Career Perceptions and Occupational Concerns of Information Technology Students in the Context of Developments in AI Technologies: A Qualitative Case Study

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Abstract

Rapid developments in artificial intelligence (AI) technologies are transforming career trajectories, professional competence expectations, and the transition from higher education to the labor market, particularly in the field of information technology (IT). This study aims to examine students' career perceptions and occupational concerns in IT-related programs in the context of recent developments in AI. More specifically, it focuses on how students evaluate AI as a career opportunity or risk and how they make sense of its possible effects on their future professional lives. The study was designed as a qualitative case study. The participants consisted of 67 students enrolled in IT-related undergraduate programs at a public university. Participants were selected through criterion-based purposive sampling. Data were collected using a printed semi-structured open-ended questionnaire developed by the researchers and reviewed by field experts. The collected written responses were transferred to a digital environment without changing their content and analyzed through inductive content analysis. The findings indicate that students perceive AI technologies both as career opportunities and as potential sources of occupational concern. While some students associate AI with new career opportunities, productivity, and professional development, others express concerns about job competition, automation, and the changing nature of entry-level positions. Overall, the study suggests that students view AI not as a force that eliminates IT professions, but rather as a transformative force that requires continuous adaptation and skill development.

Keywords: Artificial intelligence, information technology students, career perceptions, occupational concerns, qualitative case study, content analysis

Introduction

As one of the fundamental drivers of the Fourth Industrial Revolution, AI is radically transforming the labor market and employment dynamics (OECD, 2022). While automation and machine learning applications enhance productivity in production, the substitution of routine and rule-based tasks deepens unemployment concerns globally while simultaneously generating new domains of expertise (Acar & Güneş, 2022; Tekin Balcı & Demirel, 2025). This atmosphere of uncertainty directly shapes the occupational decisions and career planning of Generation Z, who encountered technology at an early age (Umar, 2020; Akay, 2024).

For students enrolled in IT programs, the sector is considered an attractive career field due to employment opportunities, global mobility, and flexible work models (Tekin Epik & Altay, 2026). However, capitalizing on this potential requires students to possess AI literacy and advanced technical competencies (Ceylan & Kirazcı, 2025). Indeed, the risk of task substitution, the pressure to adapt to technology, and dystopian discourses in the media can lead students to perceive AI as an occupational threat (Akçakanat, 2024; Kılıç, 2026; Sanguinetti & Palomo, 2024).

In university students' perceptions of post-graduation employment, there is a positive correlation between unemployment anxiety and AI-related anxiety (Surat & Ceran, 2020; Uçar et al., 2024). Rising employer expectations and the belief that theoretical education will fall short of meeting market practices exacerbate professional anxiety (Belber & Özmen, 2024). In contrast, the literature suggests that rather than eliminating professions, AI automates routine tasks, thereby transforming required skill sets and job descriptions (Pan & Froese, 2023; Eloundou et al., 2024). For instance, generative AI tools enhance productivity in software processes, whereas the ultimate output remains contingent upon expert supervision and level of experience (Cui et al., 2026). Accordingly, beyond the direct impact of AI on employment, it is critical to examine how students cognitively and affectively make sense of this transformation. While students receiving IT education encounter new career opportunities, they also experience professional ambiguity driven by the automation of entry-level roles and escalating competition.

This study aims to qualitatively examine the career perceptions and occupational concerns of IT students amid the proliferation of AI technologies. Within this scope, the study examines how AI is positioned across the opportunity

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and risk dimensions, post-graduation employment expectations, and the prospective implications of this technology for professional futures. The study sought to answer the following research questions:

RQ1: How do students in the field of IT view the impact of advancements in AI technologies on their career plans?

RQ2: Do computer science students view AI technologies as an opportunity or a risk for their careers?

RQ3: What kinds of concerns and expectations do computer science students have regarding AI technologies in their professional lives after graduation?

