Prospects of Employing Graduates of Computer Science and Technology Diploma Programs in Asir Region, Saudi Arabia: An Analysis for the Period 2019-2023

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Abstract

This paper aims to explore and analyze the employment processes of graduates from computer science diploma programs in Saudi Arabia during the period from 2020 to 2023.

This paper employed a quantitative research approach and utilize the survey method to collect data. The survey instrument designed to address the research objectives and questions outlined earlier. The collected survey data was analyzed using the Statistical Package for the Social Sciences (SPSS) software. The target population for this study comprises all graduates of computer science and technology diploma programs in the Asir Region of Saudi Arabia for the period from 2019 to 2023. Since it is not feasible to survey the entire population, a representative sample of 60 participants had been selected using a random sampling technique.

The results indicate that there are 42 (70%) who are Employed, there are 10 (16.7%) who are Self-Employed, and there are only 8 (13.3%) who are Unemployed. Which indicates that Graduates of Computer Science and Technology Diploma Programs in Asir Region, Saudi Arabia have higher probabilities to be employed. There are 19

(31.7%) who were graduated in 2019 and 2020, and there are 10 (16.7%) who were graduated in 2022. While there are 9 (15%) who were graduated in 2023. And there are only 3 (5%) who were graduated in 2021. there are 26 (43.3%) who are Employed in Public Sector, there are 20 (33.3%) who are Employed in private Sector, there are 6 (10%) who are Employed in mixed Sector (public and private), and there are only 8 (13.3%) who are Unemployed. Which indicates that private sector faces greater challenges in employing computer science program graduates compared to the public sector.

Keywords: Employing, Graduates of Computer Science and Technology, Diploma Programs, Asir Region, Saudi Arabia.

Introduction

In an era defined by rapid technological advancements and the ever-increasing digitalization of various industries, the demand for skilled professionals in the fields of computer science and technology has become paramount (Alsolami, 2024). As the global economy continues to evolve, the ability to leverage cutting-edge technologies and adapt to changing market dynamics has become a crucial determinant of organizational success and national competitiveness (Abed and Shackelford, 2020). Within this context, the employment prospects of graduates from computer science and technology diploma programs have taken on heightened significance, as they possess the specialized knowledge and technical expertise necessary to drive innovation and facilitate digital transformation (Wiseman et al., 2013).

The Asir Region of Saudi Arabia, with its vibrant economic landscape and burgeoning tech sector, presents a unique opportunity to explore the employment patterns, challenges, and opportunities faced by these graduates (Tikare et al., 2017). As the Kingdom of Saudi Arabia embarks on its ambitious Vision 2030 plan, which aims to diversify the nation's economy and reduce its reliance on oil, the importance

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of nurturing a highly skilled and adaptable workforce in the fields of computer science and technology cannot be overstated (Gibbs and Bozaid, 2022). The region's strategic location, coupled with its growing investment in technological infrastructure and talent development, makes it a compelling case study for understanding the employment prospects of computer science and technology diploma graduates (Aljohani and Alajlan, 2020).

Amid the rapid development witnessed in the technology and computing sector in Saudi Arabia, employing graduates from computer science diploma programs is of utmost importance to meet the growing needs of the labor market (Jahan et al., 2021). Understanding employment patterns and their evolution for this group of graduates is essential for better guiding educational and training policies and enhancing workforce capabilities in this field (Allam, 2020).

This study seeks to delve into the intricate dynamics of the employment landscape for these graduates within the Asir Region (Alfaraidy, 2020). Through providing a comprehensive analysis of the prevailing trends, obstacles, and emerging possibilities, the research aims to inform strategic decision-making and contribute to the development of effective policies and interventions that can enhance the employability and career prospects of computer science and technology diploma graduates in the region (El-Kady et al., 2014).

Furthermore, this study aims to explore and analyze the employment processes of graduates from computer science diploma programs in Saudi Arabia during the period from 2020 to 2023. The study inquiries about the common patterns of employment for these graduates, the factors that influence employment processes, the challenges they face in entering the labor market, and the opportunities available to them across various sectors and industries (Abdulaziz et al., 2023). The research comes in the context of a critical analysis of these processes and trends to understand

the prevailing dynamics behind the employment of computer science diploma program graduates. This helps in guiding educational and training policies more effectively and improving employment opportunities for these graduates (Allmnakrah and Evers, 2020).

This research represents a significant effort to understand the employment of computer science diploma program graduates in Saudi Arabia during the specified period. It aims to make a valuable contribution to the development of the labor market and to enhance job opportunities for this important group of graduates.

Problem Definition

With the rapid expansion of technology and the increasing demand for digital skills, there is a need to understand how these changes affect the employment of graduates from computer science and technology diploma programs in Asir Region, Saudi Arabia, during the period from 2019 to 2023. These graduates face a range of challenges in integrating into the labor market, which may arise from various factors including economic changes, technological developments, and educational and training policies. Hence, there is a need to deeply analyze these challenges and opportunities to provide practical recommendations that might improve the employment prospects of these graduates and enhance their role in supporting technological development in the Kingdom.

Research Objectives

1. Assess Employment Patterns and Career Paths: Analyze and assess the employment patterns of computer science and technology diploma graduates in Asir Region for the period between 2019 and 2023, focusing on identifying the sectors and fields that primarily recruited these graduates.

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2. Understand and Address Challenges: Identify and analyze the challenges faced by computer science and technology diploma graduates during the employment process in Asir Region, including market obstacles, technological changes, and professional requirements, and assess their impact on employment possibilities and job opportunities.

3. Explore and Maximize Opportunities: Explore the job opportunities available for diploma graduates in computer science in Asir Region, considering current and future market demand, and determine how graduates can benefit from these opportunities.

4. Strategic Recommendations to Enhance Employment: Develop strategic and practical recommendations to improve the employment processes for computer science program graduates in Asir Region. This includes enhancing cooperation between educational institutions and companies, improving curricula to meet market needs, and providing policy recommendations that support the more effective integration of computer science graduates into the labor market.

Research Questions

1. What are the common employment patterns for graduates of computer science and technology diploma programs in Asir Region during the period from 2019 to 2023?

2. What are the main challenges facing the employment processes of computer science program graduates in Asir Region during the mentioned period?

