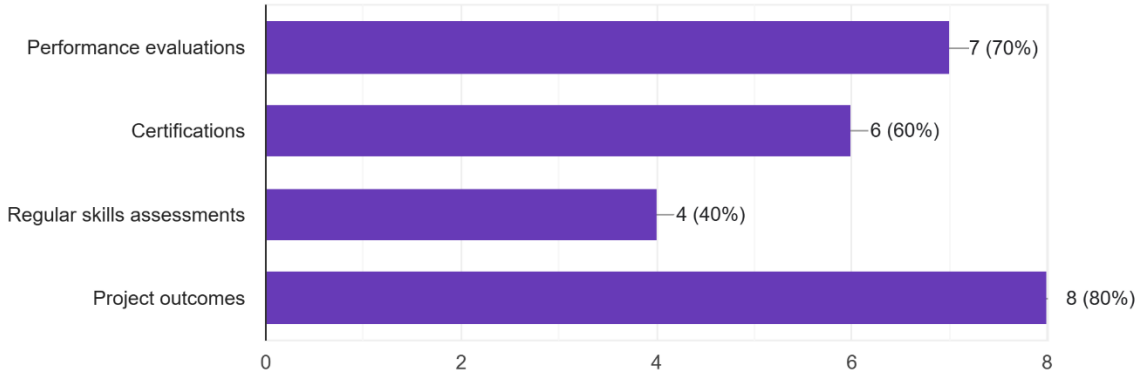

Figure 10: How do you assess the advanced digital skills of your IT employees?

Alignment of Skills with Organizational Needs

The survey reveals a generally high level of satisfaction with the alignment between employees' digital skills and the strategic needs of organizations (see Figure 11). This alignment is critical for the seamless integration of new technologies and methodologies into existing business processes. When skills and business needs are well-aligned, companies experience increased efficiency and a stronger competitive edge in the market.

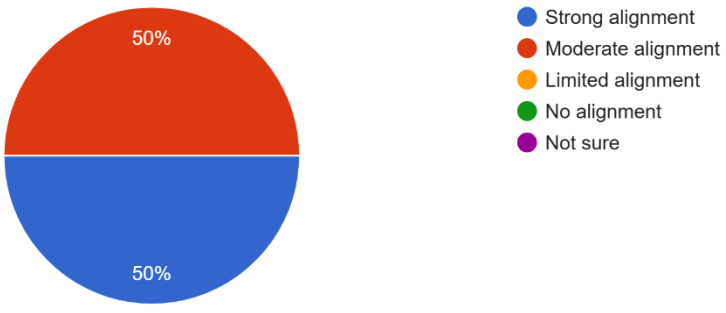

Figure 11: How would you rate the alignment between the digital skills of your current workforce and the evolving needs of your organization?

4.1.5 Challenges and Recruitment

Challenges in Attracting or Retaining Employees

Attracting and retaining top talent in IT is a significant challenge for companies, largely due to the competitive nature of the digital skills market. The high demand for advanced skills often leads to a scarcity of available talent, making recruitment and retention critical strategic concerns. As seen below most companies face challenges in finding people with the digital skills that they prefer as well as retaining the employees with those skills. Companies must, therefore, develop attractive offers and career development opportunities to retain skilled professionals and reduce recruitment costs (see Figure 12).

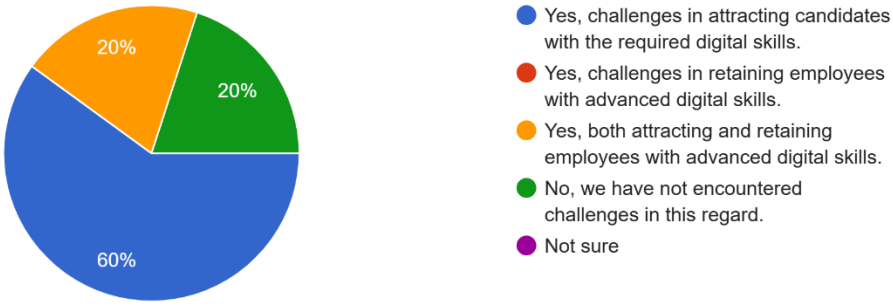

Figure 12: Have you encountered any challenges in attracting or retaining employees with advanced digital skills in your industry?

Gaps in the Industry Field

The questionnaire results from companies with IT departments highlight a significant prevalence of skills gaps in areas crucial for current technological demands. Predominantly, gaps in Artificial Intelligence (AI) and Machine Learning (ML), Software Development and Programming, and Cybersecurity skills are consistently noted, pointing to a widespread industry challenge in adapting to rapid technological advancements and evolving security landscapes. Additionally, skills in Cloud Computing and Data Analysis and Data Science are frequently cited as deficient, alongside specific mentions of Internet of Things (IoT) and niche skills like Web development with the Django framework (see Figure 13). This variety of deficiencies across companies, coupled with some reporting no significant gaps and others being unsure, underscores the diverse stages of digital transformation and the urgent need for enhanced training programs and strategic workforce development to secure innovation and robust digital infrastructures.

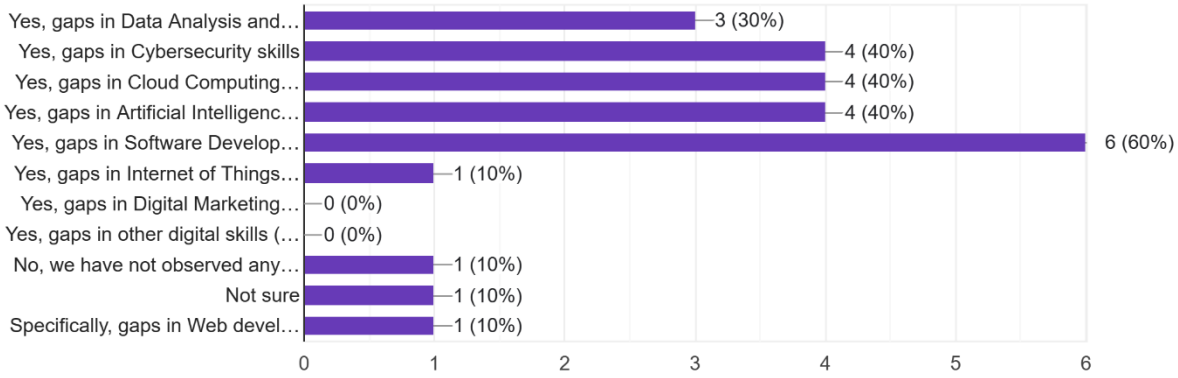

Figure 13: Have you identified gaps in the field of Advanced Digital Skills from your employees?

4.1.6 Proactive Identification and Planning

Identification of Digital Skills Needs

Identifying the necessary digital skills within an organization is achieved through a holistic approach that includes **employee feedback, analysis of project requirements**, and **strategic planning sessions** (see Figure 14). This comprehensive method ensures that all potential areas of improvement are considered and that the training programs are well-targeted to meet both current and future needs.

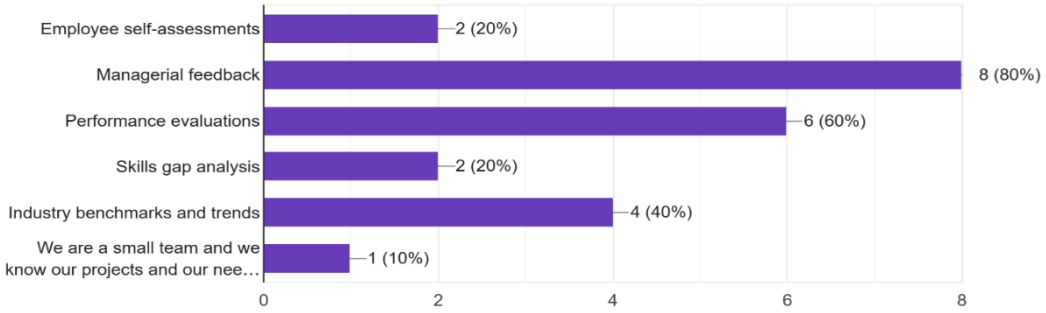

Figure 14: How do you currently identify the digital skills needs within your organization? (Select all that apply)

Future Digital Skills

Looking towards the future, there is a clear consensus among companies that skills in **Artificial Intelligence and Machine Learning** as well as other skills like **Cybersecurity, Cloud Computing and Big Data Analytics** will be crucial (see Figure 15). This foresight into future skill requirements is vital for companies to begin preparing now, ensuring that their workforce is ready to leverage these technologies for enhanced productivity and innovation.

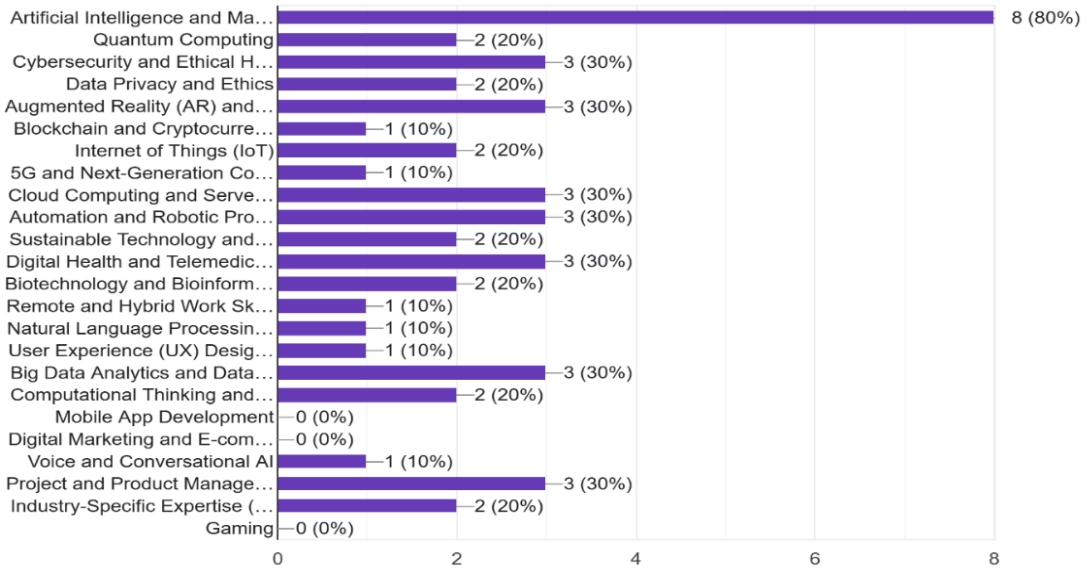

Figure 15: What future digital skills do you think will be important in ten years from now? Please select the skills you believe will be crucial.

4.2 Summary of Findings

The detailed analysis of the survey data provides a comprehensive overview of the current state and future directions of digital skills within IT departments of companies in Cyprus. Companies are actively engaging in multiple strategies to maintain a skilled workforce capable of handling the demands of a digital economy. These strategies include regular training, rigorous skill assessments, and substantial support for continuous learning. However, challenges in talent acquisition and retention highlight the need for enhanced strategies in HR practices and education alignment. Overall, the commitment to developing a highly skilled workforce is evident, and the insights gained from this survey will undoubtedly contribute to shaping more effective digital skills strategies in the future.

Building upon the insights gained from Chapter 4, which examined the integration of advanced digital skills within companies, Chapter 5: Research 2 – Employees on Advanced Digital Skills, shifts focus to the experiences and perceptions of individual employees. In this chapter, we will explore the alignment between the digital skills that employees possess and those required by their roles. Through detailed survey results, we will assess the effectiveness of current training programs and explore areas where employees feel further education and skill development are necessary. This chapter aims to provide a comprehensive view of the workforce's readiness to meet the demands of a digitally evolving workplace.

Chapter 5

Research 2 – Employees on Advanced Digital Skills

Chapter 5 delves into the specific digital skills that employees in Cyprus possess and the training they receive to enhance these capabilities. By focusing on the workforce's perspective, this chapter provides critical insights into the alignment—or misalignment—between the skills employees have acquired and those demanded by the marketplace. The primary data collection method for this research involved detailed questionnaires distributed to employees across various sectors. These surveys explored areas such as the availability and effectiveness of ongoing professional development, self-assessment of skill levels, and perceived gaps in digital training. This chapter aims to highlight opportunities for enhancing employee training programs, ensuring that the workforce is well-equipped to meet current and future technological demands. Through this analysis, we seek to understand better how well-prepared Cyprus's employees are to contribute effectively in a digitally driven economy.

5.1 Presentation of survey results

5.1.1 Demographics

Gender Distribution of Survey Respondents

The gender distribution of the survey respondents reflects a significant male dominance, with a male to female ratio of more than two to one (see Figure 16). Out of thirty respondents, twenty-three are male, six are female, and one prefers not to disclose their gender. This distribution raises questions about gender diversity within the IT sector in Cyprus, particularly in relation to digital skills proficiency. Such a disparity may indicate a broader industry trend where men might be more prevalent in IT roles, potentially affecting diversity in digital skills development and career advancement opportunities in the sector. This gender imbalance underscores the need for targeted initiatives to

encourage more female participation in tech-related fields, ensuring a more inclusive digital skills landscape.

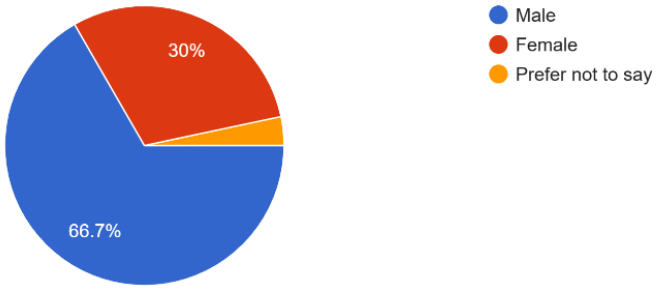

Figure 16: Gender

Age Distribution of Survey Respondents

The age distribution of the survey participants spans across a range from young adults to senior professionals, providing a broad perspective on digital skills across different career stages. Most respondents fall within the 25-44 age range, highlighting a workforce that is potentially in the prime of their professional and technical development (see Figure 17). This demographic is likely to be highly influential in shaping the current and future digital landscape in Cyprus. Notably, there are also younger participants (18-24) and a smaller representation from the 45-64 age bracket, suggesting an engagement with digital technologies that spans generations. This diversity in age may reflect varying levels of experience, expertise, and adaptability to digital change, which are crucial for addressing the skills gap in the digital economy.

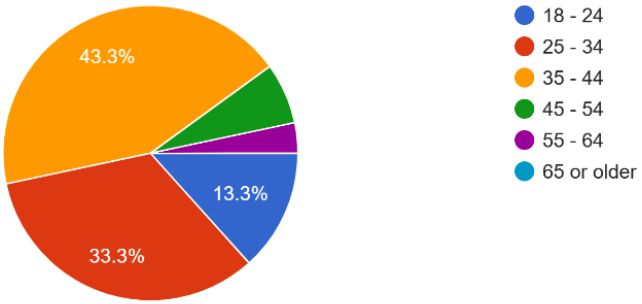

Figure 17: Age

5.1.2 Professional Background

Professional Experience of Survey Respondents in the IT Industry

The survey indicates a varied level of professional experience among the participants in the IT industry (see Figure 18). The responses show a substantial group with significant experience, with a notable portion of respondents having more than 10 years of experience. This suggests a mature skill set within the workforce that can provide deep industry insights and a strong foundation for mentoring younger employees. There is also a notable representation from the mid-range (6-10 years) and lower ranges (1-5 years), including some newcomers with less than a year in the industry. This mix underlines a dynamic and evolving IT landscape in Cyprus, where seasoned professionals and newcomers contribute to a diverse technological ecosystem. The presence of varying experience levels highlights potential for growth and the necessity for continued education and skills development to keep pace with technological advancements.

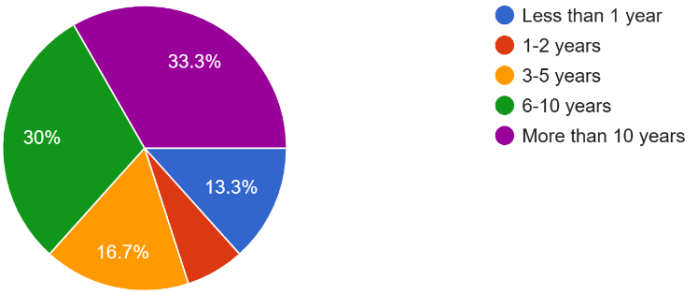

Figure 18: How many years of professional experience do you have in the IT industry?

