



The AI Paradox: Students' Perceptions of Employability in a Transforming Labor Market

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Abstract. As artificial intelligence transforms the job market at an unprecedented pace, students are grappling with both excitement and uncertainty about their career prospects. This systematic review dives deep into the complex ways students perceive the impact of AI on their future careers, exploring both the opportunities and challenges that come with this technological revolution. By synthesizing existing research, we uncover the skills and competencies students believe are crucial for success in an AI-driven world. We also delve into their anxieties about job displacement and the evolving nature of work. Our goal is to identify key themes, gaps in research, and emerging trends that will guide future studies and educational strategies. To achieve this, we've used a rigorous systematic literature review approach to gather and analyze relevant studies across various disciplines, including education, computer science, business, and social sciences. This comprehensive perspective helps us understand how students can be best prepared for thriving careers in the AI era.

Keywords: Artificial Intelligence (AI), Perceived Employability, Students, Career Readiness, Future Workforce.

1 Introduction

The 21st century is characterized by an unprecedented acceleration in technological innovation, fundamentally transforming the structure and dynamics of both higher education and the global labor market. This transformation necessitates a rigorous examination of how students' perceived employability is conceptualized, cultivated, and assessed within diverse academic disciplines (Morgan et al., 2022; Tushar & Sooraksa, 2023). In the past decade, scholarly discourse has increasingly focused on the multifaceted relationship between students' perceptions of their employability and the ever-evolving technological landscape (MN et al., 2020). This discourse acknowledges the imperative for graduates to possess not only discipline-specific knowledge but also a robust set of digital competencies, adaptability skills, and a nuanced understanding of the ethical considerations inherent in the digital age (Morgan et al., 2022). A systematic literature review, employing the Scopus database as its primary source, is crucial to

comprehensively analyze the existing body of knowledge, identify key trends, and pinpoint areas requiring further investigation regarding students' perceived employability in the context of rapid technological advancement (Thijssen et al., 2008). The aim is to synthesize existing research on how higher education institutions can adapt their curricula, pedagogical approaches, and support services to better prepare students for the demands of the modern workforce. Furthermore, the review seeks to understand how students perceive their own preparedness for the job market in light of these technological advancements, and what factors influence their perceptions of employability (MN et al., 2020).

2 Methodology

This paper guarantees a thorough and ordered synthesis of current research on students' perceived employability in the framework of technological developments by means of a rigorous systematic literature review (SLR). Kitchenham & Charters (2007) advise an SLR should be carried out using a transparent, replicable approach that reduces bias and improves the dependability of conclusions. The study was carried out using the well-known and respected scholarly database Scopus. Focusing on research released in open-access journals between 2015 and 2025 and written in English, we conducted a Boolean search query to find pertinent papers. We used search terms to indicate students, perception, employability and future of work. We also used inclusion and exclusion criteria to narrow the choices so that only peer-reviewed journal articles fitting our scope would be taken under account.

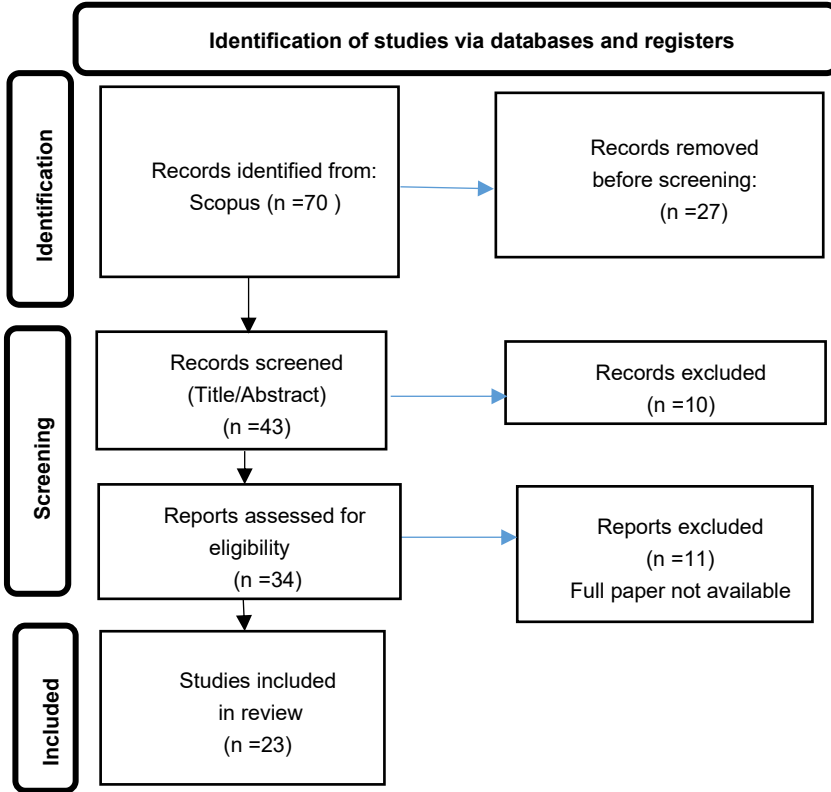
Table 1. Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
Our review associated studies that: Focused on students' perceived employability In the new technological era Contains keywords related to student, perception, employability, industry 4.0, future workforce, artificial intelligence; Articles published in the field of business management and accounting, social sciences & computer science; Published between january 2015 and february 2025.	Articles were excluded: If they were not published in the English language; If they are published outside the set number of years; If they are irrelevant;