3. What opportunities are available for graduates of computer science and technology diploma programs in Asir Region according to the identified employment patterns?

4. What are the differences in employment patterns, challenges, and opportunities between the public and private sectors in Asir Region?

5. What is the impact of economic and technological changes on the employment of computer science program graduates in Asir Region during the specified period?

Research Hypotheses

1. It is assumed that the shift towards digitization in various sectors in Asir Region will lead to increased demand for computer science program graduates.
2. It is assumed that the private sector will face greater challenges in employing computer science program graduates compared to the public sector in Asir Region.
3. It is assumed that recent technological developments, such as artificial intelligence and cloud computing, will create new opportunities for computer science program graduates in Asir Region.

Importance of the Research

1. Meeting Market Needs: The research contributes to understanding the labor market needs in Asir Region for qualified computer science personnel, thus the findings of the research can contribute to meeting these needs and better-directing education and training policies.
2. Improving Employment Opportunities: By understanding the common patterns of employing computer science program graduates and identifying the challenges and opportunities in the labor market, the research can help in developing and improving job opportunities for graduates in this field.
3. Supporting the Technology Industry: The technology sector is vital to the economy of the Kingdom of Saudi Arabia, therefore, scientific research in this field can contribute to supporting and developing this sector and enhancing its role in achieving economic development.
4. Making Policy and Strategic Decisions: The research findings provide a reliable database for making policy and strategic decisions related to developing the

computer science sector and enhancing the employment of computer science program graduates in the Kingdom, thereby achieving sustainable development in this sector.

In summary, research in this area contributes to a better understanding of the challenges and opportunities of employing computer science program graduates and developing policies and strategies that enhance job opportunities and competitive capabilities in the labor market.

Research Domain and Limitations

Research Domain:

This study is firmly situated within the domain of employment and labor market analysis, with a specific focus on the prospects of employing graduates of computer science and technology diploma programs in the Asir Region of Saudi Arabia. The research aims to provide a comprehensive understanding of the employment patterns, challenges, and opportunities faced by these graduates during the period from 2019 to 2023.

The Study's Scope Encompasses Several Aspects:

Employment patterns: The research examines the sectors, industries, and job roles in which computer science and technology diploma graduates in the Asir Region have been employed, as well as the factors influencing their career paths.

Challenges: The study investigates the various challenges encountered by these graduates during the employment process, including market conditions, skill gaps, and professional requirements.

Opportunities: The research explores the emerging job opportunities available to computer science and technology diploma graduates in the Asir Region, considering factors such as technological advancements, market demands, and economic trends.

Differences between public and private sectors: The study analyzes the variations in employment patterns, challenges, and opportunities between the public and private sectors in the Asir Region.

Through addressing these key aspects, the study aims to provide valuable insights and strategic recommendations to enhance the employability and career prospects of computer science and technology diploma graduates in the Asir Region.

Limitations:

While this research endeavors to provide a comprehensive analysis of the employment prospects for computer science and technology diploma graduates in the Asir Region, it is important to acknowledge the following limitations:

1. **Geographical scope:** The study is confined to the Asir Region of Saudi Arabia and may not be directly applicable to other regions or the country as a whole. The employment landscape and market dynamics may vary across different geographical areas.

2. **Temporal scope:** The research period is limited to 2019-2023, and the findings may not fully capture the long-term employment trends and changes that could occur beyond this timeframe.

3. **Sampling limitations:** Despite the use of a random sampling technique, the selected sample may not perfectly represent the entire population of computer science and technology diploma graduates in the Asir Region, which could affect the generalizability of the findings.

4. **Data availability and reliability:** The study relies on self-reported survey data from the graduates, which may be subject to response biases or inaccuracies. Additionally, the availability and reliability of secondary data sources, such as government reports or industry statistics, may pose some limitations.

5. **Contextual factors:** The employment prospects of computer science and technology diploma graduates may be influenced by a range of contextual factors, such as cultural norms, socio-economic conditions, and institutional policies, which may not be fully captured within the scope of this research.

These limitations should be considered when interpreting the findings of the study and when applying the recommendations to other contexts or time periods. Future research may address these limitations and expand the scope of investigation to enhance the overall understanding of the employment prospects for computer science and technology diploma graduates in the Asir Region and beyond.

Research Methodology

This study will employ a quantitative research approach and utilize the survey method to collect data. The survey instrument will be designed to address the research objectives and questions outlined earlier.

Data Collection:

A self-administered questionnaire will be developed and distributed to the selected sample of computer science and technology diploma graduates in the Asir Region. The questionnaire will include both closed-ended and open-ended questions to gather comprehensive information. The survey will be conducted either online or through in-person data collection, depending on the feasibility and accessibility of the target respondents.

Data Analysis:

The collected survey data will be analyzed using the Statistical Package for the Social Sciences (SPSS) software. The analysis will involve various statistical techniques, including:

1. Descriptive statistics: Frequencies, percentages, means, and standard deviations will be calculated to describe the demographic characteristics of the respondents and provide an overview of the employment patterns, challenges, and opportunities faced by the graduates.

2. Inferential statistics: Appropriate statistical tests, such as t-tests, ANOVA, and correlation analysis, will be conducted to examine the relationships between variables and test the research hypotheses. This will help identify any significant differences in employment patterns, challenges, and opportunities between the public and private sectors, as well as the impact of economic and technological changes.

Study Population and Sample:

The target population for this study comprises all graduates of computer science and technology diploma programs in the Asir Region of Saudi Arabia for the period from 2019 to 2023. Since it is not feasible to survey the entire population, a representative sample of 60 participants will be selected using a random sampling technique.

Data Analysis

What is your gender?