Current Departmental Distribution of Survey Respondents

The survey results indicate a diverse array of departments within which the respondents work, reflecting a broad spectrum of specialties within the IT industry (see Figure 19). A significant number of participants are in Software Development, showcasing its central role in the IT sector. Cybersecurity and Artificial Intelligence and Machine Learning are also prominently represented, highlighting the increasing importance of security and advanced analytics in today's tech landscape. Other specialized areas such as Cloud Computing, Data Science and Analytics, and Network Infrastructure indicate the multifaceted nature of digital skills that are currently in demand. Smaller groups are in roles that support IT functions such as Sales, Project Management, Systems

Administration, and IT Consulting, underscoring the interdisciplinary approach businesses are taking to integrate IT across various operational levels.

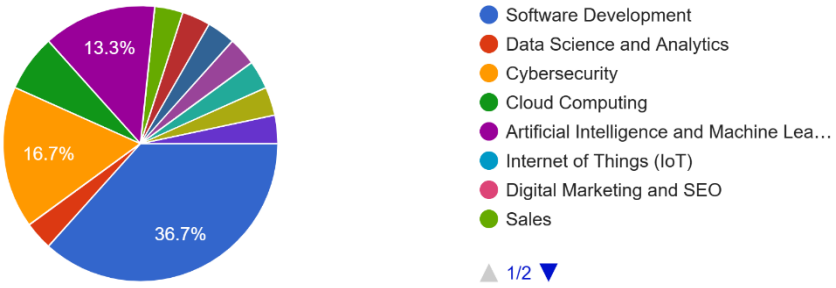

Figure 19: What department do you currently work in within your company? (Select one)

5.1.3 Training and Development

Satisfaction with Advanced Digital Skills Training and Development

Most of the respondents express satisfaction with the advanced digital skills training and development opportunities provided by their companies (see Figure 20). A considerable number report being "Satisfied" or "Very Satisfied," indicating that their companies are effectively supporting their continuous learning and skill enhancement in the digital domain. However, there is a notable fraction of the workforce that feels neutral or even dissatisfied, including a few who are "Very Dissatisfied" or "Dissatisfied." This mixed response highlights areas where improvements could be made, suggesting that while many companies are on the right track, there is still a need to enhance training programs to meet the diverse needs and expectations of all employees.

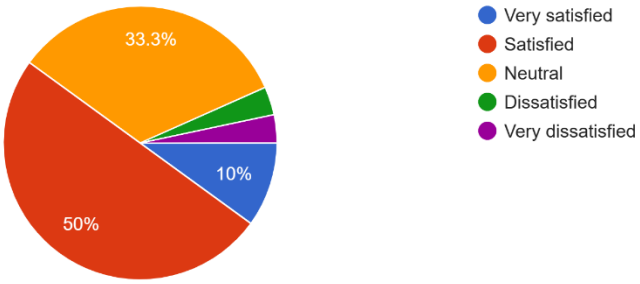

Figure 20: How satisfied are you with the advanced digital skills training and development opportunities provided by the company?

Encouragement to pursue additional training in ADS

The majority of survey respondents report that their employers encourage them to pursue additional training or certifications in advanced digital skills (see Figure 21). Most participants indicated they are either "somewhat encouraged" or "strongly encouraged," suggesting a proactive approach by companies towards continuous professional

development in the IT sector. However, a small number noted they are "not encouraged," highlighting a gap in support that could impact the overall readiness and competitiveness of the workforce in a fast-evolving digital landscape. This disparity emphasizes the need for more uniform encouragement across all organizations.

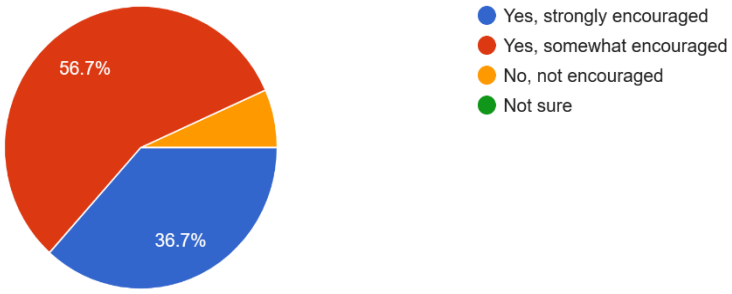

Figure 21: Are you encouraged to pursue additional training or certifications in advanced digital skills by your employer?

5.1.4 Skills Assessment

Evaluating the Adequacy of Advanced Digital Skills for Job Roles

Most survey respondents believe that their current advanced digital skills adequately meet the demands of their job roles, with a strong majority affirming this belief (see Figure 22). However, a few respondents either do not feel confident about their skills or are unsure, indicating areas where further training or skill development might be necessary to fully meet job demands. This mix of confidence and uncertainty highlights the continuous need for skills development to keep pace with evolving technological requirements.

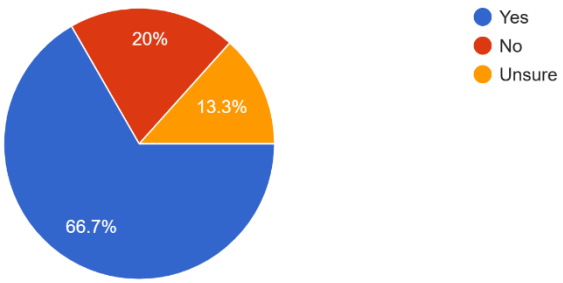

Figure 22: Do you believe that your current advanced digital skills are adequate for your job role?

Preferred Methods for Learning and Enhancing Advanced Digital Skills

The preferred methods for learning and improving advanced digital skills among the respondents are diverse, reflecting a combination of formal and informal learning

approaches (see Figure 23). Most respondents favor online courses and tutorials, often complemented by on-the-job learning, which suggests a preference for flexible and practical learning environments. Additionally, many also value workshops and seminars, with some combining these with peer learning, mentorship programs, and formal certifications. This variety in preferred learning methods highlights the importance of offering multiple training avenues to cater to different learning styles and needs.

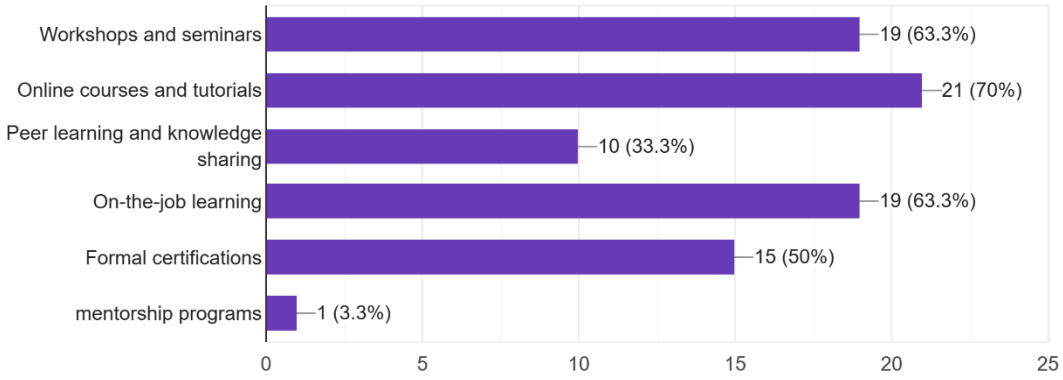

Figure 23: How do you prefer to learn and improve your advanced digital skills? (Select all that apply) (If other please specify)

5.1.5 Challenges and Environment

Challenges in Acquiring Advanced Digital Skills in Current Roles

While many respondents report no barriers to acquiring advanced digital skills in their roles, a notable number have cited specific challenges (see Figure 24). The most common issue is the lack of time due to heavy work commitments, which hinders their ability to engage in learning and development activities. Additionally, some mention the absence of relevant courses or programs that align with their needs or the specific requirements of their job roles. Budget constraints and the need for approval for training expenses also pose significant hurdles for some employees, limiting their access to essential training opportunities.

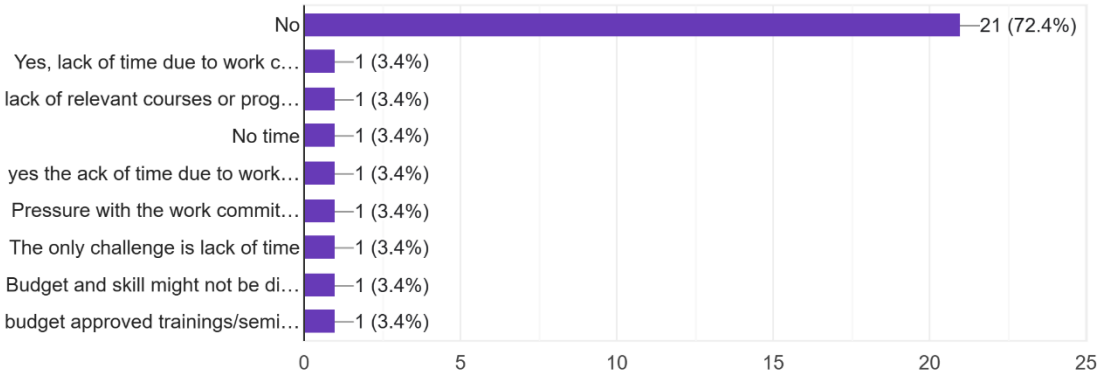

Figure 24: Have you faced any barriers or challenges in acquiring advanced digital skills in your current role? Of yes, please describe (Other...)

Assessing Workplace Environment and Culture for Promoting Advanced Digital Skills Development

The overall rating of the workplace environment and culture in terms of promoting advanced digital skills development is generally positive among the respondents (see Figure 25). Most consider it to be "Good," indicating a supportive setting that encourages skill growth. However, there are varied opinions, with several ratings of "Excellent" suggesting exceptional support in some companies, and a few "Fair" and "Poor" ratings pointing to areas where the environment may not be as conducive to learning and development. These mixed reviews highlight the need for consistent efforts across different organizations to foster an encouraging learning culture.

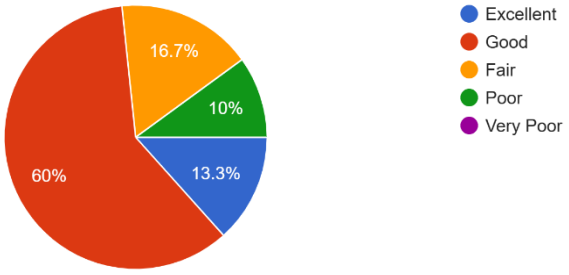

Figure 25: How would you rate the overall workplace environment and culture in terms of promoting advanced digital skills development?

5.1.6 University Education Feedback

Satisfaction with University Education in Advanced Digital Skills

Responses regarding satisfaction with advanced digital skills education received at university show a mix of perspectives among the respondents (see Figure 26). A notable number of participants are either "Satisfied" or "Very Satisfied," indicating that their educational institutions adequately prepared them for their careers. However, there are several responses ranging from "Neutral" to "Dissatisfied," highlighting variability in the perceived quality or relevance of the digital skills training provided. This diversity in satisfaction levels suggests areas for potential improvement in aligning university curricula with industry needs.

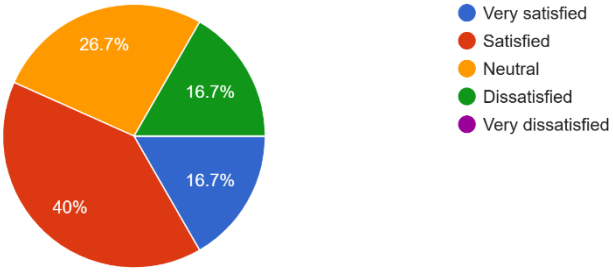

Figure 26: Are you satisfied with the advanced digital skills education you received at your university?

Identifying Gaps and Areas for Improvement in University Digital Skills Education

Respondents have identified several areas for improvement in their university education on digital skills, revealing gaps in both the scope and depth of key technological areas (see Figure 27). There is a consistent request for more extensive coverage of foundational subjects like cybersecurity and cloud computing. Additionally, there is a significant demand for better education in emerging fields such as artificial intelligence and machine learning, reflecting their rising importance in the industry. Other areas like blockchain and cryptocurrency, despite their growing relevance, are noted as underrepresented in academic programs. Many also feel that practical projects and industry-specific knowledge were lacking, highlighting the need for more applied learning opportunities. Soft skills and communication, crucial for success in technology careers, are also seen as inadequately addressed. Moreover, there is a call for more advanced instruction in programming languages and data science. Issues of ethics and privacy in digital technologies are becoming increasingly relevant, suggesting that curricula need to be both technically comprehensive and aligned with industry demands and ethical standards.

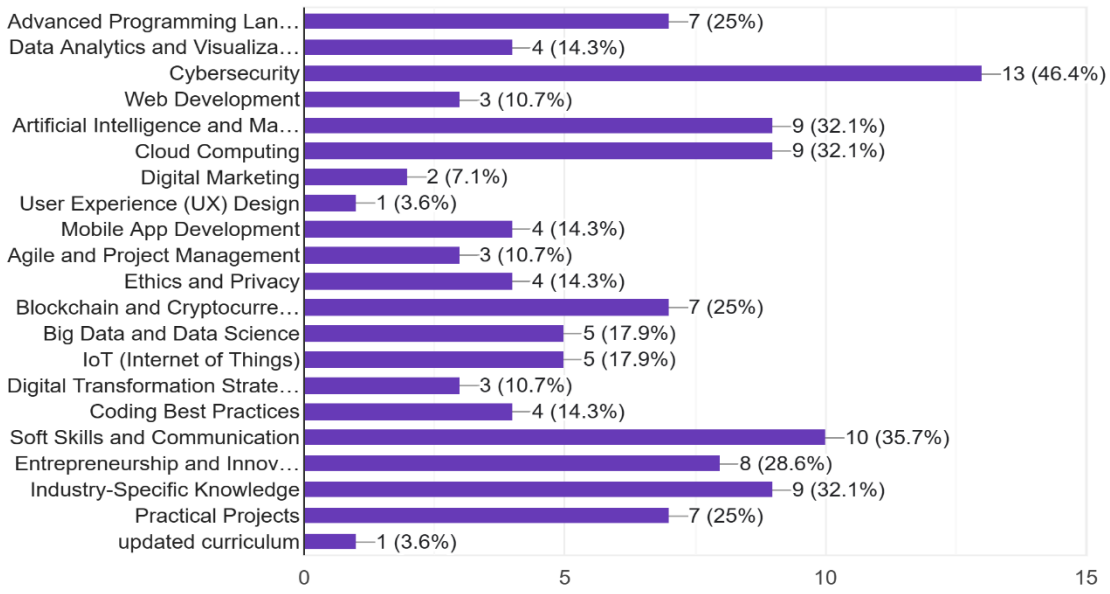

Figure 27: If you feel that something is missing or could have been improved in your university's education on digital skills, please specify the areas or topics you believe were lacking.

Assessment of University Preparation for IT Industry Demands in Advanced Digital Skills

Most survey respondents feel that their university education only partially prepared them for the demands of the IT industry in terms of advanced digital skills (see Figure 28). Several responses indicate that while some fundamental aspects were covered, education did not fully meet the evolving and specific needs of the industry. A few respondents feel completely unprepared or not prepared at all, highlighting significant gaps in their education. Conversely, a smaller group believes they were fully prepared, suggesting some variability in the effectiveness of different programs or individual experiences.

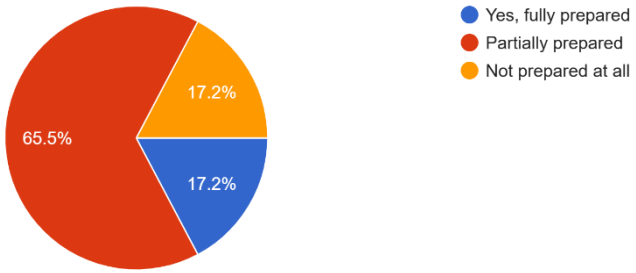

Figure 28: Do you believe that your university adequately prepared you for the demands of the IT industry in terms of advanced digital skills?