Following the retrieval of the search results, we exported the data to Rayyan, an artificial intelligence-powered tool intended for systematic reviews, so enabling the screening process. Every paper was checked for significance or non-qualifying studies were eliminated. The authors then closely examined the last set of chosen papers to identify

important themes, trends, and ideas regarding students' apparent employability in the digital age. The guidelines of preferred reporting items for systematic review and meta-analysis (PRISMA) were followed for conducting systematic review in this study.

Fig. 1. PRISMA-ScR flow diagram of the study, processed results



This methodological approach guarantees a strong, open, and repeatable review process, so enabling us to learn important new perspectives on how students view their career prospects among fast technological change.

3 Results

To analyze the publication years of the studied articles, we utilized Julius AI, an advanced data processing tool. The dataset was extracted from Scopus in the form of a “.bib” (BibTeX) file, which contains metadata related to the referenced articles. Publication activity stayed consistent between 2019 and 2020, with four publications published annually. But there was a dramatic reduction in 2021—just one article was published—signaling a brief break in research productivity. After a modest rebound in 2022, there was a notable uptick in 2023, which saw the greatest number of publications (six articles). Despite a minor decrease in 2024, the quantity of publications was still

quite significant as compared to other years. One article was published in 2025, indicating a dramatic decline, though this might be the result of insufficient data collecting for the year.

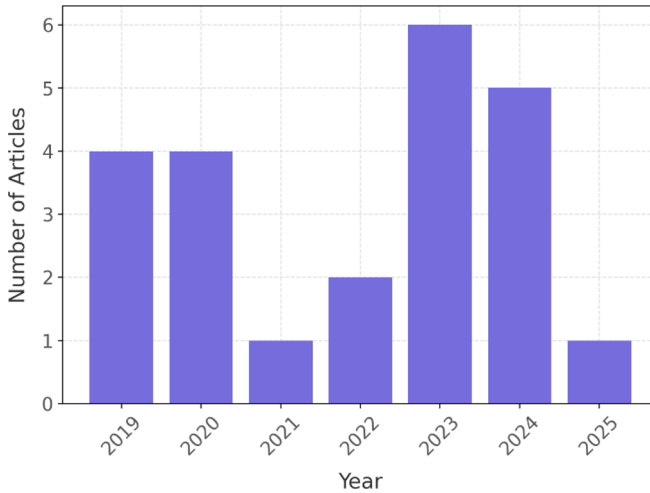


Fig. 2. Number of articles published per Year (2015-2025)

This pattern points to a rise in interest in the field of study, which peaked recently and may be a sign of greater funding or importance for the topic.

The systematic literature review reveals a complex interplay of factors influencing students' perceived employability in the technological era. We used VOSviewer, a specialised program for bibliometric analysis and network visualization, to create Figure 3, which displays the Co-occurrence Analysis of terms from the 23 examined papers. The resulting visualization highlighted important research subjects and their linkages, offering insights into the thematic organization of the evaluated literature.