Table 1: Gender

Gender		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	18	30.0	30.0	30.0
	Male	42	70.0	70.0	100.0
	Total	60	100.0	100.0	

When asking about the gender of the study participants, there are 42 males and 18 females among a sample of 60 who are (graduates of computer science and technology diploma programs in the Asir Region of Saudi Arabia for the period from 2019 to 2023).
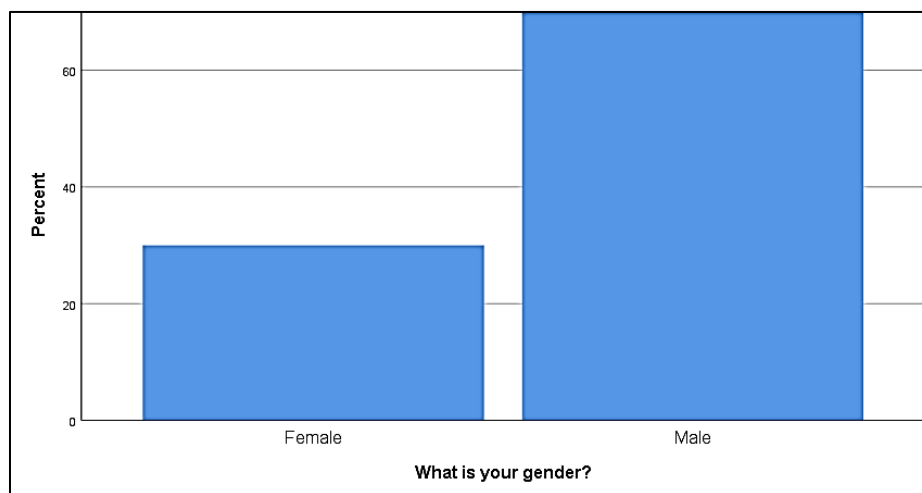

Figure 1: Gender

What is your age range?

Table 2: age

		Frequency	Percent	Valid Percent	Cumulative Percent
Age					
Valid	35-54	1	1.7	1.7	1.7
	55 and above	2	3.3	3.3	5.0
	25-34	23	38.3	38.3	43.3
	18-24	34	56.7	56.7	100.0
	Total	60	100.0	100.0	

When asking about the age of the study participants, there are 34 (56.7%) who are within the age range (18-24), and 23 (38.3%) who are within the age range (25-34).
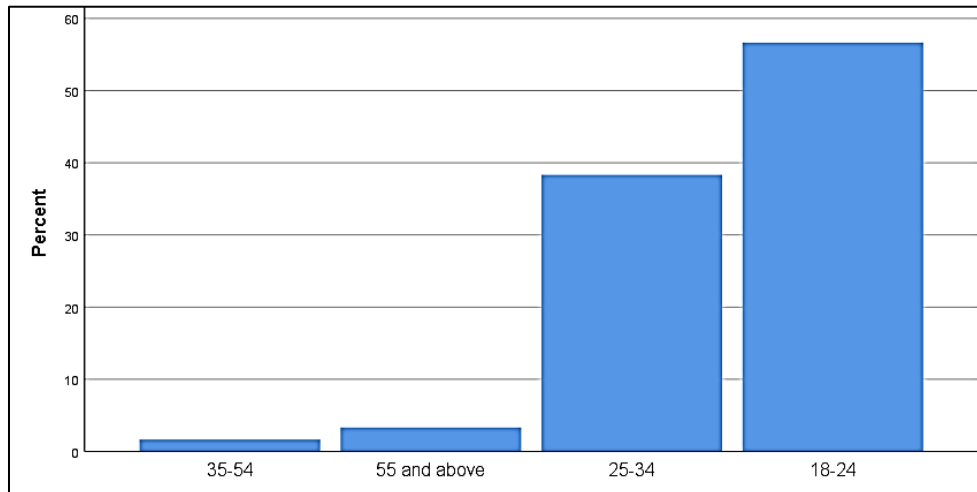
Figure 2: age

What is your graduation year?

Table 3: graduation year

		Frequency	Percent	Valid Percent	Cumulative Percent
Graduation Year					
Valid	2021	3	5.0	5.0	5.0
	2023	9	15.0	15.0	20.0
	2022	10	16.7	16.7	36.7
	2019	19	31.7	31.7	68.3
	2020	19	31.7	31.7	100.0
	Total	60	100.0	100.0	

When asking about the Graduation Year of the study participants, there are 19 (31.7%) who were graduated in 2019 and 2020, and there are 10 (16.7%) who were graduated in 2022. While there are 9 (15%) who were graduated in 2023. And there are only 3 (5%) who were graduated in 2021.
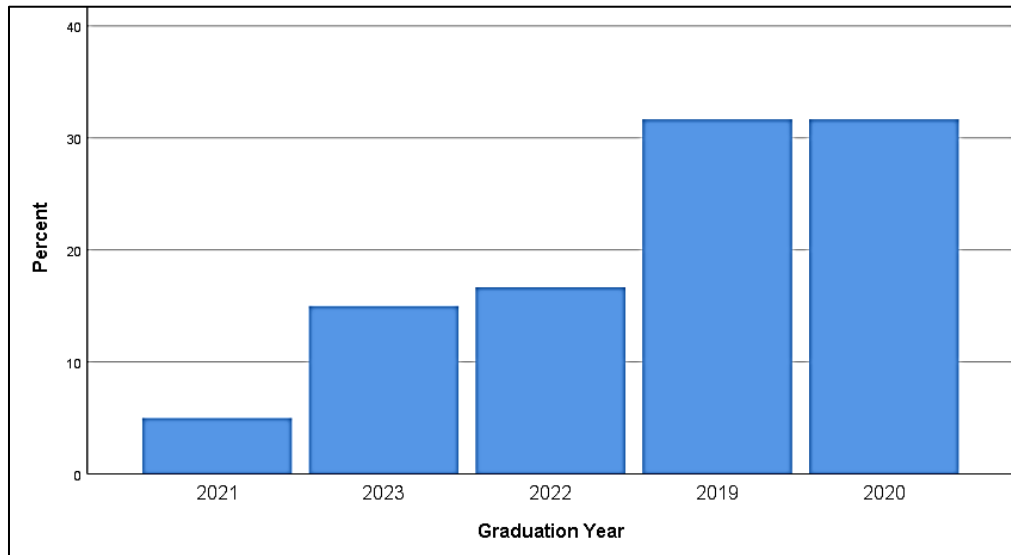
Figure 3: graduation year

What is your current employment status?