Identifying Gaps in University Coverage of Advanced Digital Skills

The responses indicate a strong desire among students for more comprehensive education in several key areas of advanced digital skills (see Figure 29). Cybersecurity emerges as a frequently mentioned area, underscoring a perceived gap in security-related education. Cloud computing is often paired with cybersecurity, highlighting the need for a deeper understanding of cloud infrastructures. There is also a significant demand, in this case the strongest, for more advanced training in artificial intelligence and machine learning, reflecting their importance in the tech industry. Data analysis and data science are seen as crucial for effectively managing big data and analytics. Additionally, there is a desire for more in-depth skills in software development and programming. The Internet of Things (IoT) is noted for its growing relevance in connecting devices and systems. Digital marketing and SEO are also pointed out as areas needing enhanced skills related to online marketing strategies. These domains represent the areas where students felt their education could have better prepared them to meet the current demands of the tech industry.

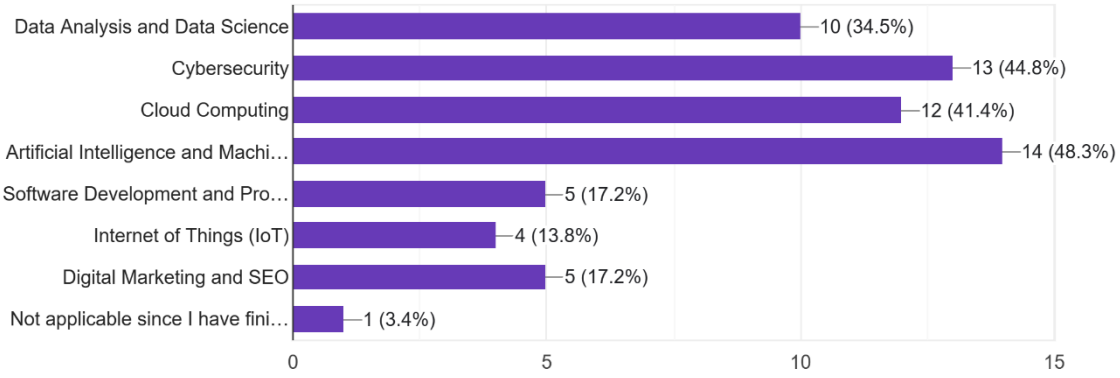

Figure 29: Are there specific advanced digital skills or knowledge areas that you wish your university had covered more comprehensively? (Select all that apply)

Perceptions of the Skill Gap Between University Education and Current IT Job Demands

Most respondents perceive a gap between the skills they acquired in university and those required by their current IT roles (see Figure 30). While many describe this gap as slight but manageable, indicating they can cope with additional self-directed learning or minor training, others report a significant gap that necessitates substantial additional training. A few individuals even note that this substantial gap is affecting their job performance, underscoring a critical disconnect between educational preparation and industry demands. This variety in responses highlights the need for continuous learning and possibly revisiting and updating academic curricula to better align with current industry requirements.

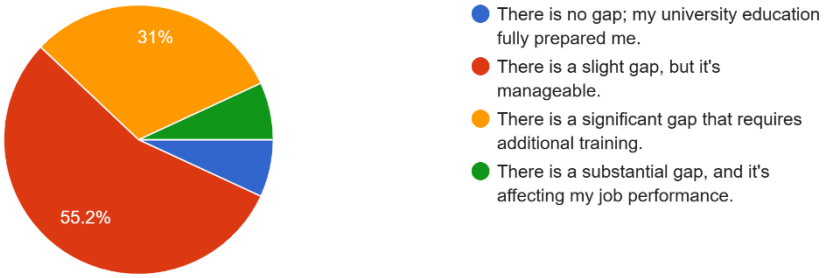

Figure 30: How do you perceive the gap, if any, between the skills you acquired in your university education and the skills demanded by your current job in the IT university? (Select one)

5.1.7 Future Outlook and Adaptability

Confidence in Adapting to New Digital Technologies and Tools in the Workplace

Many respondents feel confident in their ability to adapt to new digital technologies and tools in their job, with a significant number indicating they are "Very Confident." This strong sense of self-assurance suggests that despite gaps in formal education, many IT professionals are adept at learning and integrating new technologies as required. A smaller group expressed a neutral stance, reflecting some uncertainty or less confidence

in adapting quickly. This distribution highlights the importance of fostering adaptability and continuous learning in the rapidly evolving field of technology (see Figure 31).

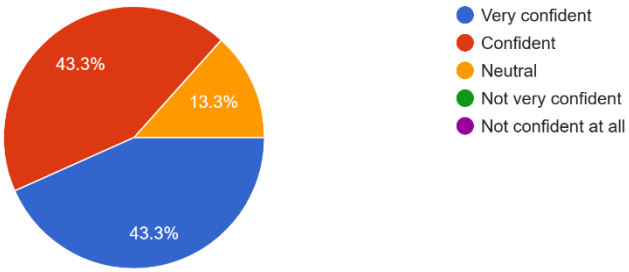

Figure 31: How confident do you feel in your ability to adapt to new digital technologies and tools in your job?

Forecasting Changes in Demand for Digital Skills in the Industry Over the Next 3-5 Years

The consensus among respondents is that the demand for digital skills in the IT industry will predominantly see a significant increase over the next 3-5 years (see Figure 32). A large majority anticipate that the need for most digital skills will grow considerably. Some believe there will be a moderate increase in demand for certain digital skills, suggesting selective growth depending on the specific areas within the industry. A smaller group expects the demand to remain relatively stable, indicating that while advancements continue, the rate of new skills integration might plateau for some areas.

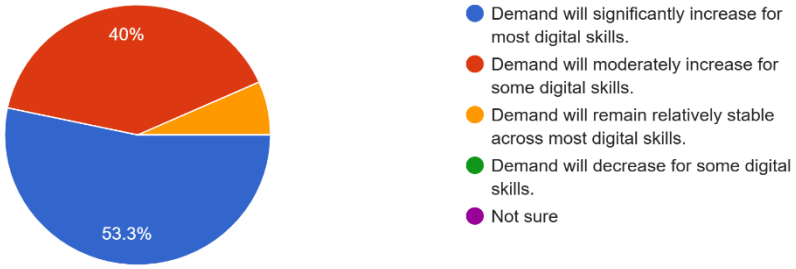

Figure 32: How do you think the demand for specific digital skills will change in your industry in the next 3-5 years? (Select all that apply)

Predicting Crucial Digital Skills for the Future: A Ten-Year Outlook

Based on collective feedback about critical digital skills for the future, several key areas are consistently highlighted by respondents (see Figure 33). Nearly all emphasize the increasing importance of artificial intelligence (AI) and machine learning (ML) across various sectors. Cybersecurity and ethical hacking are also noted as essential, given the evolution of digital threats. Quantum computing is recognized for its potential to revolutionize computing speeds and capabilities. Cloud computing and serverless architecture are fundamental for developing scalable and efficient digital solutions. Data privacy and ethics are becoming increasingly crucial as data usage expands in business operations. Blockchain and cryptocurrency are anticipated to continue influencing finance and data security. The Internet of Things (IoT) is essential for the advancement of connected devices and smart systems. Additionally, 5G and next-generation connectivity are seen as vital for supporting emerging technologies and enhancing communications. These areas are expected to significantly shape the digital landscape in the next decade.

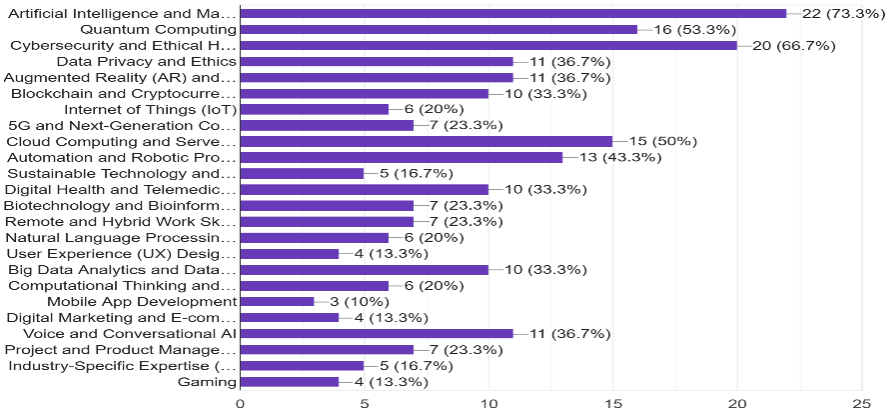

Figure 33: What future digital skills do you think will be important in ten years from now? Please select the skills you believe will be crucial.

5.2 Summary of Findings

The findings in Chapter 5 provide a comprehensive overview of the current state of digital skills among employees within the IT industry in Cyprus. It highlights a general satisfaction with the level of skills employees possess, but also notes significant areas for improvement, particularly in cutting-edge technologies such as AI, cybersecurity, and cloud computing. The data shows that while employees feel confident in their abilities to adapt to new technologies, there is a clear recognition of the need for ongoing training to bridge the gap between existing skills and emerging industry requirements. The chapter

underscores the importance of structured training programs and the potential benefits of investing in continuous professional development to enhance employee competencies in alignment with future technological advancements.

After examining the perspectives and experiences of individual employees in Chapter 5, we progress to Chapter 6: Research 2 – Higher Institutions on Advanced Digital Skills. This chapter shifts the focus towards the educational institutions that play a pivotal role in developing the advanced digital skills landscape in Cyprus. We will analyze how universities and colleges are responding to the demands of the digital economy, the strategies they implement to enhance their curricula, and the challenges they face in this endeavor. This exploration will help us understand the foundational role that educational settings play in equipping future generations with the digital competencies needed for the evolving workforce.

Chapter 6

Research 3 – Higher Institutions on Advanced Digital Skills

Chapter 6 investigates how higher education institutions in Cyprus are addressing the burgeoning demand for advanced digital skills. This chapter explores the curricular and extracurricular initiatives that universities and colleges are implementing to equip students with necessary digital competencies. Through surveys and interviews with academic leaders, this analysis aims to understand the alignment of educational offerings with industry needs, the challenges faced in curriculum development, and the strategies institutions employ to enhance their digital skills training programs. The goal is to assess the effectiveness of these educational frameworks in preparing students for the rapidly evolving digital landscape.

6.1 Presentation of survey results

6.1.1 Institutional Participation

Distribution of Institutions Participating in the Survey

The survey responses reveal a diverse participation from both universities and colleges, reflecting the broad interest and involvement in advancing digital skills education (see Figure 34). The higher presence of colleges indicates a significant engagement at this level, suggesting that colleges are actively addressing the need for digital skills. Universities, though fewer in number, also show substantial involvement, likely offering more specialized or advanced courses in digital skills. This distribution highlights the collaborative efforts across different types of higher education institutions to equip students with necessary digital competencies.

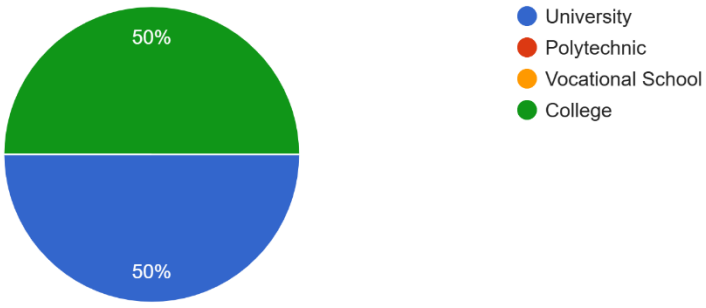

Figure 34: Type of Institution

6.1.2 Student Enrolment Analysis

Enrollment Size Variation Among Institutions

The survey highlights a significant variation in the number of students enrolled in digital skills courses across different institutions (see Figure 35). Most colleges reported relatively small enrollments, with figures ranging from 0 to 1000 students, indicating more intimate or specialized settings for digital skills training. In contrast, universities displayed much larger enrollment numbers, some exceeding 7000 students. This suggests that universities may offer a broader range of digital skills programs or have a higher capacity to accommodate large numbers of students seeking these critical skills. The diversity in enrollment sizes reflects the varying approaches and resources dedicated to digital skills education in higher education institutions.

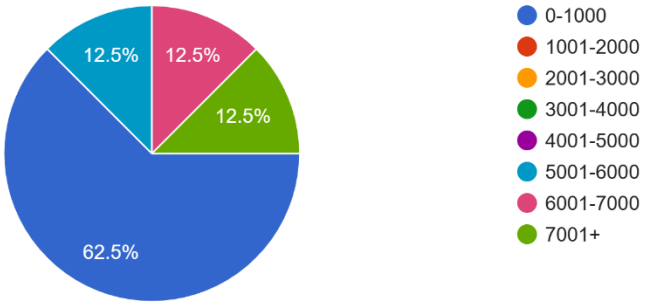

Figure 35: Number of students enrolled.

6.1.3 Curriculum and Courses

Course Offerings in Advanced Digital Skills at Higher Institutions

The survey indicates a mixed response regarding the availability of courses specifically focused on advanced digital skills at higher education institutions (see Figure 36, Figure 37). A majority of the institutions confirmed offering such courses, which include a diverse range of subjects such as Data Analytics, Cloud Computing, Software Development, Artificial Intelligence and Machine Learning, Digital Project Management, Cybersecurity, Digital Marketing, Blockchain, and the Internet of Things (IoT). This variety underscores a significant commitment to equipping students with the skills necessary to navigate and succeed in a digitally driven environment. Conversely, some institutions reported not offering courses directly focused on these advanced skills, highlighting a potential area for curriculum development to meet emerging industry demands.

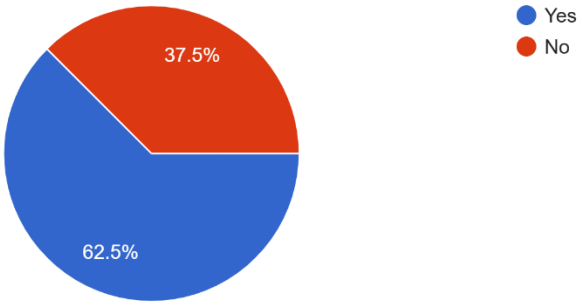

Figure 37: Does your institution offer courses specifically focused on advanced digital skills/ technologies?

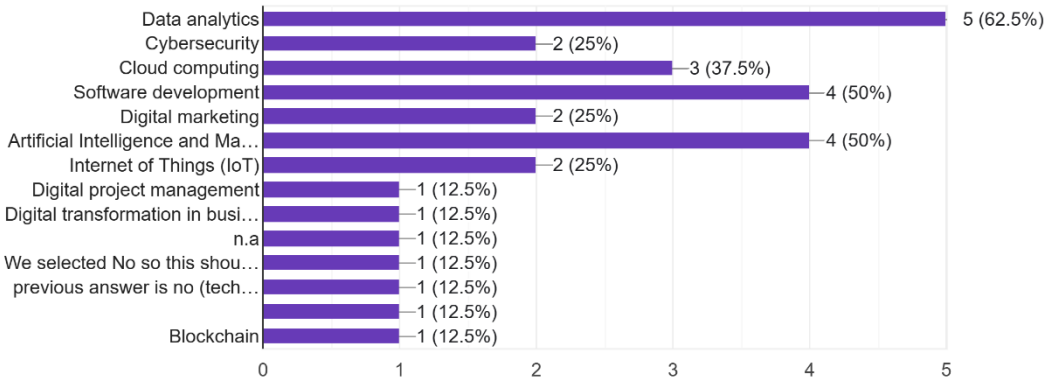

Figure 36: If yes, please specify.

Curriculum Update Frequency in Response to Digital Trends

The frequency at which higher education institutions update their curriculum to reflect current digital trends varies significantly (see Figure 38). Most of the surveyed institutions indicated that they update their curriculum annually, demonstrating a proactive approach to keeping educational offerings relevant and current. However, there are institutions that update less frequently, with intervals ranging from every 2-3 years to every 4-5 years, and even a case where updates are never made. This variation highlights differing levels of responsiveness to the fast-paced changes in technology and digital trends across different institutions.

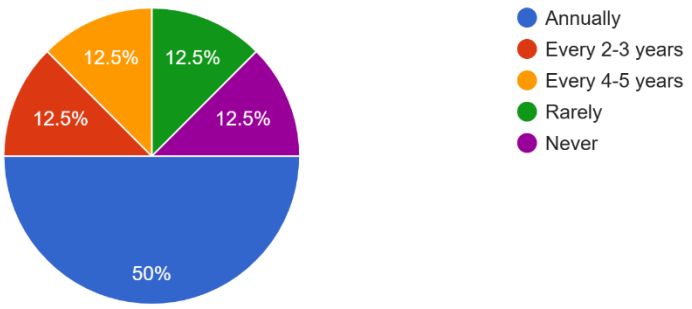

Figure 38: How often is the curriculum updated to reflect current digital trends and needs?