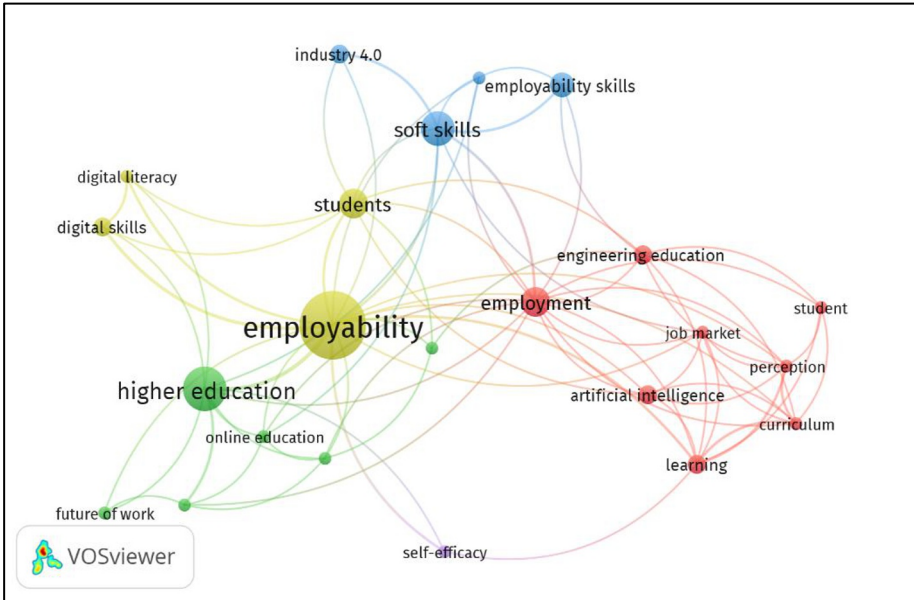


Fig. 3. Keyword Co-occurrence Analysis

The criticality of digital literacy, which goes beyond simple computer proficiency to include the capacity to assess digital material critically, adjust to new technologies, and interact ethically in online settings, is a noteworthy concept that has emerged from the literature (Morgan et al., 2022). In addition to providing students with the digital skills that companies require, higher education institutions are being expected to help students develop a deeper awareness of the ethical and societal implications of technology (MN et al., 2020).

Studies show how important industry partnerships are in giving students real-world experiences, and experiential learning, which includes internships and project-based learning, is a crucial tool for bridging the gap between academic knowledge and workplace requirements (MN et al., 2020). According to the investigated papers, it is the obligation of institutions to provide top-notch facilities and technologies that meet market demands and trends (MN et al., 2020).

Additionally, studies highlight how important it is for students to acquire good problem-solving, communication, and teamwork abilities because these are necessary for success in technologically advanced businesses. Studies indicate that interventions targeted at improving students' self-efficacy can have a positive impact on their career aspirations and job search behaviors. Self-efficacy, or students' belief in their ability to succeed in their chosen field, emerges as a crucial factor influencing their perceived employability. As a result, educational institutions ought to help students by offering real-world experience and activities that foster both professional and personal growth (Thirunavukarasu et al., 2020).

4 Discussion

The systematic literature review reveals several overarching themes that shape the discussion of students' perceived employability in the new technological era. The literature emphasizes how important technology proficiency and digital literacy are becoming as essential employability skills in a variety of industries (MN et al., 2020). Digital literacy is defined as a complex capability that includes information access, critical analysis, ethical judgment, and successful communication in digital environments, rather than only being the ability to operate software and hardware (Morgan et al., 2022).

According to the literature, many students only have a superficial awareness of technology and lack the critical thinking abilities needed to appreciate the complexity of online sources and information (MN et al., 2020). Institutions of higher learning ought to concentrate on developing more profound digital literacy abilities that go beyond fundamental operational understanding, such as data analytics and digital production. (Young, 2017). The evolution of old skills and the rise of new skill sets that employers are requesting in the digital age constitute the second major issue. Employers are looking for applicants with excellent analytical reasoning, problem-solving, communication, and teamwork skills in addition to technical expertise (MN et al., 2020).

Given the increasingly dynamic and interactive nature of modern workplaces, the ability to work well in interdisciplinary teams and adjust to quickly changing technologies is highly prized. The importance of experiential learning in raising students' perceived and actual employability is another major subject. Project-based learning opportunities, co-operative education programs, and internships give students priceless real-world experience that enables them to build professional networks, apply theoretical knowledge to real-world scenarios, and improve their skills in real-world work environments (Morgan et al., 2022). Additionally, it is recognized that developing soft skills like problem-solving, cooperation, and communication is essential for employment in technologically advanced settings (Tushar & Sooraksa, 2023).

According to MN et al. (2020), self-regulated learning and adaptability are emphasized as critical qualities for negotiating the complexity of the contemporary workplace, which are required for lifelong learning. Furthermore, the literature highlights how crucial career counseling and support services are in influencing students' employability beliefs and easing their transition from school to the workforce. Students can explore career alternatives, polish their job search skills, and gain confidence in their ability to land fulfilling work with the support of career counseling, mentorship programs, and networking opportunities. The literature analysis demonstrates that governments, businesses, and educational institutions are addressing employability as a global issue (Pianda et al., 2024). As a result, it is crucial that graduates possess the abilities needed to thrive in both the workforce and society (Morgan et al., 2022). Internationalization, which is regarded as one of the main pillars of Education 4.0 in higher education, is also gaining more attention from educational policies (Amini et al., 2023). The employability of graduates is thought to be significantly influenced by the skills and abilities acquired through internationalization (Amini et al., 2023; Li et al., 2022; Obi et al., 2020; Thirunavukarasu et al., 2020).