Table 4: employment status

What is your current employment status?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unemployed	8	13.3	13.3	13.3
	Self-Employed	10	16.7	16.7	30.0
	Employed	42	70.0	70.0	100.0
	Total	60	100.0	100.0	

When asking about the current employment status of the study participants, there are 42 (70%) who are Employed, there are 10 (16.7%) who are Self-Employed, and there are only 8 (13.3%) who are Unemployed. Which indicates that Graduates of Computer Science and Technology Diploma Programs in Asir Region, Saudi Arabia have higher probabilities to be employed.
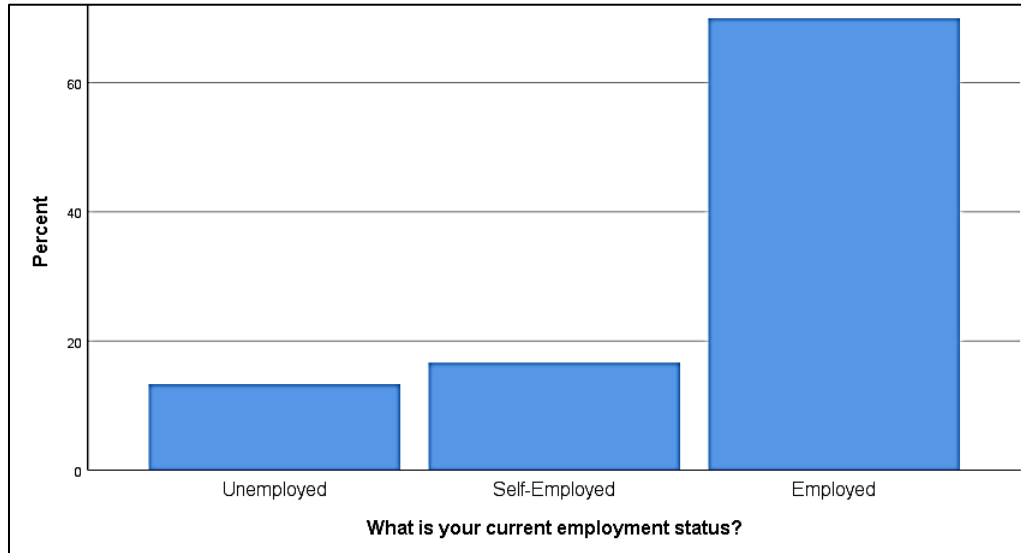
Figure 4: employment status

If employed, what type of organization do you work for?

Table 5: organization type

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Mixed sector	6	10.0	10.0	10.0
	Unemployed	8	13.3	13.3	23.3
	Private Sector	20	33.3	33.3	56.7
	Public Sector	26	43.3	43.3	100.0
	Total	60	100.0	100.0	

If employed, what type of organization do you work for?

When asking about the type of organization of the study participants, there are 26 (43.3%) who are Employed in Public Sector, there are 20 (33.3%) who are Employed in private Sector, there are 6 (10%) who are Employed in mixed Sector (public and private), and there are only 8 (13.3%) who are Unemployed. Which indicates that

private sector faces greater challenges in employing computer science program graduates compared to the public sector.
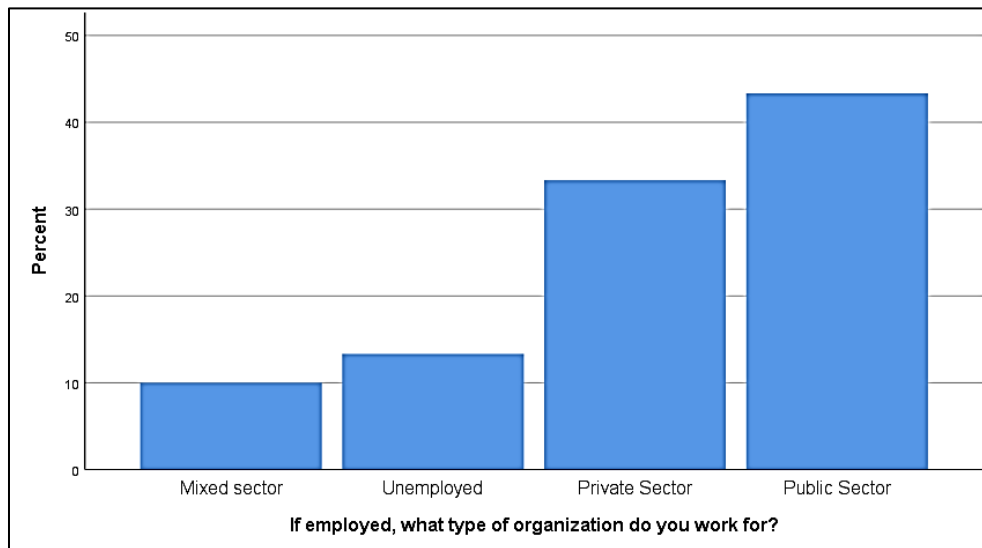

Figure 5: organization type

What is your current job role and responsibilities?

Table 6: role and responsibilities

What is your current job role and responsibilities?				
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Research/Development	4	6.7	6.7	6.7
	Educational	6	10.0	10.0	16.7
	Unemployed	8	13.3	13.3	30.0
	Managerial/Administrative	9	15.0	15.0	45.0
	Technical/Engineering	16	26.7	26.7	71.7
	Industrial	17	28.3	28.3	100.0
	Total	60	100.0	100.0	