6.1.4 Industry Collaboration

Partnerships with Tech Companies to Enhance Digital Skills Training

Most of the higher education institutions surveyed indicated that they have partnerships with tech companies or organizations to enhance digital skills training (see Figure 39). These collaborations provide several key benefits, including internship opportunities for students, access to cutting-edge tools and technologies, guest lectures from industry experts, curriculum development and review, and research collaborations. Such partnerships help bridge the gap between academic programs and industry demands, ensuring that the curriculum remains relevant and that students gain practical experience and exposure to the latest in technology.

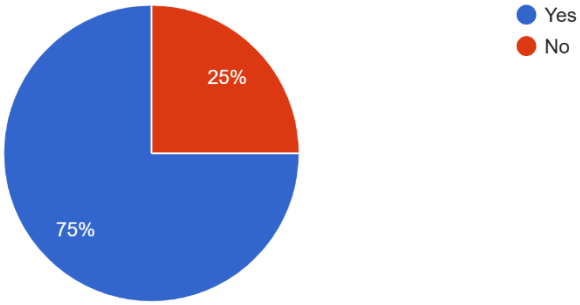

Figure 39: Do you have partnerships with tech companies or organizations to enhance the digital skills training?

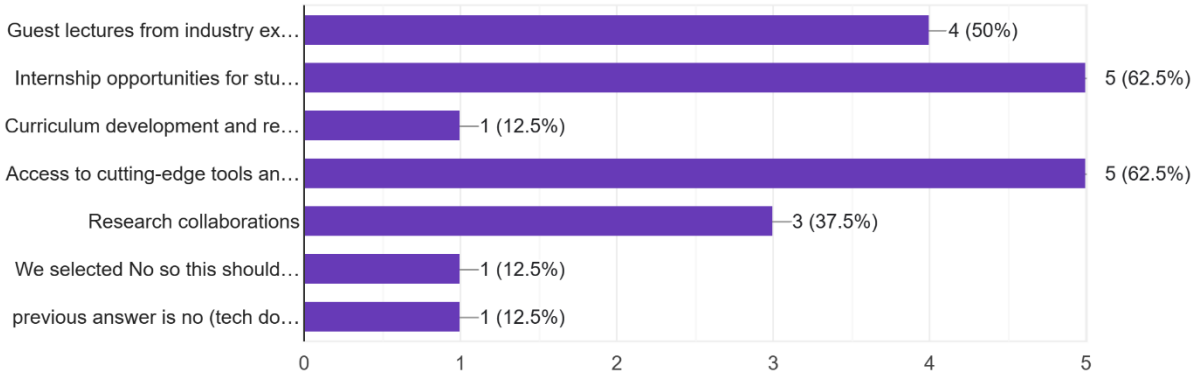

Figure 40: If you answered 'Yes 'to the previous question how do these partnerships benefit your institution? (Select all that apply)

6.1.5 Graduate Preparedness

Confidence in Graduates' Digital Skills Preparedness

Most higher education institutions surveyed express a strong confidence in their graduates' digital skills, with the majority indicating they are "Very Confident" or "Extremely Confident" that their alumni are well-equipped to meet the digital skill demands of organizations in Cyprus (see Figure 41). This confidence likely reflects robust training programs and effective industry collaborations that help students stay abreast of technological advancements. However, there is an outlier with one institution indicating "Not at all confident," suggesting variability in how different institutions perceive the effectiveness of their digital skills training.

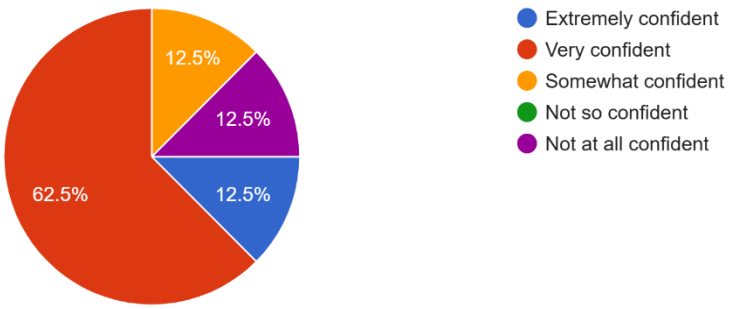

Figure 41: How confident are you that graduates from your institution are well-equipped with the digital skills required by organizations in Cyprus?

6.1.6 Institutional Challenges

Challenges in Providing Up-to-Date Digital Skills Training

Higher education institutions face several significant challenges in providing current digital skills training (see Figure 42). A common issue cited is the lack of funding, which affects multiple areas including infrastructure and resource availability. Additionally, the rapidly changing technology landscape makes it difficult to keep curricular content relevant and up to date. Another notable challenge is the difficulty in hiring qualified faculty who are adept in the latest digital technologies. These factors combine to create hurdles in maintaining a curriculum that meets the evolving demands of the tech industry.

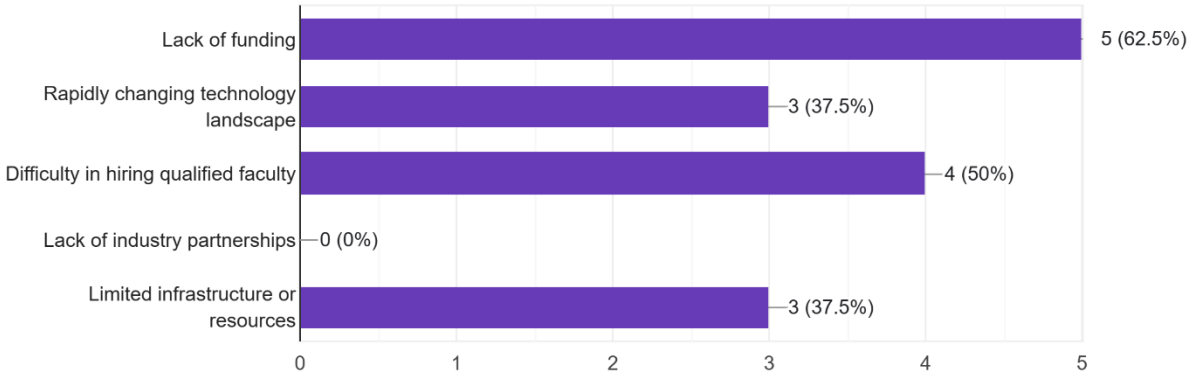

Figure 42: What challenges does your institution face in providing up-to-date digital skills training? (Select all that apply)

6.1.7 Future Skills Focus

Future Emphasis on Specific Digital Skills

Institutions believe that certain digital skills need more emphasis in the future to keep pace with industry demands (see Figure 43). Key areas identified include Data Analytics, Cybersecurity, Artificial Intelligence & Machine Learning, and Cloud Computing. Blockchain technology also stands out as a recurring area of focus across several responses. Additionally, some institutions see the need to expand into emerging fields like Digital Marketing, Virtual Reality, and Augmented Reality, recognizing their growing importance in a technologically advanced marketplace.

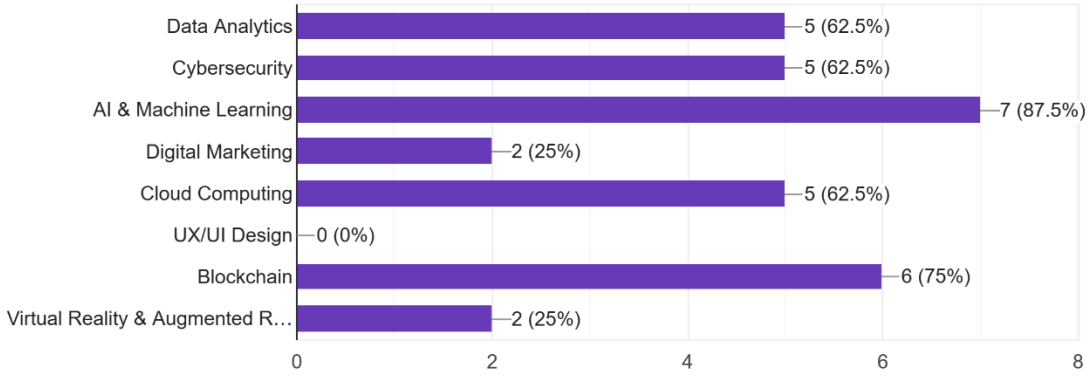

Figure 43: Are there any specific digital skills or areas you believe need more emphasis in the future?

Projected Importance of Digital Skills Over the Next Decade

Institutions anticipate a significant emphasis on a broad array of digital skills over the next ten years, highlighting the evolving complexity and interconnectivity of technology (see Figure 44). Key skills identified include Artificial Intelligence and Machine Learning, Cybersecurity and Ethical Hacking, and Cloud Computing, reflecting their foundational role in future technological infrastructures. Additionally, areas such as Blockchain, Internet of Things (IoT), and Data Privacy are expected to become even more crucial. Emerging technologies like Quantum Computing, Augmented and Virtual Reality, and Sustainable Technology are also seen as critical, ensuring that future professionals are equipped to address both technological advancements and ethical considerations in their fields.

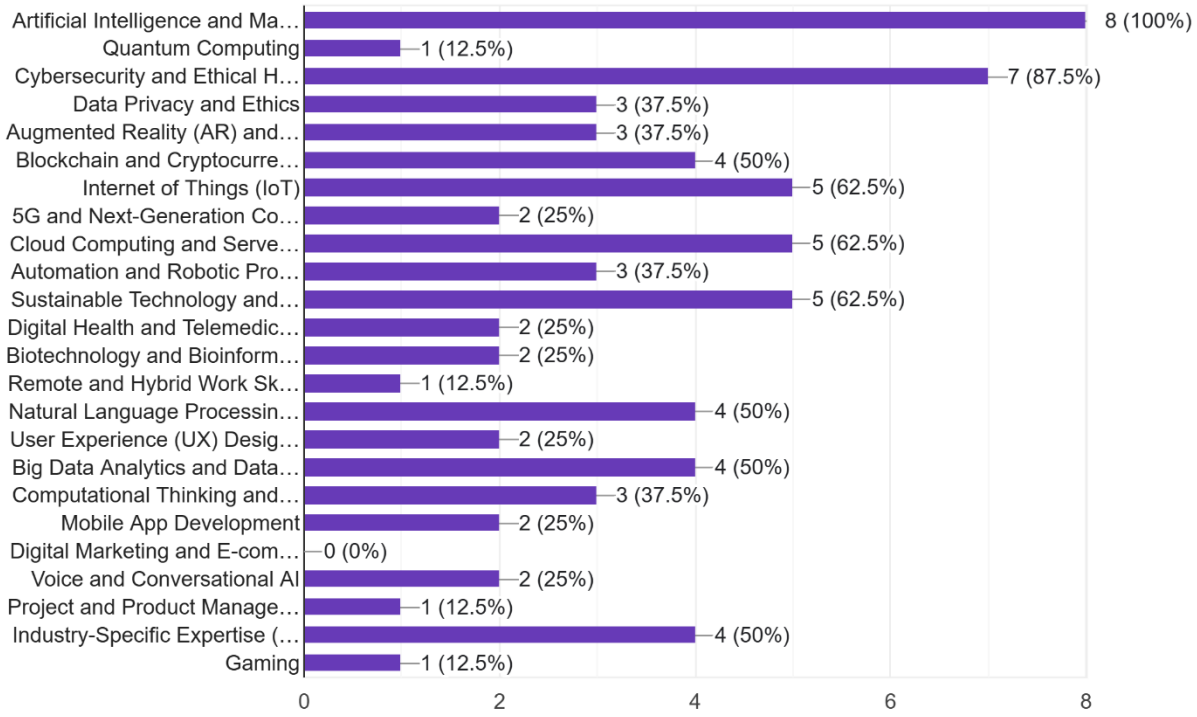

Figure 44: What future digital skills do you think will be important in ten years from now? Please select the skills you believe will be crucial.

6.2 Summary of Findings

Chapter 6 provides a thorough analysis of how higher education institutions in Cyprus address the training and development of advanced digital skills. It highlights the diverse participation of universities and colleges in integrating digital skills into their curricula, with varying enrolment sizes and a focus on essential areas like AI, cybersecurity, and cloud computing. The chapter discusses the frequency of curriculum updates, emphasizing the need for institutions to stay current with rapid technological changes. Partnerships with tech companies emerge as a strategic approach to enhancing educational offerings, providing students with practical experience and access to the latest technologies. The chapter also reflects on the confidence educators have in their graduates' preparedness for the digital demands of the workplace, while identifying significant challenges like funding and resource constraints that institutions face in delivering up-to-date digital skills training. Lastly, it projects the growing importance of specific digital skills over the next decade, underlining the need for educational programs to anticipate and adapt to future technological trends.

As we conclude Chapter 6, which examines how higher education institutions in Cyprus are addressing the digital skills demands of today's economy, we transition to Chapter 7:

Comparative Analysis and Interpretation of Findings. This next chapter builds on the foundational data previously discussed by providing a nuanced analysis of the interconnections and disparities among the responses from educational institutions, companies, and individual employees. We aim to synthesize these diverse perspectives to pinpoint the underlying challenges and opportunities within Cyprus's advanced digital skills landscape. By comparing these key stakeholder groups, Chapter 7 seeks to offer strategic insights that could lead to effective solutions for enhancing the digital capabilities of the Cypriot workforce. This comprehensive analysis will guide our final recommendations, aiming to bridge any identified gaps and fully capitalize on the potential synergies.

Chapter 7

Comparative Analysis and Interpretation of Findings

This chapter serves as a critical synthesis and analysis of the extensive data collected through the surveys from higher education institutions, companies, and employees in the IT sector of Cyprus. This chapter seeks to deeply explore and interpret how the development and implementation of advanced digital skills are perceived and enacted across these different sectors. By doing so, it aims to address the noted discrepancies and opportunities in the digital skills landscape, with a view to providing actionable insights that could help resolve the persistent skills gap in Cyprus.

We begin by detailing the distinct findings from each respondent group—highlighting pivotal trends, identified challenges, and reported successes. These initial insights will set the stage for a rigorous comparative analysis across the three groups. This analysis will compare the educational strategies and curriculum emphases of higher institutions against the practical skill requirements and expectations articulated by companies. Similarly, it will compare the real-world skill applications and professional development experiences of employees with the training opportunities and digital skill provisions from both their employers and educational institutions. Through this comprehensive comparative approach, the chapter will showcase critical alignment gaps as well as potential synergies between the theoretical training provided by educational institutions and the practical needs of the marketplace. It will also explore how well companies are equipped to support ongoing professional development in line with emerging digital demands, and whether employees feel adequately prepared to meet the challenges of their roles in a digitally evolving environment.

The findings and their analyses are expected to come in substantial conclusions that will not only shed light on the underlying causes of the advanced digital skills gap in Cyprus but also propose informed strategies for educational bodies, governmental agencies, and corporate leaders. These strategies will aim to enhance the overall framework for digital education and professional training, thereby fostering a workforce that is both versatile and adept at navigating the complexities of a digital economy. Through these efforts, this chapter hopes to contribute meaningful solutions to the pervasive issue of advanced

digital skills deficiency, promoting a more robust and adaptive digital skills ecosystem in Cyprus.

7.1 Comparison between Companies and Institutions on Advanced Digital Skills

7.1.1 Skills Demand and Curriculum Alignment

In addressing the dynamic landscape of advanced digital skills, a critical examination of both industry and academic perspectives reveals contrasting priorities and approaches. This analysis dives into the alignment, or misalignment, between the skills demanded by companies and those offered within curricula of higher education institutions.

Companies: Immediate Practical Skill Needs

Companies operating in Cyprus highlight a strong demand for specific technical skills that are crucial for immediate application within various IT roles. The survey results indicate a strong emphasis on Data Analysis, Data Science, Cybersecurity, Cloud Computing, and Software Development. These skills are not just preferred; they are essential for driving business innovation and maintaining competitive edge in a rapidly evolving digital marketplace. This focus reflects a strategic orientation towards skills that enable data-driven decision making, robust security protocols, and efficient software solutions, which are directly applicable to current market demands.

For example, the survey revealed that most of the companies rate Cybersecurity and Cloud Computing as top priorities due to increasing concerns about data breaches and the need for scalable cloud solutions. This necessity translates into direct recruitment efforts aimed at candidates who can immediately engage with these technologies, highlighting a market-driven approach to skill acquisition.