RQ4: How do computer science students think advancements in AI technologies will affect their professions in the future?

Methodology

Research Design

This qualitative study aims to examine the impacts of AI developments on IT students' career perceptions and occupational concerns. The research employs a case study design, which allows for an in-depth investigation of a bounded phenomenon within its real-world context (Creswell & Poth, 2016; Yin, 2018). Based on data collected through an open-ended questionnaire, students' positioning of AI as a career opportunity or a risk, their employment anxieties, and their future occupational expectations are analyzed holistically.

Study Group

The study group consisted of 67 university students selected through criterion sampling, a purposeful sampling method (Patton, 2015). The primary criteria for participation were that participants be enrolled in an undergraduate program related to IT, have at least some experience with AI tools, and volunteer for the study.

Table 1. Demographics of participants and frequency of AI use

Variable	Category	N	%
Gender	Female	35	52,2
	Male	32	47,8
Department	Computer Engineering	47	70,1
	Computer Technology & Information Systems	20	29,9
Grade	First	24	35,8
	Second	9	13,4
	Third	21	31,3
	Fourth	13	19,4
Frequency of AI use	Occasionally	10	14,9
	Often	36	53,7
	Frequently	21	31,3

Data Collection Tool

The data were collected using a printed open-ended questionnaire prepared by the researchers and validated through the input of experts in educational technology (n=3) and assessment and evaluation (n=2). In addition to demographic information, the questionnaire included four key questions examining the impact of AI on career plans, perceptions of opportunities and risks, concerns about post-graduation professional life, and the effects on the profession's future. The printed questionnaires were distributed to students in person; the data were digitized without any loss of content, and participants were anonymized by coding them as K1–K67.

Data Analysis and Reliability

The data were analyzed using an inductive content analysis approach (Yıldırım & Şimşek, 2018). Codes were developed from participants' responses, and common conceptual structures were then transformed into categories and main themes. To test coding reliability, the dataset was evaluated by six independent experts from the fields of educational technology (n=3) and engineering (n=3). Inter-coder reliability was calculated using Krippendorff's Alpha coefficient, yielding an alpha of 0.824. This value exceeded the 0.800 threshold, confirming that the analysis was highly reliable (Krippendorff, 2004).

Results

The Impact of AI on Career Plans

Students' views on the impact of AI on their career goals have been grouped under three themes (Table 2).

Table 2. Themes related to the impact of AI technologies on career plans

Theme	Sample participant opinion	f
Supporting career planning	"It helps me make my career plan more efficient and technology-focused; by accelerating my research and learning process, it makes it easier for me to achieve my goals." (K6) "Since it provides a general overview of every topic, it helps me figure out how to move forward." (K54)	33
Redefining career paths	"A junior developer cannot compete with AI tools in the software industry. I am trying to specialize in more specific areas." (K12) "I used to think only about becoming a software developer, but now I have goals like specializing in AI and becoming a machine learning engineer." (K29)	22
Not causing a noticeable change	"I wanted to pursue game design both before and after AI. That is why it did not really have much of an impact" (K10) "I do not think it had much of an impact" (K56)	12

Approximately half of the participants (n=33) view AI as a supportive tool that shortens the learning curve and increases individual productivity. A significant portion of the students (n=22), however, indicated that, in the face of AI competition, they have shifted their career goals toward niche fields such as machine learning engineering and data science.

Assessment of AI as Both an Opportunity and a Risk for Careers

The participants' assessments of opportunities and risks, based on the principle of multiple coding, are summarized in Table 3.