When asking about the job role and responsibilities of the study participants, there are 17 (28.3%) who are Employed in Industrial Sector, there are 16 (26.7%) who are Employed in Technical/Engineering Sector, there are 9 (15%) who are Employed in Managerial/Administrative, and there are only 8 (13.3%) who are Unemployed.
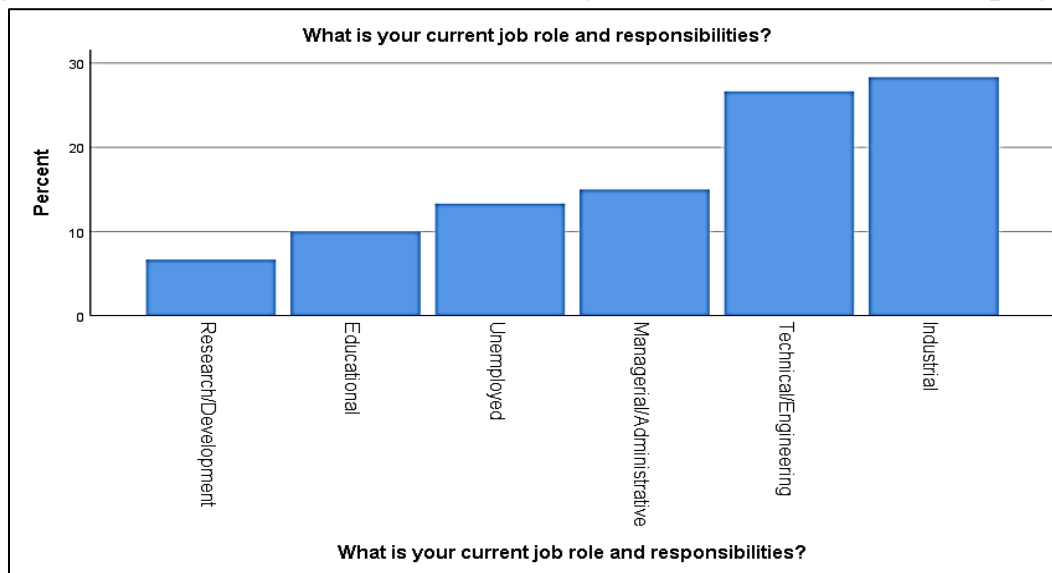

Figure 6: role and responsibilities

How did you find your current job?

Table 7: How did you find your current job

	How did you find your current job?				
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	university/college placement	5	8.3	8.3	8.3
	Personal/professional network	6	10.0	10.0	18.3
	Unemployed	8	13.3	13.3	31.7
	Job advertisements	15	25.0	25.0	56.7
	Linked In	26	43.3	43.3	100.0
	Total	60	100.0	100.0	

When asking about the how the study participants found their current job, there are 26 (43.3%) who used LinkedIn, there are 15 (25%) who used job ads, there are 6 (15%) who used Personal/professional network, and there are only 8 (13.3%) who are Unemployed.
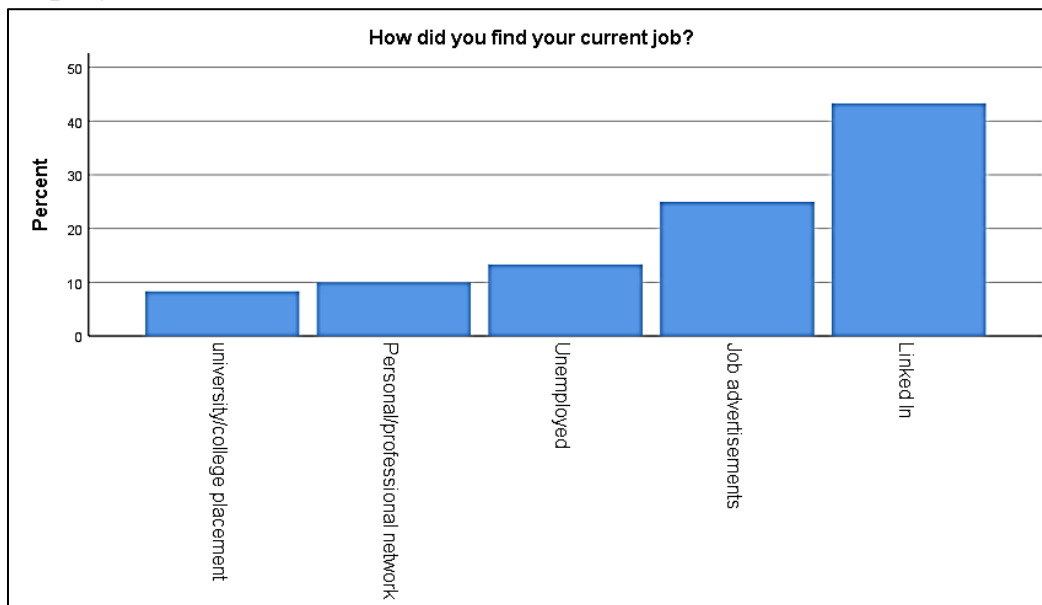

Figure 7: How did you find your current job

To what extent do you feel your computer science and technology diploma program prepared you for your current job?

Table 8: computer science and technology diploma importance

computer science and technology diploma program				
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at all	8	13.3	13.3	13.3
	Moderately	9	15.0	15.0	28.3
	Somewhat	11	18.3	18.3	46.7
	Extensively	32	53.3	53.3	100.0
	Total	60	100.0	100.0	

When asking about the computer science and technology diploma importance, there are 32 (53.5%) who are Extensively agreed that computer science and technology diploma prepared them for their current job, and there are only 8 (13.3%) who Not at all think that computer science and technology diploma prepared them for their current job.
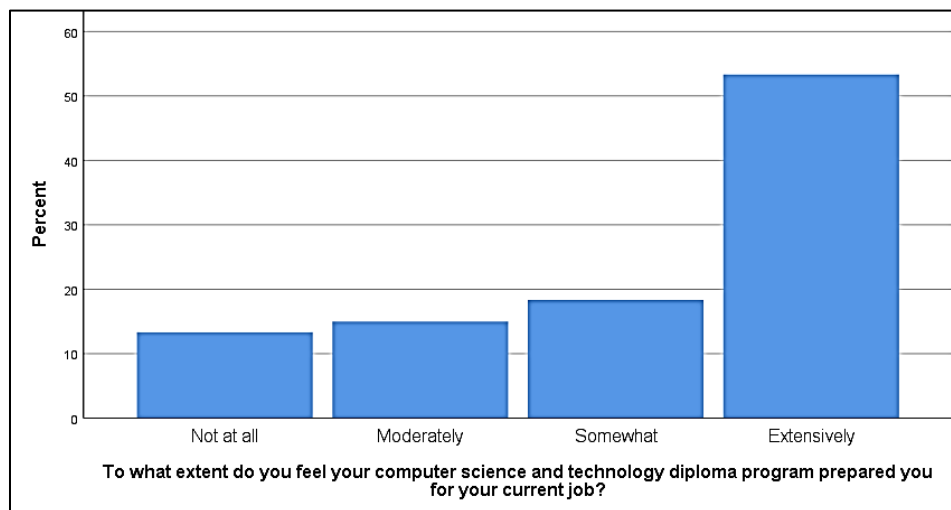

Figure 8: computer science and technology diploma importance

What are the main challenges you have faced in the employment process as a graduate of a computer science and technology diploma program?