Higher Education Institutions: Broader Educational Scope

In contrast, the curriculum offerings from higher education institutions, while covering the mentioned skills, tend to have a broader scope. Academic programs started to incorporate Data Science, Artificial Intelligence, Digital Marketing, Blockchain, and Internet of Things (IoT) alongside foundational skills like Software Development, Data Analytics and Cybersecurity. This comprehensive approach is designed to equip students with a diverse set of competencies that are expected to be relevant in the future tech landscape, not just the current job market. This strategy supports a long-term educational

goal of preparing students to adapt to various future scenarios, rather than focusing solely on current industry demands.

Comparative Analysis

The difference in focus points to a fundamental tension between the immediate applicability of skills in the workforce and the educational landscape of preparing graduates for a broad range of future possibilities. Companies seek graduates who can immediately contribute to specific technical needs without requiring extensive on-the-job training. In contrast, institutions aim to develop well-rounded graduates who can navigate and adapt to an unpredictable technological landscape, which may sacrifice some degree of immediate job readiness for a more comprehensive educational experience.

Companies are often driven by the need to respond quickly to market changes, which is reflected in their targeted training programs and skill demands. They prioritize skills that have immediate benefits, optimizing operations and enhancing current technological implementations. This market responsiveness necessitates a focus on short-term needs and specific technical competencies, which can sometimes lead to a narrower scope of employee development but ensures that the workforce can meet current operational demands efficiently.

On the other hand, institutions are tasked with a broader educational mission, which includes not only technical training but also the development of critical thinking, problem-solving abilities, and adaptability to future technologies. This educational approach is designed to equip students with a wide range of capabilities that will serve them throughout various stages of their careers. While this broader focus of learning are beneficial for long-term career flexibility, they may not align perfectly with the specific, immediate needs of local industries, potentially creating a gap between academic preparation and professional requirements.

Conclusion

Based on the conclusions from this analysis, bridging the gap between company expectations and academic offerings could involve more collaborative curriculum design, where industry professionals contribute directly to course development, ensuring that educational programs are both forward-looking and aligned with current professional landscapes. Such partnerships might also enable more fluid transitions for graduates

entering the workforce, ensuring that they are equipped with both the immediate skills needed to contribute effectively and the broader competencies required for long-term career success and adaptability.

7.1.2 Training and Development

Training and development strategies in the context of advanced digital skills present diverging approaches when analysed through the lenses of the corporate sector and higher education institutions. This segment explores how each sector addresses the continuous enhancement of digital skills, focusing on the methodologies, extent, and effectiveness of their respective training programs.

Companies: Targeted and Continuous Skill Enhancement

Companies in Cyprus demonstrate a trend of continuously updating the skill sets of their IT workforce. The strategy involves a combination of internal training sessions, external workshops, and online courses. These methods are tailored to meet immediate operational needs and adapt to rapid technological advancements. Companies recognize that continuous employee development is crucial not only for maintaining competitiveness but also for adapting to new technologies that emerge within the digital landscape.

Many companies in Cyprus have established robust internal training programs as part of their strategy to keep their IT workforce skilled and up to date. These internal frameworks are regularly revised to reflect the latest IT developments, ensuring that employees are proficient in the most recent digital tools and methodologies. This approach allows companies to quickly integrate new technologies and processes, enhancing productivity and efficiency within their teams.

Furthermore, Cypriot companies also encourage participation in external workshops and seminars. These opportunities provide employees with exposure to broader industry trends and innovations. By engaging with external experts and peers, employees can acquire new perspectives and ideas, which they can then integrate into their own work environments. This not only enriches their personal knowledge and skills but also brings valuable insights back to their companies, contributing to overall organizational growth.

Additionally, the adoption of online learning platforms has become a significant component of employee development strategies. These platforms offer a range of courses and training materials that employees can access at their convenience. The flexibility of

online learning allows individuals to enhance their skills at their own pace while balancing work commitments. This method of learning is particularly beneficial in adapting to the rapid pace of technological change, as it provides continuous access to updated content and the latest skills in demand in the IT sector.

Higher Education Institutions: Broad-Based Educational Frameworks

On the other hand, most higher education institutions incorporate advanced digital skills training as a fundamental component of their curricula, aimed at providing a comprehensive educational foundation. These institutions often update their courses annually to incorporate new knowledge and technologies, ensuring that graduates are well-versed in a wide array of digital skills by the time they enter the workforce.

Digital skills are seamlessly integrated into broader course offerings within these educational institutions, including both theoretical knowledge and practical applications. This approach ensures that students not only understand the fundamentals of digital technologies but also how these technologies can be applied in real-world scenarios. By combining theory with practice, educational programs help students develop a rounded understanding of digital tools, enhancing their employability upon graduation.

Moreover, the frequency of curriculum updates in these institutions is designed to keep pace with rapid industry changes. Although the frequency and depth of these updates can vary, most institutions strive to reflect the latest advancements in technology and digital practices. However, this variation can sometimes lead to discrepancies in how quickly students acquire the newest industry-specific advanced digital skills, potentially affecting their immediate readiness for certain roles in the workforce.

Furthermore, the range of digital skills taught in academic programs often extends beyond those currently demanded by local employers, preparing students for a variety of potential career paths within the digital domain. This broad educational scope equips students with versatile skills that are applicable in multiple sectors, potentially opening up more opportunities for career advancement and specialization in emerging areas of the digital economy. This foresight in curriculum design ensures that graduates can adapt to and thrive in a dynamically evolving technological landscape.

Comparative Analysis

The comparison reveals a fundamental difference in the field of training and development efforts between corporate environments and academic institutions.

Companies typically focus on skills that have immediate applicability, facilitating quick adaptation to current industry needs. This approach ensures that employees can swiftly integrate and utilize new technologies that are directly relevant to their day-to-day operations. In contrast, academic institutions tend to prepare students for a broader career trajectory. While this may not align perfectly with the immediate demands of the current market, it equips students with a wider skill set that anticipates future needs. For instance, while higher education may offer advanced digital skills aimed for use in the next couple of years, such as courses in emerging technologies like Blockchain, they might not offer many advanced digital skills currently demanded by the industry.

On the specificity versus comprehensiveness of training, there is also a distinct difference. Corporate training programs are often highly specific, tailored to meet the immediate needs of the business and closely linked to the current technologies used within the company. This specificity ensures that employees are capable and effective in their specific roles. On the other hand, academic training is more inclusive, designed to provide a broad knowledge base. While this inclusiveness has a variety of skills and theoretical knowledge, it might not always address the specific, most current needs of the local IT job market, potentially leaving a gap between education and practical application in the workplace.

Also, companies emphasize training that fosters quick adaptability and innovation. This focus is crucial for maintaining a competitive edge, as it allows companies to rapidly respond to changes and new opportunities in the market. Academic programs, however, tend to focus on foundational knowledge, promoting a deeper, more gradual understanding of technologies over time. This educational approach encourages long-term mastery and innovation but may not provide the immediate practical skills required in fast-paced business environments.

Conclusion

After examining this comparison, we concluded that enhanced cooperation between the corporate sector and academic institutions could lead to the development of training

programs that are both deeply informative and highly applicable to current market needs. Such collaboration could also facilitate more seamless transitions for students entering the workforce, ensuring they are equipped with the necessary skills to thrive in a digital economy.

7.1.3 Partnerships and Collaboration

The role of partnerships and collaborations in fostering advanced digital skills offers a striking contrast between the corporate sector and higher education institutions. This analysis explores how each sector leverages these relationships to enhance digital competency and meet the evolving demands of the digital economy.

Companies: Strategic Industry Collaborations

Companies in Cyprus utilize partnerships strategically to enhance immediate operational capabilities and align with fast-paced digital advancements. Survey results from the corporate sector reveal a strict emphasis on engaging with tech leaders and specialized training providers, aimed at integrating the latest technological tools and methodologies. This approach ensures that employees receive up-to-date training and direct access to cutting-edge technology, fostering an environment of continual learning and immediate application in daily operations.

For example, collaborations mentioned in the surveys often involve receiving advanced training on cybersecurity measures and cloud technology implementations directly from tech firms. This not only boosts operational efficiency but also enhances the company's competitive edge in the market. By partnering with experts in specific fields, companies ensure that their staff are proficient with the latest technologies and practices, which is crucial for maintaining high security standards and efficient cloud operations.

Furthermore, companies often collaborate with tech firms to ensure that their staff has direct access to cutting-edge technologies and the expertise needed to implement them effectively. These partnerships provide essential resources that may not be widely available internally, allowing companies to stay at the forefront of technological innovation. By having direct access to the latest technologies, employees can immediately apply new tools and approaches to their work, significantly improving productivity and operational effectiveness.

Through these collaborations, companies can also access customized training modules that are specifically designed to meet their immediate needs. These tailored training solutions are crucial for addressing specific operational challenges, thereby enhancing efficiency and productivity. Customized training ensures that the workforce is not only well-versed in the use of current technology but also equipped to leverage new technologies as they are introduced.

Additionally, collaborations can serve as a big part of innovation by integrating external insights and technologies that may not be available in-house. This exposure to new ideas and tools stimulates creative problem-solving and innovation, driving the development of fresh solutions that can offer significant competitive advantages. Such partnerships enrich the company's knowledge base and skill set, fostering a culture of continuous improvement and innovation.

Higher Education Institutions: Comprehensive Academic Partnerships

In contrast, higher education institutions prioritize long-term educational goals and comprehensive skill development through their partnerships. The survey data from educational institutions highlight collaborations that extend beyond immediate practical applications to include curriculum development, research initiatives, and broad-based educational enrichment.

These institutions often partner with a variety of organizations, including other academic entities and technology companies, to offer students a blend of theoretical knowledge and practical experience. Universities, for example, frequently facilitate internships and cooperative education programs that allow students to work on real-world projects. This approach enhances their practical skills while still under the academic path, allowing students to apply theoretical concepts in practical settings, which boosts their readiness for the workforce.

Partnerships also often influence curriculum development, helping institutions align their courses with industry requirements. These collaborations ensure that the educational content remains relevant and responsive to the evolving needs of the job market. Additionally, partnerships facilitate internship opportunities, allowing students to gain hands-on experience. This integration of practical experience into the curriculum is

crucial for preparing students for the complexities of their future careers, providing them with a competitive edge in the job market. Moreover, academic partnerships can significantly enhance the research capabilities of institutions and bring industry experts into the classroom. These collaborations often result in guest lectures and workshops that provide students with exposure to real-world challenges and the latest industry practices. This direct interaction with industry leaders not only enriches the learning experience but also bridges the gap between academic theories and practical applications.

Collaborations can also enable resource sharing, such as software licenses, access to specialized equipment, and joint research facilities, which might otherwise be a big expense for educational institutions. This shared access to resources enhances the quality of education and research opportunities available to students and faculty, facilitating advanced studies and innovation that contribute significantly to academic and professional fields.

Comparative Analysis

The contrast in partnership strategies between the corporate sector and educational institutions underscores their different foundational goals.

In the corporate sector, the focus of partnerships is primarily on acquiring specific technologies and skills that can be immediately deployed to improve business processes and address current market needs. These partnerships often have a single aim—enhancing specific operational aspects like data analytics implementations or software development efficiencies. This direct approach allows companies to rapidly integrate new technologies and methodologies, thereby enhancing their competitive edge and operational efficiency almost immediately.

Educational institutions, on the other hand, aim to provide a rounded education that prepares students for a range of future possibilities. Their partnerships are more diverse, including those that enhance curriculum through guest lectures, provide practical experience through internships, and foster research opportunities that may not have immediate market applications. This strategy is designed to offer students a comprehensive learning experience that builds long-term capabilities rather than immediate job-specific skills.

Corporate partnerships are often designed for immediate utility, directly enhancing current business practices and employee skills. This approach ensures that investments in partnerships quickly translate into improved operational capabilities and business outcomes. In contrast, academic collaborations tend to focus on long-term educational value, preparing students for future industry needs that may not yet be fully defined. These partnerships are geared towards developing a deeper understanding of subjects and a broader skill set that will benefit students in their future careers. The direct impact of corporate collaborations is often measurable in increased productivity, improved technology implementation, and enhanced employee skills relevant to current operations. Companies can see tangible results from their partnership investments, which directly contribute to their bottom line and operational efficiency. On the other hand, the outcome of collaborations for institutions, while the immediate impact might be less tangible, includes producing graduates who are adaptable and equipped with a broad understanding of potential digital landscapes, ready to tackle future technological shifts.

In terms of scope, companies generally engage in targeted collaborations that directly enhance their business operations. These are often strategic and narrowly focused to meet specific business objectives. Conversely, institutions pursue a wide range of partnerships to broadly elevate their educational capabilities, which might include collaborative research projects, educational program enhancements, and international partnerships that provide global exposure to students.

The impact on stakeholders varies between the two sectors. For companies, successful partnerships directly affect the bottom line and operational efficiency, making them a crucial part of business strategy. For educational institutions, the impact of partnerships extends into the broader educational outcomes and long-term career success of their students, contributing to a well-rounded educational ecosystem that supports both personal and professional development.

Conclusion

The distinct approaches to partnerships in the corporate sector versus higher education institutions underscore their differing missions but also highlight potential areas for synergy. By enhancing dialogue, and understanding each sector’s goals, there is significant potential to design partnerships that bridge the gap between immediate

industry needs and long-term educational objectives. Initiatives like joint ventures in technology development, co-operative education programs that allow students to work on real industry projects, and business participation in curriculum design could greatly enhance the relevance of academic training and the readiness of graduates entering the workforce. Such collaborative efforts could ensure that the future workforce is not only adept at handling contemporary challenges but is also primed to innovate and adapt as the digital landscape evolves.

7.1.4 Preparedness and Confidence

The level of preparedness and confidence in advanced digital skills among graduates and employees is a pivotal area for understanding the effectiveness of educational and training programs offered by higher education institutions and companies, respectively. This analysis examines how each sector perceives the readiness of their workforce or alumni in meeting the demands of the digital economy, and the confidence they have in the training provided.

Companies: Confidence in Practical Skill Application

Companies in Cyprus exhibit a robust confidence in their employees' digital capabilities, primarily due to comprehensive, real-time training aligned with immediate industry demands. Survey results indicate that firms heavily invest in up-to-date training modules focusing on Data Analysis, Cybersecurity, and Cloud Computing, areas where skills can be directly applied to enhance operational efficiency and innovation. This targeted training is constantly refined based on feedback and technological advancements, ensuring employees are well-prepared to meet current challenges.

The corporate sector’s confidence in their workforce stems from the direct application of skills in daily operations, which provides tangible evidence of employee competence and readiness. The practical use of newly acquired skills not only demonstrates the effectiveness of the training programs but also reassures management about the immediate impact of their investment in workforce development. This cycle of training and application helps maintain a highly skilled workforce that can adeptly handle the complexities of modern business environments.

Additionally, there is a notable alignment between the training programs and operational needs, which boosts confidence in employee capabilities to handle current and upcoming

digital challenges effectively. For instance, frequent skills assessments, as noted in the surveys (Figure 7), show that companies regularly evaluate their employees, adjusting training programs to fill any emerging gaps promptly. This ongoing assessment ensures that training remains relevant, and employees are always equipped with the necessary skills to navigate the evolving digital landscape. This alignment not only maintains skill relevance but also enhances corporate confidence in their workforce's ability to adapt and thrive in a dynamic digital environment.

Higher Education Institutions: Broad-based Educational Confidence

In contrast, higher education institutions maintain a broader and somewhat more theoretical approach to digital skills training. While universities also recognize the importance of areas like Software Development and Artificial Intelligence, their curricula are designed to provide a foundational knowledge that prepares students for a range of potential future scenarios, not just immediate job roles. This comprehensive approach, as highlighted in survey responses (Figure 38), often leads to a varied confidence level regarding the direct applicability of these skills in immediate industry roles.

Educational programs are noted for their slower pace in updating curricula, which can lead to discrepancies between the skills taught and the current market demands. However, they excel in developing critical thinking and adaptability, preparing students to learn and apply new skills as technologies evolve. This is crucial for long-term career success but might not align perfectly with the immediate, practical needs of local industries. The slower curriculum updates may occasionally put graduates at a temporary disadvantage in the fast-evolving tech sector, yet the emphasis on foundational skills and critical thinking equips them to quickly catch up and excel in their fields. Higher education institutions often incorporate a wide array of digital skills in their programs, aiming to prepare students for a variety of potential roles and industries. This comprehensive training ensures that graduates have a well-rounded skill set, making them versatile and adaptable professionals. Such a broad educational scope is designed to enable graduates not only to fulfil the current demands of various industries but also to thrive in roles that may develop as the digital landscape evolves.