Table 3. Student perspectives on the assessment of AI technologies as career opportunities and risks

Theme	Sample participant opinion	f
Career opportunities that boost efficiency, learning, and productivity	"More opportunities in the field of IT, because it speeds up work, makes it easier to develop new projects, and increases productivity." (K23) "It is an opportunity because I think it makes learning easier and speeds up work." (K64)	24
New fields of work and opportunities for specialization	"It is definitely an opportunity because it creates new job opportunities and makes existing jobs more efficient. By delegating routine and tedious tasks to AI, we can focus on more creative and strategic work." (K29) "It is an opportunity because new job opportunities are emerging for those who specialize in AI, and different career options are opening up in the IT sector." (K35)	7
Job search, entry-level positions, and the risk of job loss	"With the advancement of AI, companies are thinking, Instead of hiring a junior, I will hire one person with 10–15 years of experience—they can handle it easily with an AI assistant, so career opportunities for recent graduates—that is, for us—are closing one by one." (K12) "I think it is a risk because, for example, before AI, a software team used to have a lot of people, but as a result of AI, it has been reduced to just one or two people, which, of course, means we have to compete with more people in terms of our careers." (K66)	27
The risk of declining basic skills and reliance on AI	"In my opinion, it is both an opportunity and a risk, but when used correctly, it is more of an opportunity. It boosts productivity, facilitates learning, and supports the development of new solutions. The risks, on the other hand, could include professional complacency, relying on misinformation, and a decline in basic skills." (K31) "It creates both opportunities and risks; how we use it determines the balance. It is best to use it to seek help without becoming overly dependent." (K61)	16

The findings indicate that students' greatest concern (f=27) is the shrinking number of entry-level (junior) positions and the restriction on hiring recent graduates due to experienced staff being paired with AI assistants. At the same

time, AI is recognized as a lever for learning and productivity (f=24); however, it is also emphasized that overuse carries the risk of cognitive laziness and weakening the fundamentals of coding (f=16).

Anxieties and Expectations Regarding the Professional Life After Graduation

Students' concerns and expectations regarding the post-graduation process have been grouped under four themes (Table 4).

Table 4. Student perspectives on concerns and expectations regarding professional life after graduation

Theme	Sample participant opinion	f
Concerns about finding a job, entry-level positions, and job loss	"I am feeling more anxious. As I mentioned before, companies are thinking in terms of 'senior + AI tools' rather than hiring juniors." (K2) "My biggest concern is that companies are scaling back entry-level job postings because they are thinking, 'Why should we hire recent graduates and train them from scratch when AI can do so much of the work?' My expectation, however, is that knowing how to use AI will no longer be a plus—it will become a requirement, just like knowing Git or English." (K30)	27
No particular concerns	"AI is not going to take over every job—it has its limits, so I am not very worried" (K9) "I am not worried about it for now" (K67)	18
Pressure regarding professional competence, competition, and adapting to AI	"The constantly rising expectations in job postings are creating a problem. Thanks to AI, one person can now do the work that used to be done by several people, so companies are looking for fewer but more qualified employees." (K27) "Especially in the IT and software sectors, AI is a formidable competitor for us, and for our colleagues who have not kept up with the times, AI—with its free and inexhaustible energy—is a threat to human performance. For this reason, when we graduate, we will be thrust into a struggle to find a job and hold onto the one we find, requiring extraordinary performance and advanced skills." (K35)	17
Expectations that AI will streamline work processes	"I believe it will improve my performance at work" (K16) "So, if I am in the workforce, it will not do any harm—it will actually be beneficial; it will help me do my job more accurately and quickly" (K66)	14

At the heart of students' employment concerns is companies' desire to avoid the costs of training new graduates (f=27). On the other hand, while some participants stated that they did not feel any significant concern, pointing to the limitations of AI's human-like reasoning (f=18), f=17 students noted that the bar for qualifications and competitive pressure in the job market has increased exponentially.

Views on the Impact of AI on the Future of IT Professions

The participants' views on the future evolution of their professions are presented in Table 5.