Table 9: main challenges

main challenges faced in the employment process		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Insufficient industry connections	7	11.7	11.7	11.7
	Lack of relevant experience	14	23.3	23.3	35.0
	Limited job opportunities	18	30.0	30.0	65.0
	Mismatch between skills and job requirements	21	35.0	35.0	100.0
	Total	60	100.0	100.0	

When asking about the main challenges faced in the employment process, there are 21 (35%) who think that Mismatch between skills and job requirements is the main challenge, and there are 18 (30%) who think that Limited job opportunities is the main challenge.
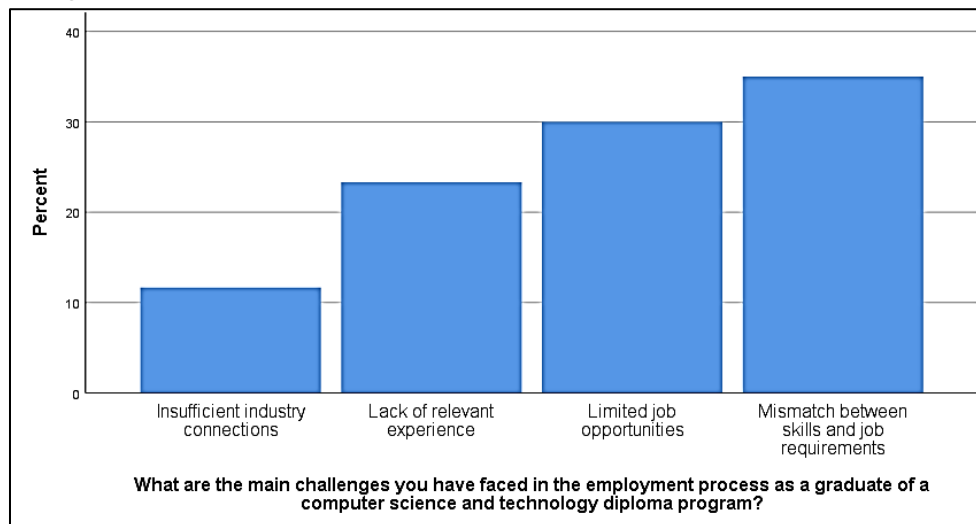

Figure 9: main challenges

In your opinion, what are the most in-demand skills and competencies for computer science and technology diploma graduates in Asir Region?

Table 10: most in-demand skills

most in-demand skills and competencies					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Cloud Computing	7	11.7	11.7	11.7
	Data Analysis	16	26.7	26.7	38.3
	Cybersecurity	18	30.0	30.0	68.3
	Programming	19	31.7	31.7	100.0
	Total	60	100.0	100.0	

When asking about the most in-demand skills and competencies for computer science and technology diploma graduates in Asir Region, there are 19 (31.7%) who think that Programming is the most in-demand skill and competency for computer science and technology diploma graduates in Asir Region, and there are 18 (30%) who think that Cybersecurity is the most in-demand skill and competency for computer science and technology diploma graduates in Asir Region.
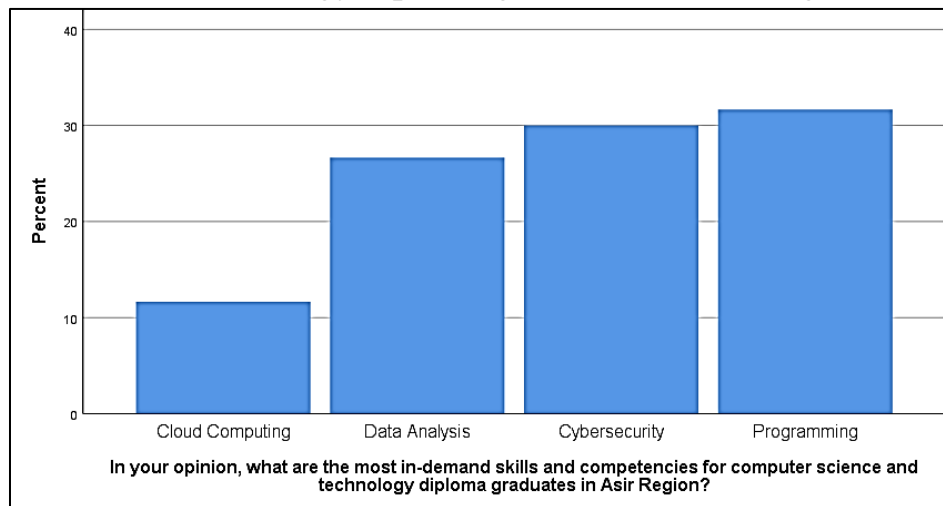

Figure 10: most in-demand skills

Are you aware of any recent technological advancements (e.g., Artificial Intelligence, Internet of Things) that have created new job opportunities for computer science and technology diploma graduates in Asir Region?

Table 11: Recent technological advancements

Recent technological advancements					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not sure	7	11.7	11.7	11.7
	No	12	20.0	20.0	31.7
	Yes	41	68.3	68.3	100.0
	Total	60	100.0	100.0	

When asking about the recent technological advancements, there are 41 (68.3%) are aware of recent technological advancements (e.g., Artificial Intelligence, Internet of Things) that have created new job opportunities for computer science and technology diploma graduates in Asir Region, and there are 12 (20%) who are not aware of recent technological advancements (e.g., Artificial Intelligence, Internet of Things) that have created new job opportunities for computer science and technology diploma graduates in Asir Region.
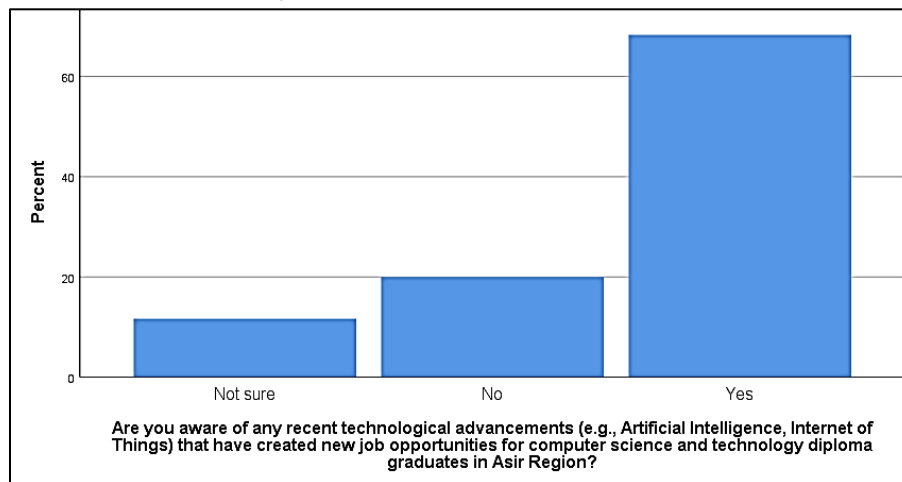