The focus in academia is on future-proofing students by providing a foundational knowledge base that allows graduates to adapt to technological shifts over time. This

educational strategy may not always perfectly align with specific immediate industry requirements but is intended to equip students with the ability to learn and adapt continually. This approach is particularly valuable in an era where technological advancements can quickly render specific technical skills obsolete, whereas a solid foundation in understanding and adapting new technologies remains a constant asset.

Comparative Analysis

The comparative outlook on preparedness and confidence reveals distinct differences in focus and outcomes between the two sectors:

In the corporate sector, there's a high confidence in the practical application of skills, stemming from ongoing, tailored training that aligns closely with current operational needs. This training is often highly responsive and swiftly integrates new technologies and methods, ensuring that employees can immediately apply their new skills to enhance business operations. The immediacy and specificity of corporate training programs help companies maintain a competitive edge by ensuring their workforce is up-to-date and fully capable of handling current technological demands.

In contrast, within educational institutions, confidence in graduates' preparedness is more varied and based on the belief that students are equipped for a range of future possibilities, not just immediate job demands. This comprehensive approach to education may produce graduates who are exceptionally adaptable and have a broad knowledge base. However, these graduates might require additional, more focused training to refine specific skills for immediate applications. Education aims to prepare students for long-term success across various future scenarios, which can sometimes mean a sacrifice in immediate job readiness.

Regarding alignment with industry needs, companies exhibit a strong alignment of training with immediate business needs, which ensures that skills are applicable and directly relevant to current operations. This alignment boosts employee readiness and operational efficiency, as training programs are designed to meet the immediate and practical demands of the business environment.

Educational institutions, on the other hand, aim for broader curricular goals that include future skills and emerging technologies. These goals might not directly coincide with current industry-specific demands but provide graduates with a wider scope of

knowledge. This forward-thinking approach prepares students for technological and industrial changes that may arise in the future, though it may not provide the immediate specificity some employers seek.

As for the speed of adaptation, companies are quick to adapt their training programs to technological changes, ensuring that the skills taught remain on the cutting edge and are immediately applicable in the workplace. This rapid adaptation is crucial in industries that are constantly evolving and where technological prowess can significantly impact business success.

Institutions tend to be more measured in their curricular updates, which may lag behind the rapid pace of industry changes but provide students with a depth of understanding and thorough grounding in foundational concepts. While this slower pace can sometimes put recent graduates at a temporary disadvantage in fast-moving tech fields, it also ensures that they have a durable and comprehensive education that can be adapted over the course of their careers.

Conclusion

The analysis clearly demonstrates a significant alignment gap between the skills training provided by companies and the educational curricula of higher institutions. While companies focus on immediate application and rapid skill deployment, institutions prepare students for a broader future landscape. This gap suggests a strong need for initiatives like co-developed programs and increased industry input into curriculum design, ensuring that graduates are not only adaptable and well-rounded but also ready to meet specific, immediate industry needs. Enhancing collaborations, such as internships and joint research projects, could serve as vital bridges, aligning academic preparation with practical industry requirements and fostering a workforce that is both innovative and immediately effective.

7.1.5 Future Skills Focus: A Comparative Analysis

The focus on future digital skills is critical as it shapes how both companies and higher education institutions prepare their workforce and students for the challenges of tomorrow’s digital landscape. This analysis compares how each sector anticipates and plans for the skills that will be crucial in the next decade.

Companies: Proactive Skill Development for Emerging Technologies

Companies in Cyprus are highly proactive in identifying and integrating future digital skills into their training programs. The anticipation of future needs is closely tied to industry trends and market predictions, which influence corporate training agendas and strategic planning.

Businesses in Cyprus focus on developing skills that are expected to have a direct impact on future market demands and operational requirements. This strategic approach often includes prioritizing areas such as Artificial Intelligence (AI), Machine Learning (ML), Cybersecurity, and Cloud Computing. By aligning their training efforts with these anticipated needs, companies ensure that their workforce is not only prepared for current challenges but also equipped for future technological shifts that could influence their industry. Additionally, companies adjust their training programs rapidly in response to technological advancements, ensuring that employees remain at the forefront of industry developments. This responsiveness allows businesses to stay competitive by continuously updating their employees' skills in sync with the latest technological trends. The ability to swiftly adapt training programs reflects a dynamic approach to workforce development, crucial for maintaining a knowledgeable and efficient team.

Additionally, there is a significant emphasis on investing in training for technologies that are on the edge of becoming mainstream within their operational contexts, such as Quantum Computing and Blockchain. By investing in emerging technologies, companies in Cyprus are not just reacting to current trends but are also proactively preparing for future shifts. This foresight helps them leverage new technologies as soon as they become relevant, ensuring a strategic advantage in the market, and positioning the company as a leader in technological adoption.

Higher Education Institutions: Broad and Inclusive Skill Preparation

Higher education institutions approach the preparation for future digital skills with a broader, more inclusive strategy. This approach is not only about responding to current market trends but also about fostering a deep foundational knowledge that can adapt to changes over a longer horizon.

Academic programs aim to cover a wide spectrum of digital skills, from current applications to emerging technologies that might become relevant over the next decade.

Comprehensive curriculum development is a foundation of this strategy, as it ensures that students are not only equipped to handle today's technology but are also prepared for future innovations. By covering a broad range of topics, these institutions aim to provide a strong educational foundation that remains relevant as new technologies emerge.

Institutions emphasize developing students' adaptability and critical thinking skills, which are crucial for navigating and mastering future digital landscapes that are yet to be fully defined. The focus on these skills is designed to prepare students not just to use technology, but to innovate and lead in its application. This emphasis on adaptability and critical thinking ensures that graduates can thrive in a digital economy where they may often face challenges that require novel solutions. Educational programs often incorporate various skills that blend technology with business, healthcare, and environmental studies, anticipating the need for holistic approaches to future challenges. This integration reflects the growing recognition that the most impactful digital solutions will likely come from the ability to integrate knowledge across different fields. By fostering interdisciplinary learning, institutions are preparing students to solve complex problems and lead diverse teams in a rapidly evolving digital world.

Comparative Analysis

The contrast between how companies and educational institutions focus on future skills underscores their differing operational and educational mandates:

Companies are strategically focused on equipping their workforce with digital skills that have immediate applicability. They prioritize specific technologies like Artificial Intelligence and Machine Learning that are pivotal to current projects and immediate business goals. This practical focus is supported by their frequent skills assessments and adjustments to training programs based on real-time industry needs and technological developments. For example, the rapid integration of Quantum Computing and Blockchain into training reflects a direct response to emerging market opportunities and immediate competitive pressures. This approach ensures that the workforce remains agile and capable of adapting quickly to new technologies as they become relevant to the business.

In contrast, educational institutions aim to develop a versatile and durable skill set in their students. By incorporating a wide array of digital skills into their curricula, from established disciplines like software development to broader fields like IoT and

Blockchain, they prepare students not only for the jobs of today but also for technological shifts that may emerge over the coming decades. This broad-based educational approach is demonstrated by the range of courses offered and the systematic updating of curricula to include a variety studies, which equips students with foundational knowledge that can be applied across various future scenarios.

Companies directly align their training programs with immediate industry demands. This alignment is visible in how companies assess and update their training needs, ensuring that their workforce can deploy new technologies and processes that directly impact current operations. The focus on industry-specific skills is a tactical approach that supports immediate operational effectiveness and business agility, enabling companies to quickly capitalize on new technologies and market changes.

Higher education institutions maintain a broader educational scope, as shown by their extensive curricula that encompass both current and emerging digital technologies. This approach ensures that graduates possess not only the technical skills needed for immediate employment but also the critical thinking and adaptability skills required for long-term career success in an evolving digital landscape. Institutions' commitment to a comprehensive education is evident in their regular curriculum reviews and the inclusion of future-oriented technologies in their course offerings, which are designed to prepare students for a range of future technological environments.

While companies exhibit a trend in updating training programs based on emerging trends, institutions provide depth, ensuring students have a robust understanding of fundamental concepts that will enable them to learn new skills as technologies evolve. This depth of knowledge is crucial for students to effectively navigate and contribute to future technological advancements, even as the specific tools and platforms evolve.

Conclusion

This analysis reveals a crucial gap in the focus on future skills between the corporate sector and higher education institutions. Bridging this gap requires enhanced dialogue and partnership, where industry leaders can provide insights into immediate and future skill needs, helping academic institutions tailor their curricula more effectively. Similarly, institutions can help companies understand the long-term benefits of a more comprehensive educational approach, which prepares employees not just for the next

technology but for the next generation of technological integration. Also, a very good recommendation would be the introduction of cross-sector Internships and Apprenticeships. By establishing structured programs that allow students to work on real projects within companies, they will be able to gain firsthand experience with the technologies and methodologies that are driving current industry innovation. Collaborative efforts such as joint research projects, co-developed training programs, and industry-sponsored academic courses could be key strategies in aligning both sectors towards a common goal: a workforce proficient in the digital skills of tomorrow.

7.1.6 Challenges in Skill Development

The development of advanced digital skills faces distinct challenges within the corporate sector and higher education institutions. This analysis delves into the specific obstacles each sector encounters in maintaining and enhancing digital capabilities among their workforce and student bodies, respectively.

Companies: Navigating Rapid Technological Changes

For companies, the primary challenges come from the rapid pace of technological advancements and the need for continuous skill updates to keep pace with industry innovations.

The fast-evolving nature of technology means that companies must regularly update their training programs to include the latest tools and methodologies. This need for ongoing improvement demands considerable investment and careful planning. Keeping skills current is essential for businesses to remain competitive and efficient, but it also demands a proactive approach to learning and development that can be resource intensive. Allocating the necessary resources, both in terms of budget and time, for ongoing training programmes can be challenging, particularly for smaller companies with limited financial flexibility. The need to balance day-to-day operations with long-term training investments can drain budgets and overextend human resources. Effective resource allocation is crucial for sustaining growth and innovation, yet it remains a significant obstacle for many businesses trying to keep up with technological changes.

In a competitive job market, retaining top talent who possess advanced digital skills is a constant challenge. Companies must offer compelling career development opportunities and benefits to keep these valuable employees. The ability to attract and retain skilled

professionals not only supports a company's operational needs but also enhances its innovation capacity. Employers must create an engaging work environment and a clear path for career advancement to maintain a skilled and motivated workforce.

Higher Education Institutions: Bridging the Industry Gap

Higher education institutions face their own set of challenges, primarily related to curriculum development and alignment with industry needs.

Keeping academic curricula aligned with real-world industry demands is challenging due to the administrative procedures involved in updating educational programs. Academic institutions often experience a significant lag between the rapid advancements in technology and their own ability to respond with curriculum updates. This delay can lead to inconsistencies between what is taught and what is needed in the workplace, making it difficult for graduates to meet the current demands of their industries immediately upon entering the workforce.

Recruiting and retaining faculty who are not only experts in their fields but also skilled at new digital technologies is a significant challenge, impacting the quality of education and the relevance of the skills taught. Institutions must continuously attract and keep faculty who are both knowledgeable in traditional academic subjects and versed in the latest technological advancements to ensure that education remains cutting-edge. This necessity poses a particularly tough challenge in a competitive job market where industry positions may offer more attractive salary and benefits.

Limited funding can restrict the ability to upgrade facilities, invest in new technologies, and develop programs that sufficiently prepare students for the digital demands of the workforce. Financial constraints are a major hurdle, especially for public institutions that depend heavily on government funding, which may not always keep pace with technological advancements. This shortage of resources can limit the institution's ability to offer the latest tools and learning environments, possibly affecting the quality of education, and making students less equipped to join the modern workforce.

Comparative Analysis

The examination of challenges reveals critical insights into the operational and strategic differences between the corporate and academic sectors:

Resource constraints affect both the corporate and academic sectors, but they appear in different forms. Companies primarily struggle with allocating enough ongoing training resources to keep pace with rapid technological changes. This often includes both financial investments and time management, which are crucial for maintaining an up-to-date workforce but can be particularly challenging for smaller companies with limited budgets. On the other hand, educational institutions face challenges related to funding for curriculum development and technology upgrades. These constraints are often worsened by reliance on government funding, which may not keep pace with the rapid advancements in technology, leaving these institutions struggling to provide current tools and learning environments.

Adaptability to change is another area where significant differences arise. Companies need to adapt quickly to remain competitive, making the flexibility of skill development programs a necessity. This need for quick adaptation pushes businesses to constantly update their training programs and methodologies, ensuring that their workforce is equipped to meet current and future challenges. In contrast, higher education institutions often exhibit slower adaptability due to longer academic cycles and the administrative complications involved in curricular approval processes. This slower pace can hinder their ability to quickly integrate new technologies and methodologies, potentially impacting the relevance of their educational offerings.

Regarding skill relevance and application, companies place a high priority on the immediate application of skills, as any gap in skill relevance is directly felt in productivity and competitiveness. The corporate sector's focus on practical, job-ready skills ensures that employees can contribute effectively without the need for extensive on-the-job training. In contrast, for educational institutions, any misalignment between taught skills and industry needs may not become apparent until students enter the workforce and encounter real-world challenges. This delay in feedback can hinder institutions from quickly updating their curricula, potentially leading to graduates who are not well-prepared for specific job requirements, requiring additional training when they start working.

Conclusion

This analysis highlights the importance of addressing the unique challenges faced by companies and educational institutions in developing advanced digital skills. For companies, creating more flexible and responsive training environments and improving strategies for talent retention are key. For institutions, enhancing the responsiveness of curriculum updates, improving faculty recruitment strategies, and securing additional funding are crucial steps. Addressing these challenges effectively requires a collaborative approach, where industry and academia work together to ensure that both current and future workforce needs are met, enhancing the overall digital capabilities of the economy.

7.1.7 Conclusion on Comparison between Higher Institutions and Companies

The comparative analysis across various aspects of advanced digital skills development highlights significant differences and challenges between the corporate and academic sectors in Cyprus. In terms of skills demand and curriculum alignment, companies are focused on immediate application and relevance, while educational institutions emphasize broad, foundational preparation for future adaptability. Training and development efforts show that companies are quick to adapt and implement practical skills training, whereas institutions take a more structured approach, focusing on comprehensive educational outcomes. Partnerships and collaborations further underline these differences, with companies engaging in strategic industry collaborations for direct business benefits, and institutions focusing on long-term educational partnerships that bridge academic theory with practical industry applications. The analysis of preparedness and confidence reveals a divergence in sectoral confidence in skills utility, with companies confident in immediate skill application and institutions confident in long-term career preparedness. Finally, the exploration of future skills focus and the challenges in skill development showcases a shared recognition of emerging digital demands, though each sector faces unique obstacles in preparing their workforce or students to meet these demands effectively. This analysis underlines the need for enhanced cooperation between industry and academia to align skill development initiatives more closely with both current and future technological requirements.

7.2 Comparison between Companies and Employees on Advanced Digital Skills

7.2.1 Comparison of Skills Demand: Companies vs. Employees

This section delves into the demand for advanced digital skills as perceived by companies and reported by employees, exploring the alignment and differences between what companies seek and what employees perceive as valued skills in the workplace. Understanding these dynamics is crucial for addressing the skills gap and enhancing the workforce's capabilities to meet current and future technological challenges.

Companies' Perspective on Skills Demand

Companies in Cyprus have identified a high demand for specific advanced digital skills within their operations. The most sought-after skills include Data Analysis and Data Science, Cybersecurity, Cloud Computing, and Software Development. These skills are essential for various functions, such as data-driven decision-making, securing online and cloud-based platforms, and developing scalable software solutions. Companies emphasize these skills to maintain a competitive edge and drive innovation within a rapidly evolving digital landscape.

Employees' Perception of Skills Demand

While employees acknowledge the importance of these skills, there is a clear indication from the survey that they feel additional areas require attention, particularly emerging technologies. Employees express concerns about their preparedness in Artificial Intelligence (AI) and Machine Learning (ML), areas they recognize as increasingly crucial but feel under-equipped in due to either outdated or insufficient training opportunities. For example, some employees highlighted a gap in practical applications of AI in their daily tasks, suggesting that while they are aware of its importance, the depth of their training does not meet industry standards or personal career aspirations.

