

Impact of AI & ML in Employment Sector: Unemployed youth Perspective

Mohammad Niyaz Ahmad¹

¹Assistant Professor, School of Management, Swami Vivekananda University, Barrackpore, Kolkata, 700121.
niyaz.mohd2@gmail.com / niyaza@svu.ac.in

Abstract

The rapid advancement of Artificial Intelligence (AI) and Machine Learning (ML) has ignited growing concerns about their potential impact on employment. This study aims to explore the perceptions of unemployed youth regarding these technologies and their implications for the job market. A qualitative approach was adopted, involving in-depth interviews with 50 unemployed individuals aged 20-40. Participants were selected through purposive sampling until response saturation, ensuring a diverse representation of educational and socioeconomic backgrounds. The findings reveal a different perspective among unemployed youth, characterized by a mix of cautious optimism and concerns about job displacement. Participants acknowledged the need to adapt their skills to remain competitive in the face of automation. However, disparities in AI/ML awareness and preparedness were identified, particularly among individuals with lower educational backgrounds and limited technology access. This research contributes to the existing literature on the societal impacts of AI and ML by providing insights from the perspective of unemployed youth. The findings have implications for policymakers, educators, and employers, highlighting the need for targeted skill development programs and policy interventions to foster an inclusive and prepared workforce.

Keywords: AI, ML, Unemployment, Job Market, Technological Impact

Introduction

The dawn of the Fourth Industrial Revolution, characterized by the rapid advancement and integration of Artificial Intelligence (AI) and Machine Learning (ML) technologies, has ushered in a new era of automation and digital transformation across various sectors of the global economy (AL-Refaey, 2024). This technological revolution, while promising unprecedented levels of productivity and efficiency, has simultaneously sparked intense debates about its potential impact on employment, particularly among vulnerable populations such as unemployed youth (Nübler, 2016; Benanav, 2020).

The pervasive nature of AI and ML technologies has led to significant disruptions in traditional job markets. Frey and Osborne's (2013) seminal study suggested that up to 47% of U.S. jobs could be at risk of automation in the coming decades, a projection that has since been both supported and contested by various researchers (Arntz, 2016; Nedelkoska & Quintini, 2018). Regardless of

the exact figures, there is a consensus that AI and ML will profoundly reshape the employment landscape, creating a complex tapestry of opportunities and challenges for job seekers and employers alike (World Economic Forum, 2020).

This technological upheaval has created a particularly precarious situation for young job seekers, who must navigate an increasingly competitive and rapidly evolving job market. The International Labour Organization (2020) reports that young people are already three times more likely to be unemployed than adults, a disparity that may be exacerbated by the AI-driven transformation of work (Abid et al, 2024). This demographic group, often characterized by limited work experience and evolving skill sets, faces unique challenges in adapting to the changing demands of the labour market (Varghese & Panigrahi, 2022.)

Despite the growing body of research on the economic implications of AI and ML, there remains a notable gap in understanding how these technologies are perceived by those most directly affected: unemployed youth. While numerous

studies have examined the potential impact of AI on employment from economic and technological perspectives (Dwivedi et al., 2021), fewer have focused on the lived experiences and perceptions of job seekers themselves. This gap in the literature is particularly significant given the crucial role that perceptions and attitudes play in shaping individual responses to technological change, including decisions about education, skill development, and career paths (Wanberg et al., 2024).

The contemporary landscape of higher education is undergoing a significant transformation, characterized by a complex interplay of traditional pedagogical approaches, evolving student expectations, and the burgeoning influence of artificial intelligence (AI) and machine learning (ML). This paradigm shift necessitates a critical examination of the current educational framework and its efficacy in preparing students for an increasingly dynamic and technologically driven workforce.