Figure 11: Recent technological advancements

Have you noticed any differences in the employment patterns, challenges, and opportunities between the public and private sectors in Asir Region for computer science and technology diploma graduates?

Table 12: Differences employment patterns, challenges, and opportunities

Differences employment patterns, challenges, and opportunities					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not sure	5	8.3	8.3	8.3
	No	21	35.0	35.0	43.3
	Yes	34	56.7	56.7	100.0
	Total	60	100.0	100.0	

When asking about the differences in the employment patterns, challenges, and opportunities between the public and private sectors in Asir Region for computer science and technology diploma graduates, there are 35 (56.7%) who noticed differences in the employment patterns, challenges, and opportunities between the public and private sectors in Asir Region for computer science and technology diploma graduates, and there are 21 (35%) who didn't notice differences in the employment patterns, challenges, and opportunities between the public and private sectors in Asir Region for computer science and technology diploma graduates.
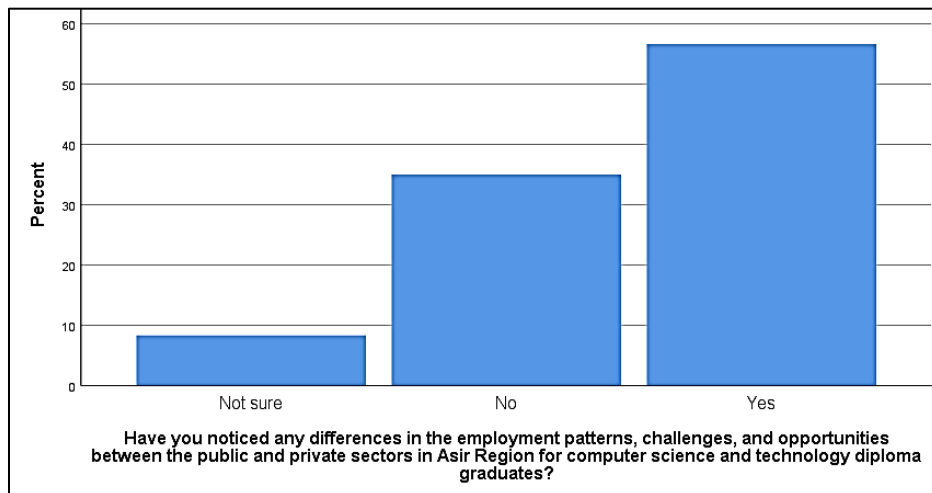

Figure 12: Differences employment patterns, challenges, and opportunities

Relationship between shift towards digitization and increased demand for computer science program graduates

Table 13: Relationship between shift towards digitization and increased demand for computer science program graduates.

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	10.446[a]	4	.034
Likelihood Ratio	11.107	4	.025
N of Valid Cases	60		
a. 5 cells (55.6%) have expected count less than 5. The minimum expected count is .93.			

Pearson Chi-Square of (0.034) which is less that (alpha=0.05) indicates that the shift towards digitization in Asir Region has led to increased demand for computer science program graduates.

Results and Discussion

The findings of this comprehensive study provide valuable insights into the employment prospects of graduates of computer science and technology diploma programs in the Asir Region of Saudi Arabia during the period from 2019 to 2023.

Demographic Profile of Respondents

The survey sample consisted of 60 graduates, with a gender distribution of 42 males (70%) and 18 females (30%). The majority of the respondents (56.7%) were within the 18-24 age range, while 38.3% were between 25-34 years old. The graduates were from various cohorts, with 31.7% having completed their diplomas in 2019 and 2020, 16.7% in 2022, 15% in 2023, and only 5% in 2021.

Employment Patterns and Status

The data indicates that the employment prospects of computer science and technology diploma graduates in the Asir Region are relatively favorable, with 70% of the respondents currently employed, 16.7% self-employed, and only 13.3% unemployed. This suggests that these graduates have a higher probability of securing employment compared to the general population.

When examining the sectoral distribution, the public sector emerged as the primary employer, accounting for 43.3% of the employed graduates, while 33.3% were employed in the private sector. A smaller proportion (10%) were employed in mixed public-private organizations. This finding indicates that the public sector in the Asir Region has been more successful in recruiting and retaining computer science and technology diploma graduates compared to the private sector.

The graduates were employed across a diverse range of job roles and responsibilities, with the highest concentrations in the industrial sector (28.3%), technical/engineering roles (26.7%), and managerial/administrative positions (15%). This suggests that computer science and technology diploma holders are sought after in a variety of industries and functions within the Asir Region.

The survey also explored how the graduates found their current employment. A significant proportion (43.3%) utilized professional networking platforms, such as LinkedIn, to secure their positions, followed by job advertisements (25%) and personal/professional networks (15%).

Perceived Relevance of Diploma Programs

The respondents' perceptions of the relevance and adequacy of their computer science and technology diploma programs in preparing them for their current roles were generally positive. Over half of the graduates (53.5%) believed that their diploma program had extensively prepared them for their current jobs, while only 13.3% felt that the program did not adequately prepare them.

Challenges in the Employment Process

The survey identified several key challenges encountered by the computer science and technology diploma graduates during the employment process. The most prominent challenges were the perceived mismatch between their skills and job requirements (35%) and the limited number of job opportunities available (30%).

These findings suggest that there may be a need to better align the curriculum and skill development within the diploma programs with the evolving demands of the local job market in the Asir Region. Additionally, efforts to expand the number of suitable job openings and facilitate smoother transitions from education to employment could help address these challenges.