Comparative Analysis

The comparison reveals a significant alignment in the types of skills demanded by companies and recognized by employees. However, the depth of expertise and readiness in newer technologies like AI and ML highlights a potential gap. Companies may believe they are providing sufficient training and opportunities for skill acquisition, but employees' feedback suggests that these may not be sufficient or tailored enough to meet individual and specific job role demands.

The survey results also show that while companies offer various training modalities, including internal sessions, workshops, and online platforms, employees feel these are not frequent enough or in-depth to cover the rapid advancements in technology. This difference suggests that while companies believe their training programs are robust, employees see them as potentially superficial or not as aligned with the real-time demands of their roles.

Companies report frequent skills assessments, with many conducting evaluations on a semi-annual basis to ensure their workforce remains at the cutting edge of technology proficiency. However, employees' feedback indicates a need for these assessments to be more reflective of the changing technology landscape and better tailored to individual development needs, suggesting a potential misalignment in how skills assessments are perceived versus their intended effectiveness.

Conclusion

The above analysis underscores a pressing need for companies to reassess their training strategies to ensure they are sufficiently comprehensive and adaptive to include cutting-edge technologies like AI and ML. There is a significant opportunity for more dynamic interaction between employees and management regarding professional development paths and training effectiveness. To bridge the identified gaps, companies could consider more personalized training plans and increased opportunities for hands-on applications of emerging technologies. Additionally, fostering an open dialogue where employees can express their needs and feedback about training programs may help realign training strategies with actual skills demands and enhance overall workforce preparedness and satisfaction.

By integrating these specific examples and insights from your questionnaires, the analysis becomes more robust and actionable, providing clear pathways for companies and employees to collaboratively enhance the acquisition and application of advanced digital skills.

7.2.2 Training and Development: Companies vs. Employees

Training and Development Practices

This section analyses how companies in Cyprus approach the training and development of their workforce in advanced digital skills compared to how employees perceive these

efforts. Understanding both perspectives provides insight into the effectiveness of current training programs and highlights areas where improvements are necessary to align employee skills with industry requirements.

Companies' Approaches to Training and Development

Companies in Cyprus demonstrate a robust commitment to enhancing their workforce's digital skills through a variety of training programs. The main methods employed by companies include internal training programs, external workshops, and online learning platforms.

These are aimed at keeping the skills of existing employees up-to-date and creating a learning culture that is agile and responsive to new technologies. For example, from the survey data (Figure 5), companies reported organizing quarterly workshops that focus specifically on emerging technologies like AI and blockchain, reflecting a direct response to the skill demands identified within their sectors.

Companies also encourage IT employees to pursue additional certifications, often providing financial assistance or paid leave to facilitate this continuing education. The data indicates that companies not only encourage but financially support certifications in cybersecurity and cloud computing, with 80% of companies that answered the survey providing allowances or refunds for specific courses (Figure 6).

Employees' Perceptions of Training and Development

On the other side, employees express a variety of responses regarding these training initiatives. Many employees are satisfied, appreciating the comprehensive learning opportunities and the ability to stay current with industry standards. However, a notable group of employees feel that the training could be more frequent and tailored to individual career paths. For instance, while general software development skills are taught, more specific areas like IoT or specific programming languages for data analysis might lack depth, as indicated by responses in the surveys (Figure 23).

According to Figure 20, while 70% of employees are satisfied with the training frequency, the remaining 30% suggest an increase in sessions that align more closely with the rapid release of new software and technologies. The feedback points to a desire for programs

that are not just generic but are closely aligned with the specific technological shifts and career progression paths within the company.

Comparative Analysis

In this analysis, we dive deeper into how training and development efforts by companies in Cyprus are perceived differently by companies themselves and their employees, focusing on alignment with industry requirements, frequency and relevance of training, support for continuing education, and the effectiveness of training modalities.

Regarding alignment with industry requirements, companies firmly believe that their training programs are robust and well-aligned with the latest industry demands. This confidence is strengthened by continuous investment in learning platforms and partnerships with training providers, which are intended to offer up-to-date content and skills relevant to current market needs. On the other hand, employees acknowledge the availability of training but often point out differences between the training provided and the actual demands they face in their roles. There is a voiced need for training programs to be more customized to the evolving roles and tasks within the company, suggesting that a one-size-fits-all approach may not be as effective in addressing specific job challenges.

In terms of the frequency and relevance of training, the company strategy typically involves scheduling training sessions at standard intervals, such as quarterly or every six months. This scheduling is intended to systematically update employees on new skills. However, employees suggest that the timing of these training sessions often does not match the pace of digital innovation, leading to a gap between the introduction of new technologies and the training provided. Many employees express a desire for more immediate and continuous learning opportunities that mirror the rapid pace of technological change, arguing that more frequent or better-timed sessions could significantly enhance immediate job performance.

When it comes to support for continuing education, corporate policies generally support ongoing education through subsidies for courses or paid time off for certification exams, seen as a strategic investment in the human capital that drives their operations forward. Despite these supportive policies, some employees feel that the level of support could be more substantial or communicated more effectively. They call for not just financial

support but also for scheduling accommodations that allow for study and exam preparation without compromising work output, highlighting a need for more holistic support structures that consider the practicalities of balancing work and continued learning.

Finally, the effectiveness of training various training methods presents another area of difference. Companies often use a blend of internal and external training methods, combining hands-on, practical training sessions with theoretical online courses to provide comprehensive learning experiences. However, feedback from employees indicates a preference for more interactive and practical training sessions over traditional, lecture-based online courses. Employees feel that the effectiveness of training should be measured by how well they can apply learned skills directly to their job tasks, suggesting a need for a greater focus on practical application in training programs.

Conclusion

To bridge the gap between corporate training strategies and employee satisfaction, companies may need to adopt more tailored training programs that consider individual and departmental needs. This approach will ensure that training not only equips employees with the latest skills but also aligns with their career aspirations and the strategic goals of the organization. Enhancing these practices will contribute significantly to maintaining a competitive edge in the digital economy and ensuring that employees feel valued and effectively prepared to meet their job demands. Companies could enhance the effectiveness of these initiatives by incorporating collaborative decision-making processes that involve employees in the development of training programs. Forming training groups with staff members can enhance team spirit and elevate the perceived worth of the training. This is because it provides an opportunity for direct contribution in designing the offered courses and resources.

The comparison between company training strategies and employee feedback highlights both strengths and areas for improvement. While companies are committed to providing foundational and advanced training, there is a clear need for these programs to be more dynamic and responsive to individual and immediate industry needs. Regular feedback mechanisms should be established to gather real-time insights from employees about the usefulness and relevance of the training they receive. Additionally, adopting more agile

training models that can quickly integrate new technologies and methodologies into the curriculum might bridge the current gaps identified by employees. By addressing these aspects, companies can enhance their training effectiveness, thereby increasing job satisfaction and productivity while aligning with strategic business objectives.

7.2.3 Support for Learning

Company Support for Learning

Companies in Cyprus generally recognize the importance of continuous professional development and support their staff's learning efforts in different ways. This includes financial assistance such as tuition payments, providing bonuses for successful course completion, and granting paid leave for educational purposes. These policies reflect a commitment to creating a highly skilled workforce, equipped to handle the demands of a rapidly evolving digital landscape.

According to the survey results, companies typically offer up to 50% tuition reimbursement for courses directly related to job functions (Figure 8). Some companies extend this to cover 100% of costs for high-demand skills like cybersecurity, reflecting targeted investment in strategic areas.

Employee Perceptions and Utilization

Employees generally appreciate the support they receive for further education and certifications. However, they often express a need for greater awareness and easier access to these benefits. There seems to be a gap between the availability of support and its utilization, which may be due to a lack of communication or the perceived complexity of the application processes.

Employees reported in the survey (Figure 21) that while the support exists, the process for application and approval is often difficult, with 30% indicating they found it hard to understand the eligibility requirements or how to apply.

Comparative Analysis

In this analysis of the support for learning, we explore the dynamics between the financial support offered by companies and the perceptions and experiences of employees regarding these policies.

Financial support from companies often covers a significant portion of training costs, though the extent of this support varies. Some organizations offer full reimbursement for certain certifications and training programs, particularly those that are highly sought after like cybersecurity, reflecting a targeted investment in strategic areas crucial to the company's long-term viability. However, others may cap the support at a percentage of the total cost, which can leave employees bearing a substantial part of the expense for high-cost courses, especially those related to cutting-edge technologies not directly linked to immediate company needs. Employees generally appreciate the financial support but often highlight that it doesn't always cover the full range of their educational interests, particularly in rapidly evolving tech areas.

Regarding eligibility and accessibility of these financial aids, corporate policies usually suggest that eligibility for financial support typically requires fulfilling certain criteria, such as previous performance, or the strategic relevance of the skills being developed. This can create barriers for newer employees or those looking to shift their career paths within the company, leading some to feel that the criteria are too restrictive or not well aligned with personal career goals, which can limit their participation in the programs.

Moreover, many companies align their support for learning with the organization’s long-term strategic needs, often focusing on key areas like cybersecurity or cloud computing. While this ensures that the workforce is skilled in areas critical to the company's core operations, it may not cater to employees' interests in broader learning opportunities that encompass emerging fields or personal interest areas. This alignment sometimes leads to a mismatch between the company’s training requirements and the employees' aspirations for professional growth.

Employees are also calling for more agile and responsive training programs that can quickly adapt to the latest market and technology trends, ensuring their skills remain relevant and cutting-edge. There is a strong desire for 'just-in-time' learning modules that can be quickly deployed to address new technological developments. This feedback underscores a need for organizations to develop more flexible learning strategies that can accommodate both the company’s strategic objectives and the individual career development goals of its employees, thereby fostering a more engaged and capable workforce.

Conclusion

This analysis reveals a foundational level of support for learning within companies that is highly valued by employees. However, to maximize the effectiveness of these support structures, companies should consider enhancing the visibility and accessibility of their support programs. Regular training sessions or informational workshops about the benefits and procedures for educational support could bridge the current information gap. Additionally, adopting a more personalized approach to professional development, perhaps through annual individual planning sessions, could help align company offerings more closely with individual aspirations and emerging industry trends. By addressing these elements, companies can better empower their employees, fostering a culture of continuous improvement and innovation.

To further strengthen this approach, companies could implement a more dynamic feedback system where employees can regularly provide input on the effectiveness and relevance of the training and support being offered. This feedback could be used to adjust and tailor programs in real-time, ensuring that educational support remains relevant to both current market conditions and future technological advancements. Additionally, enhancing support for learning with digital tools, such as mobile learning apps or online platforms that offer flexible, on-demand training options, could cater to the diverse needs and schedules of employees, encouraging greater engagement and participation in continuous professional development initiatives.

7.2.4 Skills Assessment Practices

This segment dives into the practices of skills assessment within companies and how these assessments are perceived and experienced by employees in Cyprus. Companies use structured assessments to ensure their workforce is up to date with the necessary digital skills, aligning these practices with strategic goals for maintaining a competitive market position. Employees, on the other hand, view these assessments as a measure of their professional adequacy and a determinant in their career progression.

Comparative Analysis

There is a notable divergence between corporate implementation and employee perception in Cyprus. Companies conduct regular skills assessments to measure the proficiency and readiness of their employees against the rapid technological

advancements in the market. These assessments are methodical and are integrated into the employees' performance evaluation processes. Aimed at identifying skill gaps and planning consistent training, the assessments cover various digital skills such as AI, cybersecurity, and cloud computing, reflecting the broad spectrum of capabilities required in the modern digital landscape. Such structured evaluations are crucial for companies to ensure their workforce remains competitive and can handle the dynamic demands of today's technological environment.

However, from the employees' perspective, while there is a general appreciation for the skills assessments as they provide a clear framework for expected abilities and a pathway for professional growth, there are concerns regarding the pressure these assessments can create. Employees feel that the assessments, although comprehensive, sometimes lack alignment with individual career goals and may not adequately consider the practical application of skills in day-to-day tasks. This difference suggests that while assessments are designed to maintain a highly skilled workforce, they may benefit from a more personalized approach that considers individual employee's career goals and the context in which they apply their skills.

Regarding the depth and frequency of these assessments, companies typically hold them semi-annually to provide a regular check on employee capabilities and identify any immediate training needs. This frequency is intended to keep the workforce agile and responsive to new technologies and industry demands. Nevertheless, feedback from employees indicates a desire for a more tailored approach to assessments. While the regularity is appreciated for ensuring continuous improvement, the frequency can sometimes be overwhelming and may not always be necessary for all roles. Employees value the depth of these assessments but would prefer more targeted evaluations that directly relate to their specific job functions and future career aspirations. This feedback highlights an opportunity for companies to adapt their assessment strategies to better meet the needs of their employees, thereby enhancing the overall effectiveness of their training and development initiatives.

Conclusion

The skills assessment practices within companies in Cyprus are robust and strategically implemented to ensure that the workforce remains competent and competitive. However, there is room for improvement in aligning these assessments more closely with employee expectations and career development needs. The perceptions of employees regarding the assessments highlight the need for a more individualized approach that considers personal and professional growth alongside company objectives. This adjustment is crucial for maintaining a workforce that is not only skilled but also motivated and aligned with their own professional aspirations as well as the strategic goals of the organization.

To refine the effectiveness of skills assessment practices in Cyprus, companies should consider incorporating advanced analytics and AI tools to create more dynamic and personalized assessment frameworks. By leveraging technology, assessments can be continuously updated to reflect real-time market changes and individual performance metrics, thus providing a more accurate and individualized measurement of skill gaps and training needs. Additionally, integrating a peer review component into the assessment process could enhance the transparency and acceptance of the results. Encouraging a culture where employees participate in the evaluation of their colleagues can lead to a more comprehensive understanding of team dynamics and individual contributions, fostering a collaborative environment that values continuous feedback and learning. These measures would not only tailor the assessments to be more employee-centric but also enhance their relevance and effectiveness in developing a workforce capable of meeting future challenges.

7.2.5 Future Skills Preparation

The anticipation and preparation for future digital skills within the IT industry in Cyprus present a complex landscape, characterized by both proactive approaches and areas of discrepancy between companies and employees. The analysis reveals a dichotomy between the readiness perceived by companies and the concerns expressed by employees regarding their preparedness for future technological demands.

Comparative Analysis

There is a notable dichotomy between the readiness perceived by companies and the concerns expressed by employees regarding their preparedness for future technological

demands. Companies demonstrate a keen awareness of the rapid advancements in technology and have taken proactive steps to forecast and prepare for the digital skills that are likely to be crucial soon. Feedback from business leaders highlights a strong consensus on the importance of skills in Artificial Intelligence and Machine Learning, Cybersecurity, and Cloud Computing. These skills are strategically integrated into ongoing training programs, underscoring their critical role in maintaining a competitive advantage. Additionally, companies are recognizing the emerging significance of Blockchain and the Internet of Things (IoT), projecting these technologies as essential skills that will shape future industry standards and practices.

On the other side though, the employee perspective on future skills preparation paints a different picture. Employees express concerns about their current capability to meet future digital demands, despite acknowledging the efforts made by companies in providing training. Many feel only partially prepared to tackle the advancements in fields such as Artificial Intelligence and Machine Learning, which they believe that they are dominant forces in the industry. This sentiment is particularly pronounced in areas like Cybersecurity and Data Privacy, where ongoing education and updated knowledge are vital for effective job performance. Employees are calling for more extensive training and development programs that not only address current skills gaps but also prepare them for emerging technologies that are rapidly transforming the digital landscape. There is a clear demand for training that is not only frequent and comprehensive but also anticipatively structured to enable them to navigate and excel in the evolving tech environment.

Conclusion

The gap between company perceptions and employee concerns regarding future skills preparation suggests a need for more aligned communication and training strategies. Companies might consider enhancing communication to establish clearer channels that ensure employees are aware of the strategic importance of future skills and understand how these competencies are aligned with the company's long-term goals. Developing training programs specifically designed to address the rapidly evolving areas of AI, Cybersecurity, and Cloud Computing ensures they are comprehensive and accessible to all employees. Implementing regular feedback mechanisms allows employees to express their concerns and suggestions regarding future skills training, ensuring that these insights are incorporated into training program adjustments. Fostering a culture of continuous

learning that encourages employees to proactively engage with emerging technologies, supported by access to the latest resources and learning tools, can enhance workforce readiness for future digital challenges, ensuring that both current and future skill demands are met effectively.