Table 5. Student perspectives on the future of IT careers

Theme	Sample participant opinion	f
Increased speed, ease, and efficiency in work processes	"It will make my job more efficient and faster, and it will automate some tasks, but human oversight and creativity will still be important." (K6) "I think it will save time and help solve difficult problems quickly." (K63)	22
Changes in professional roles and job responsibilities	"I believe that in the future, software development processes will be largely AI-driven. Tasks such as code generation, testing, and error detection will be completed more quickly. The role of computer engineers will shift from simply writing code to designing systems, evaluating the accuracy of AI outputs, and devising solutions to complex problems. For this reason, I believe the ability to work collaboratively with AI will become a fundamental professional competency." (K26) "In the future, traditional programming will largely disappear. Computer engineers will transition from being people who write code to becoming qualified professionals who tell AI agents what to do." (K30)	18

A decline in job opportunities and the risk of job loss	"In the future, everyone will start doing what we do thanks to AI, and our job opportunities will decrease. That is why our profession is at risk." (K10) "In the future, if a company has 100 computer engineers, it will hire only 10 engineers who are skilled in AI. As a result, there will still be plenty of computer engineers, but unemployment will rise." (K23)	17
The need to adapt to AI and pursue professional development	"It is hard to predict; even though I cannot directly point to the future in a system that's evolving every day, it is clear that those who adapt will succeed." (K36) "I think it will be beneficial for someone who has developed themselves sufficiently." (K54)	16
The view that the profession will be affected to a limited or neutral extent	"I do not think it will have an impact; I think things will continue as they are" (K44) "I do not think anything will change—technology is always changing and evolving, and changes like this always happen" (K62)	4

Participants predict that AI will accelerate routine coding processes (f=22) and transform the role of engineers from direct code writing to "system architecture, agent control, and prompt design" (f=18). Conversely, the possibility of handling the same workload with fewer staff triggers the risk of unemployment (f=17); it appears that professional viability is tied to the ability to adapt to technology (f=16).

Discussion and Conclusions

The research findings reveal that computer science students' attitudes toward AI are shaped by a multidimensional, pragmatic understanding centered on opportunities, risks, and the need for adaptation. A significant portion of the students view AI as a career lever that enhances productivity and cognitive acceleration, while shifting their career goals toward value-added fields such as machine learning and data science. This finding aligns with theoretical observations that AI is transforming professional profiles (Yavuz Aksakal & Ülgen, 2021; Pan & Froese, 2023).

In contrast, the primary point of tension regarding employment lies in the risk of job displacement in entry-level (junior) positions. As senior developers are equipped with generative AI tools and take on routine testing, documentation, and basic code blocks—tasks previously handled by junior staff—on their own, this raises barriers to entry for recent graduates. This dynamic aligns perfectly with findings in the literature regarding automation's potential for task substitution (Acemoglu et al., 2022; Eloundou et al., 2024) and AI-driven unemployment anxiety among university students (Akçakanat, 2024; Uçar et al., 2024). Furthermore, students' concerns that overreliance on AI assistants could dull fundamental algorithmic and software development skills are corroborated by experimental studies highlighting the importance of expert supervision in human-machine collaboration (Cui et al., 2026).

Projections regarding the future of the profession indicate that computer engineering will undergo a qualitative leap from operational coding tasks toward high-level architectural design, algorithmic orchestration, and AI agent supervision. In summary, while computer science students are aware that AI will not eliminate their profession, they acknowledge that the only way to remain employable is through continuous learning and the development of skills to collaborate with AI (co-piloting). In light of the research findings, the following are recommended:

- Courses on AI literacy, AI-assisted software engineering, large language model architecture, and AI ethics should be integrated into computer science programs.
- University career centers should implement programs that equip students with portfolio development, open-source contributions, and niche specialization strategies in line with the evolution of entry-level roles.
- Mentoring networks that connect students with industry professionals should be established; next-generation internship models that encourage companies to continue hiring junior staff should be implemented.
- While the use of generative AI tools is permitted in educational processes, independent assessment mechanisms that test the fundamentals of algorithmic thinking and problem-solving should be implemented.

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