Since the labor market is changing to reflect the 4IR, it is more important than ever for students enrolled in work-integrated learning programs to contribute to the transfer of 4IR skills to economies and societies (Mokhethi & Adekanmbi, 2024). Employability concerns are addressed by work-integrated learning (Mokhethi & Adekanmbi, 2024). The employability and academic accomplishments of recent graduates are enhanced by work-integrated learning opportunities in courses, which enable students to apply their academic theories in the workplace (Mokhethi & Adekanmbi, 2024). A well-managed transition from a study to a work setting is facilitated by work-integrated learning, an educational technique that blends theoretical knowledge with real-world job experience (Thirunavukarasu et al., 2020).

The emergence of technology necessitates ongoing education for employees to remain competitive in the labor market (Ra et al., 2019). The education system must incorporate employability skills throughout all learning processes due to their importance (Fajaryati et al., 2020). Employers and academic institutions should work together to develop a framework and strategy that enhance employability (Thirunavukarasu et al., 2020). Along with encouraging students to embrace continuous professional growth and adjust to changing market demands, educational institutions should concentrate on cultivating a culture of lifelong learning among its students (Zeidan & Bishnoi, 2020).

The systematic literature review highlights the multifaceted nature of students' perceived employability in the new technological era, emphasizing the significance of digital literacy, critical skills, and the influence of experiential learning (Parua & Yang, 2024). In order to prepare students for the opportunities and difficulties of the digital age, educational institutions play a critical role in bridging the gap between academic learning and industry requirements. In light of the fourth industrial revolution, research is required to ascertain if institutions of higher learning can satisfy the needs and expectations of the labor market (Mokhethi & Adekanmbi, 2024). The literature underscores the necessity for higher education institutions to integrate industry insights into curriculum development and pedagogical practices (Zeidan & Bishnoi, 2020). Practical experience, through internships and projects, improves students' abilities, self-efficacy, and understanding of real-world challenges (Mokhethi & Adekanmbi, 2024). Moreover, the soft skills such as problem-solving, communication, and teamwork have been considered critical for success in modern workplaces (Zeidan & Bishnoi, 2020).

5 Conclusion

Based on the review findings, several recommendations emerge for enhancing students' perceived employability in the digital era. Universities should foster a learning environment aligned with industry needs by integrating digital literacy and technology-related skills across disciplines (Ayofe & Ajetola, 2009). Strengthening industry-academia collaboration through internships, guest lectures, and joint research projects is also crucial (Zeidan & Bishnoi, 2020). A key theme in the reviewed research highlights the necessity of equipping graduates with proficiency in digital tools and technologies

to meet evolving job market demands (MN et al., 2020; Tee et al., 2024). This encompasses not only basic computer skills but also advanced competencies in areas such as data analytics, artificial intelligence, and cybersecurity (MN et al., 2020).

Beyond technical proficiency, the concept of crucial abilities covers a wide range of skill sets, such as critical thinking, problem-solving, communication, teamwork, and creativity. Research highlights the transforming effects of internships, cooperative education, and project-based learning on employability, highlighting the critical role that experiential learning plays (Rao, 2014). Through these experiences, students can build professional networks, apply their knowledge in practical situations, and learn about the industry.

Employers lay a high priority on communication, teamwork, analytical reasoning, and critical thinking, therefore closing the soft skills gap is essential (Karimi & Piña, 2021; Mokhethi & Adekanmbi, 2024). However, graduates' capacity to handle obstacles in the workplace is limited by the frequent absence of specialized interpersonal skill training in existing curricula (Zeidan & Bishnoi, 2020). Universities should incorporate the development of soft skills through case studies, group projects, role-playing games, and industry engagement programs in order to close this gap (Bhatnagar, 2020; Villiers, 2010). Students can be further motivated by acknowledging and rewarding the development of soft skills, for as by providing academic credits (Aziz et al., 2024).

Given the increasing demand for industry-relevant education, curricula should be updated to include practical training, guest lectures, and exposure to modern tools and technologies (Zeidan & Bishnoi, 2020). Given the increasing demand for industry-relevant education, curricula should be updated to include practical training, guest lectures, and exposure to modern tools and technologies (Zeidan & Bishnoi, 2020).

Disclosure of Interests The authors declare that they have no competing interests.

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