To further bridge the gap between company strategies and employee needs, it is crucial to involve employees in the development phase of training initiatives. By creating task forces or groups that include a cross-section of employees, companies can gain diverse perspectives on what skills are truly essential for future developments. This approach not only enhances the relevance of the training programs but also boosts employee morale and engagement by making them feel valued and heard. Additionally, companies could benefit from partnerships with educational institutions and technology experts to bring external insights and cutting-edge knowledge into their training sessions. These collaborations could provide a more varied and profound learning experience that is likely to resonate well with the dynamic needs of employees, preparing them more effectively for future technological shifts.

7.2.6 Employee Engagement and Satisfaction

The comparison between companies and employees regarding engagement and satisfaction within the context of advanced digital skills reveals complex layers influencing both sectors. Companies typically implement various strategies to foster skill development and job satisfaction, aiming to align these initiatives closely with their broader organizational objectives. In contrast, employees' perceptions and satisfaction levels come directly from their personal experiences with these implemented strategies and the actual effectiveness of the training and development opportunities they receive.

Detailed Analysis

In the detailed analysis of employee engagement and satisfaction within the context of advanced digital skills, there is a clear contrast between company strategies and employee perceptions. Companies focus extensively on aligning advanced digital skills with their strategic goals, enhancing overall productivity and competitiveness. They implement regular training programs and encourage certification, which ostensibly supports career development and job satisfaction. Additionally, financial and continuous learning

opportunities are designed not only to keep skills updated but also to boost employee motivation and retention. However, despite these well-intentioned efforts, challenges often arise in matching the rapid pace of digital transformation with effective training programs, which can lead to gaps in skill levels and, potentially, in employee satisfaction. Companies acknowledge the necessity of maintaining a highly skilled workforce and therefore provide robust support systems for learning and development, which ideally should translate to higher employee satisfaction and engagement levels.

From the employee perspective, feedback indicates a generally positive reception towards the training and development opportunities provided. Many employees express satisfaction with the availability and quality of advanced digital skills training, which is crucial in fostering a sense of knowledge and confidence, empowering them to meet job demands effectively. Despite this overall positivity, it's not a universally shared sentiment. Some employees express dissatisfaction because they find the training offered is not always relevant or timely. This training may not match the immediate needs or new trends affecting their specific jobs. Additionally, the encouragement to pursue further training or certifications, while appreciated, is not felt uniformly across all participants. This suggests inconsistencies in how company policies are implemented or perceived across different departments or roles, indicating a need for more tailored and responsive training strategies to enhance engagement and satisfaction uniformly across the organization.

Conclusion

In analysing the comparison of company initiatives against employee experiences in advanced digital skills development, it becomes apparent that while companies are deeply invested in crafting environments conducive to learning and skill enhancement, there remains a notable imbalance in how these efforts are perceived by employees. This misalignment is not just a reflection of organizational intent versus individual reception but also an indicator of the areas that require more attentive recalibration to harmonize corporate objectives with employee needs and expectations. The conclusion drawn from this analysis is that companies must not only continue to invest in the sophisticated infrastructure that supports ongoing education and professional development but also refine these efforts to ensure they are deeply resonant with, and responsive to, the actual

career paths and day-to-day realities of their employees. This involves embracing a more dynamic feedback process where employee input directly informs the development cycles of training programs, thereby making these initiatives more adaptable to the rapid evolution of technological domains.

To effectively bridge these gaps, it is essential for companies to develop a more inclusive approach to skill development. This could involve creating role-specific advisory boards consisting of employees who can provide ongoing insights and recommendations tailored to the needs of their respective functions. Such boards would facilitate a two-way communication channel where strategies and training content can be discussed openly, promoting a sense of ownership and customization among employees. Additionally, incorporating more advanced predictive analytics could help organizations anticipate future skills requirements more accurately, allowing for proactive training approaches that prepare employees ahead of industry shifts, rather than reacting to changes as they occur.

Such strategic enhancements not only promise to boost the internal culture of continuous improvement and innovation but also position companies to better leverage their human capital in a competitive digital economy. Ultimately, fostering an environment where training and development are closely aligned with both the strategic direction of the company and the individual aspirations of its employees will be crucial in cultivating a resilient, agile, and proficient workforce.

7.2.7 Conclusions

The analysis provides an in-depth exploration of the differences between company policies on advanced digital skills and the real-world experiences of employees within the IT sector in Cyprus. It reveals significant gaps that affect the effectiveness of digital skills training and its practical application in the workplace, underscoring the need for strategic reforms to address these issues. Companies are indeed proactive in identifying necessary digital skills and allocate substantial resources to training their workforce. They offer regular training programs, financial support for further education, and frequent skills assessments. However, despite these efforts, the employee experience is inconsistent. While some employees feel well-prepared and satisfied, others point out significant differences, such as the mismatch between the training provided and the actual job

requirements, the lack of practical application of the skills taught, and the insufficient customization of learning paths to fit individual career trajectories. Furthermore, some employees report difficulties in accessing further training or certification opportunities, which are critical for career advancement in a technology-driven domain.

To bridge these gaps, companies should consider implementing more dynamic training strategies that are closely tailored to individual needs and job roles. This could include developing customized training programs that allow employees to select courses that align directly with their current roles and future career aspirations. Such modular training options could significantly enhance the relevance and effectiveness of professional development efforts. Moreover, establishing robust communication and feedback mechanisms would allow for continuous refinement of training efforts based on direct employee input, leading to more targeted and effective solutions.

Additionally, companies should strengthen support for continuous learning by promoting an environment that values ongoing professional growth. This could be achieved through internal knowledge-sharing platforms, peer mentoring programs, and easier access to external educational events. Addressing the gaps in practical application is also crucial; training initiatives should not only focus on theoretical knowledge but also emphasize real-world applications. Integrating hands-on training projects, real-world case studies, and collaborations with tech companies can provide employees with valuable experiences that directly translate to their job functions.

In general, while there is a shared goal between companies and employees to enhance digital competencies to navigate the challenges of a dynamic tech sector, a more aligned and responsive approach to training programs is necessary. By improving the strategic alignment of training initiatives with the actual needs and conditions faced by employees, companies can enhance the impact of their digital skills development efforts. Additionally, fostering a culture of adaptive learning and support for ongoing professional growth will be crucial in preparing both companies and their employees to effectively meet future technological challenges and innovations. This collaborative effort between companies and employees to refine digital skills training and application will be essential in developing a workforce that is proficient in contemporary technologies and adaptable to future advancements. Enhanced strategies that focus on tailored training, continuous

learning opportunities, and practical applications of skills will be fundamental in achieving these goals.

7.3 Comparison between Institutions and Employees on Advanced Digital Skills

This section presents a summary of research conducted by Christodoulos, focusing on the comparative analysis of advanced digital skills training offered by educational institutions versus the actual skills possessed and perceived by employees in the workplace.

7.3.1 Course Offerings and Perceived Adequacy

Educational institutions report robust course offerings in advanced digital skills like AI, machine learning, and cybersecurity. These offerings are designed to prepare students for future challenges in the digital landscape. However, employees indicate a gap in the sufficiency of these courses, particularly showing a lack of comprehensive training in rapidly evolving technologies such as AI and data science. This mismatch suggests a potential inequality between the theoretical knowledge provided by institutions and the practical skills demanded in the workplace.

7.3.2 Confidence in Skill Levels

Institutions express high confidence in their graduates' abilities to meet job market demands. Conversely, employees often feel underprepared for the rapid technological changes they encounter in their roles, suggesting a need for ongoing professional development after graduation.

7.3.3 Future Skills Focus

Both educational institutions and employees recognize the critical importance of AI and machine learning for future development. However, while academic programs are preparing students for a broad range of future technologies, employees emphasize the need for skills that are immediately applicable, such as cloud computing and data analytics.

7.3.4 Emerging Trends and Adaptation

Institutions make efforts to regularly update their curricula to include new technologies. Employees, however, feel these updates do not keep pace with industry changes, indicating a need for more frequent and relevant curriculum revisions to ensure continuous alignment with industry advancements.

7.3.5 Perceived Skills Gap

There is a difference in perceptions regarding the alignment of training with industry needs. Institutes believe their programs are well-aligned, but employees see significant gaps, especially in high-demand areas like AI, cybersecurity, and data analytics.

7.3.6 Barriers to Skill Development

Educational institutions face challenges such as limited resources and difficulties in hiring qualified faculty. Employees, on the other hand, report barriers related to time constraints and lack of support for ongoing learning, which hinder their ability to keep skills up to date.

7.3.7 Training Satisfaction and Alignment

While there is general satisfaction among institutions regarding the alignment of their training with industry needs, employee feedback reveals dissatisfaction with the relevance of their training to actual job requirements. This highlights the necessity for educational programs to be more responsive to the practical demands of the market.

7.3.8 Conclusion

The analysis provided by Christodoulos enhances our understanding of the differences between the digital skills training offered by institutions and the needs perceived by employees.

It is important to acknowledge that some of the discrepancies observed in this analysis might stem from the diverse educational backgrounds of the employees surveyed. Notably, a significant number of IT professionals in Cyprus may have received their education abroad, bringing with them expectations and experiences that differ from those specifically prepared through Cypriot educational systems. While our study primarily collected data on programs within Cyprus, it is recognized that the global landscape of higher education, especially in advanced digital skills, tends to converge in terms of quality and curriculum content. This global standardization suggests that the insights drawn from local institutions are broadly reflective of wider educational trends. However, this factor should be considered when evaluating the perceived gaps and satisfaction levels reported by employees, as their benchmarks may vary based on their educational experiences outside Cyprus.

To bridge these gaps, a collaborative approach involving both educational institutions and industry stakeholders is essential. This collaboration could focus on developing curricula that are not only technologically advanced but also directly applicable to current and future workplace demands.

7.4 General Conclusion on the problem

In this chapter, we have navigated through the diverse perceptions and implementations of advanced digital skills across educational institutions, companies, and employees in Cyprus. The detailed comparative analyses of all the sections have illuminated significant alignment gaps as well as areas where cooperation could be fostered to enhance the digital skills landscape. Importantly, these insights point to both current challenges and potential strategies that can be adopted by stakeholders to bridge the skills gap effectively.

Moving into Chapter 8, we will synthesize these findings to summarize the conclusions about the state of advanced digital skills in Cyprus. We will evaluate the effects of our research for educational and corporate practices and suggest strategic directions for future efforts. This final chapter aims to not only summarize the key points of our investigation but also to recommend actionable steps that stakeholders can undertake to foster a resilient and dynamic digital workforce. As we conclude, let's consider how the insights we've gathered can lead to real changes and meet the urgent needs of advanced digital skills in Cyprus.

Chapter 8

Conclusions And Recommendations

8.1 Conclusion on the Gap of Advanced Digital Skills in Cyprus

This diploma thesis has extensively explored the advanced digital skills landscape in Cyprus, focusing particularly on the alignment as well as the misalignment between educational institutions, companies, and the real-world experiences of employees in the IT sector. The findings showed a series of significant gaps, which are essential in understanding the challenges faced by the region in developing a digitally advanced, proficient workforce.

A critical gap identified is the mismatch between the curricula of higher education institutions and the immediate practical needs of the industry. A mentioned in the extensive analysis, educational programs often emphasize theoretical knowledge and a broad base of skills, including emerging technologies such as AI and blockchain. However, companies have reported a need for specific, actionable skills like cybersecurity, cloud computing, and data analytics, which are not adequately covered by current academic offerings. This suggests that educational institutions may not be quick to respond to the rapid evolution of industry requirements.

Another area that showed a critical gap, is the training within companies as it often fails to meet employee's expectations for career development and skill acquisition. Employees showed their concerns in the lack of preparation of corporate training programs for their roles, showing a lack of depth and failure to keep pace with technological advancements. This leads to significant variability in the readiness of employees, where some workers feel well-equipped to meet their job demands, while others feel underprepared and unsupported.

Also, the pace of technological change rises as a further challenge, as it is often faster than the rate at which curricula and training programs are updated. This lag results in a workforce that is often playing catch-up with current technologies. As a result, it impacts the overall productivity and competitiveness of companies within the region. Additionally, the theoretical focus of most academic and corporate training programs

means that employees often lack practical, hands-on experience, which makes the gap between training and real-world job needs even wider. Furthermore, there are considerable barriers to continuous learning and development, both within companies and educational institutions. Employees face obstacles such as limited time, lack of financial support, and insufficient access to relevant training resources, which hinder their ability to maintain and enhance their digital skills. Educational institutions also struggle with limited budgets and academic processes that delay the integration of new technologies and methodologies into their programs.

Another problem that appeared along the research was that resource constraints within both sectors, corporate and academic, limit the ability to provide state-of-the-art training and education. These constraints include not only financial limitations but also a shortage of faculty and trainers who have industry experience and expertise. Such systemic issues contribute to the difficulties in maintaining a curriculum that is responsive to the dynamic digital landscape.

8.2 Recommendations for the future to shorten the gap.

To effectively address the advanced digital skills gap in Cyprus, it is essential to use a comprehensive approach that better aligns educational programs, corporate needs, and real job market demands. Many proposed solutions were introduced alongside this diploma thesis that can help shorten this gap. The strategy should involve collaboration among schools, industry leaders, and government bodies to build a strong workforce that is skilled and capable of handling the challenges of a digital economy. Some of the most essential proposed solutions are listed below.

A key strategy is to develop and continuously update educational curricula in direct partnership with industry professionals. This involves jointly creating courses focused on essential skills like cybersecurity, data analytics, and cloud computing, and incorporating real-world applications through expanded internships, live project work, and simulations that replicate actual job challenges. These proposed solutions will not only keep the educational content up to date but also improve students' ability to use what they learn in professional environments. Additionally, educational institutions and corporations should create clear paths for professional development, supported by training that matches

individual career goals and wider company aims. This should include help with gaining certifications and advanced training in specialized areas, fostering a culture of continuous learning. To support this, organizations should offer extensive access to learning resources, such as online courses and seminars, and provide the necessary time and financial backing to promote ongoing professional growth.

Investing in flexible, accessible learning platforms is also vital. These platforms should accommodate different learning styles and schedules, enabling self-paced, on-demand learning that meets the diverse needs of the workforce. Moreover, increasing direct industry involvement in educational governance through advisory roles, guest lectures, and curriculum development can offer crucial insights into the practical skills needed by the industry. Implementing skills forecasting and strategic planning is critical to predict and proactively address future skill requirements. Also, strengthening public-private partnerships will also enhance the use of resources from both sectors to improve educational infrastructure, broaden training opportunities, and provide greater access to modern learning resources.

Finally, establishing robust feedback mechanisms for continuous adaptation of training and educational programs is crucial. This involves the systematic collection and utilization of feedback from all stakeholders—including industry leaders, educators, and learners—to ensure that training content and methods are continually refined and remain relevant to the evolving needs of the digital economy.

8.3 Personal hopes

Reflecting on the advanced digital skills landscape in Cyprus, me, and my colleague Christodoulos have identified significant gaps that underscore a pressing need for alignment between educational programs, corporate training, and actual job market requirements. These gaps, including outdated curricula, insufficient practical training, and slow adaptation to technological advances, highlight critical areas needing attention. In response, recommendations for fostering stronger collaborations between academia and industry, updating curricula to include real-world applications, emphasizing practical skills, and investing in flexible learning platforms were proposed. These steps are

essential to prepare both current and future workers effectively for the dynamic demands of the digital marketplace.

Looking ahead, it's important to keep examining and assessing our approach to digital skills. Future research should aim to spot new gaps and constantly come up with new strategies to address them. I am optimistic about the potential to narrow these gaps. By putting the suggested strategies into action, we have a great opportunity to greatly improve digital skills across Cyprus's workforce. This improvement would not only help individuals in their careers but also boost the national economy. Although the challenges are significant, the strategies we've laid out show a clear way forward. With a dedicated effort towards continuous research and adapting our strategies as needed, I believe we can not only lessen but perhaps even close the digital skills gap in Cyprus, leading to a strong digital economy driven by a skilled, creative, and flexible workforce.

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Annex A

This annex section of this thesis includes the complete questionnaires used to gather data from three distinct groups: higher education institutions, companies, and employees within the IT sector of Cyprus. This appendix provides transparency about the research process, allowing readers to see the exact measures used to evaluate the advanced digital skills landscape in Cyprus, thereby supporting the findings and conclusions discussed throughout the thesis.

A.1: For Institutes

"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: _____

A-2: For Companies

“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: _____

A-3: Employees

“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: _____