In-Demand Skills and Emerging Opportunities

The respondents highlighted programming (31.7%) and cybersecurity (30%) as the most in-demand skills and competencies sought by employers in the Asir Region. This aligns with the region's focus on digital transformation and the growing importance of specialized technical expertise in the field of computer science and technology.

Furthermore, the majority of the graduates (68.3%) reported being aware of recent technological advancements, such as artificial intelligence and the Internet of Things, that have created new job opportunities in the region. This suggests that the computer science and technology diploma graduates in the Asir Region are cognizant of the evolving technological landscape and the potential career paths it presents.

Differences Between Public and Private Sectors

The survey findings indicate notable differences in the employment patterns, challenges, and opportunities between the public and private sectors in the Asir Region for computer science and technology diploma graduates. Over half of the respondents (56.7%) reported observing these differences, while 35% did not perceive any significant variations.

The analysis revealed that the public sector appears to provide more stable and secure employment opportunities for these graduates, while the private sector faces greater challenges in recruiting and retaining them, potentially due to misalignment between the graduates' skill sets and the specific requirements of private sector roles.

Implications and Recommendations

The results of this study have several important implications for enhancing the employment prospects of computer science and technology diploma graduates in the Asir Region:

1. Strengthening industry-academia collaboration to align curricula with market needs
2. Implementing targeted professional development programs to bridge the identified skills gaps
3. Fostering closer ties between graduates and potential employers through internships, apprenticeships, and industry networking events
4. Exploring strategies to expand the number of suitable job opportunities in the private sector
5. Developing policies and initiatives that support the seamless integration of computer science and technology diploma graduates into the regional labor market

Through addressing these key areas, stakeholders in the Asir Region can work collectively to improve the employment landscape for computer science and technology diploma graduates, ultimately contributing to the region's technological advancement and economic growth.

Conclusion

This comprehensive study has shed valuable light on the prospects of employing graduates of computer science and technology diploma programs in the Asir Region of Saudi Arabia, covering the period from 2019 to 2023. The findings of this research offer critical insights that can inform strategic decisions and interventions to enhance the employability and career prospects of these graduates. The analysis of employment patterns revealed that computer science and technology diploma graduates in the Asir Region have been able to secure jobs across a diverse range of industries and sectors, with the public sector emerging as a significant employer. However, the study also identified notable differences in the employment experiences between the public and private sectors. While the public sector appeared

to provide more stable and secure employment opportunities, the private sector faced greater challenges in recruiting and retaining these graduates, often due to misalignment between their skill sets and the specific requirements of the roles.

The study's exploration of the challenges encountered by the graduates during the employment process uncovered a multifaceted set of obstacles. Prominent among these were the perceived mismatch between their academic training and the evolving demands of the job market, the lack of relevant work experience, and the fierce competition for a limited number of suitable job openings. These challenges were further exacerbated by the dynamic technological landscape, which necessitated continuous upskilling and adaptation to stay relevant. Notwithstanding the challenges, the research also identified numerous opportunities for computer science and technology diploma graduates in the Asir Region. The ongoing digital transformation across various industries, coupled with the rising demand for specialized technical skills, has created a favorable environment for these graduates. Emerging technologies, such as artificial intelligence, cloud computing, and the Internet of Things, have opened up new avenues for career development and professional growth.

The strategic recommendations outlined in this study provide a comprehensive roadmap for enhancing the employment prospects of computer science and technology diploma graduates in the Asir Region. These include strengthening the collaboration between educational institutions and industry partners to align curricula with market needs, implementing targeted professional development programs to bridge the skills gap, and fostering closer ties between graduates and potential employers through internships, apprenticeships, and industry networking events. Through addressing the identified challenges and capitalizing on the available opportunities, stakeholders in the Asir Region can work collectively to improve the employment landscape for computer science and technology diploma

graduates. This, in turn, will contribute to the overall economic development and technological advancement of the region, as these skilled professionals play a pivotal role in driving innovation and fostering a knowledge-based economy.

Future Work

Building upon the insights and findings of this comprehensive study, there are several avenues for future research and exploration that can further enhance our understanding of the employment prospects for computer science and technology diploma graduates in the Asir Region.

One potential area of future work is to delve deeper into the specific skill sets and competencies that are most valued by employers in the Asir Region. This could involve conducting in-depth interviews with industry leaders and HR professionals to gain a more nuanced understanding of the evolving job market requirements and the skills gaps that need to be addressed. Such an investigation would enable the development of more targeted and aligned academic and training programs, ensuring that graduates are well-equipped to meet the demands of the local job market. Additionally, a longitudinal study tracking the career trajectories of computer science and technology diploma graduates over an extended period would provide valuable insights into the long-term employment patterns and the factors that contribute to their professional success. Such a study could also explore the impact of ongoing technological advancements and economic fluctuations on the employment landscape, allowing for the formulation of more adaptive and responsive strategies.

Moreover, future research could examine the role of entrepreneurship and self-employment as alternative career paths for computer science and technology diploma graduates in the Asir Region. Investigating the motivations, challenges, and success factors of graduates who have pursued entrepreneurial ventures would shed light on the untapped potential of this talent pool and inform the development of supportive

policies and programs to foster a thriving entrepreneurial ecosystem. Another promising avenue for future work is to conduct a comparative analysis of the employment prospects and experiences of computer science and technology diploma graduates across different regions of Saudi Arabia. Such a study would enable the identification of best practices, the sharing of successful strategies, and the development of more comprehensive, nationwide initiatives to enhance the employability of these graduates.

Finally, future research could explore the potential for international collaboration and exchange programs that facilitate the mobility of computer science and technology diploma graduates, both within the Gulf Cooperation Council (GCC) region and globally. This could involve investigating the feasibility of joint educational programs, international internships, and cross-border job placement initiatives, thereby expanding the career horizons for these graduates and contributing to the region's overall competitiveness in the global knowledge economy. Through pursuing these and other avenues of future work, researchers and policymakers can build upon the foundation laid by this study, ensuring that the Asir Region continues to leverage the immense potential of its computer science and technology diploma graduates and remains at the forefront of technological innovation and economic progress.

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