One of the primary concerns in the current educational milieu is the apparent disconnect between the acquisition of degrees and the cultivation of genuine learning enthusiasm among students. Many institutions of higher learning seem to prioritize theoretical knowledge dissemination, often at the expense of practical application and experiential learning. This predominant focus on theoretical aspects has led to a perceptible decline in student engagement, manifesting in reduced class attendance and diminished academic curiosity (Washor & Mojkowski, 2013). The resultant ennui among the student populace poses a significant challenge to educators and policymakers alike, necessitating a reevaluation of pedagogical strategies to rekindle the intrinsic motivation for learning.

Private educational institutions, in particular, find themselves at a crossroads. While ostensibly adhering to regulatory requirements, many such institutions appear to be primarily focused on the conferment of degrees rather than the holistic development of their students. This approach is often driven by market demands and the expectations of guardians who view higher education primarily as a means to secure

lucrative employment opportunities for their wards (Engell & Dangerfield, 2005). However, this narrow focus on job placement is increasingly being challenged by the rapid advancement of AI and ML technologies, which are reshaping the employment landscape across various sectors.

The specter of technological unemployment looms large, with AI and ML augmentation potentially displacing traditional roles that graduates once aspired to fill (Masera, 2024). This development has significant implications for private institutions that have long relied on attractive placement statistics as a key selling point. The evolving job market demands a recalibration of educational objectives, shifting the focus from mere degree acquisition to the development of skills that complement and leverage AI and ML technologies (Lang, 2024).

In response to these challenges, there is a growing recognition of the need to integrate AI and ML learning into educational curricula. This paradigm shift represents an acknowledgment of the changing nature of work and the skills required to thrive in an AI-augmented workplace. Educational institutions are increasingly being called upon to equip students with the knowledge and skills necessary to work alongside AI systems (Pedro et al., 2019), harness their potential, and navigate the ethical considerations that arise from their deployment.

However, this transition towards AI and ML integration in education is still in its nascent stages. Many institutions lack the infrastructure, expertise, or resources to effectively implement such programs. Moreover, there is a dearth of standardized frameworks for integrating these technologies into existing curricula, leading to inconsistencies in the quality and depth of AI and ML education across different institutions.

The challenges facing the education system in the context of technological advancements are multifaceted and necessitate a concerted effort from various stakeholders. Policymakers play a critical role in developing comprehensive guidelines that promote the meaningful integration of artificial intelligence (AI) and machine learning (ML) into educational programs.

Such guidelines must prioritize both academic rigor and ethical standards to ensure that technology enhances rather than detracts from educational outcomes. Additionally, educational institutions must invest significantly in faculty development, infrastructure upgrades, and curriculum redesign (Taylor & Colet, 2010). This investment is essential for equipping educators with the tools and knowledge necessary to prepare students for a future increasingly influenced by AI and automation.

Educational institutions often focus on imparting domain-specific knowledge, which can detract from the development of essential meta-skills such as learning agility, critical thinking, and adaptability. This narrow emphasis risks leaving students ill-equipped to navigate the complexities of the modern workforce, where the ability to adapt and learn continuously is crucial. Additionally, faculty members face significant pressure to maintain work-life balance (Owens et al., 2018), which can hinder their ability to innovate in teaching practices or engage in professional development. The educational landscape is increasingly time-oriented, prioritizing efficiency and measurable outcomes over holistic learning experiences. This emphasis on speed and productivity neglects the fundamental human aspects of education, such as creativity and personal growth. As a result, both students and educators may feel overwhelmed and undervalued, leading to a cycle that undermines the quality of education. To address these challenges, institutions must re-evaluate their priorities, integrating meta-skills into curricula and supporting faculty well-being, thereby fostering an educational environment that values human development alongside academic achievement. Such an approach will better prepare students for the demands of an ever-evolving job market while enhancing overall educational outcomes.

Methodology of the Study

The current study try to explore the perceptions of unemployed youth towards the rapid advancements in Artificial Intelligence (AI) and Machine Learning (ML) and their implications on the job market. A qualitative research approach was adopted to gather in-depth insights into the

perceptions and concerns of unemployed individuals. This approach is particularly suitable for capturing the nuanced perspectives of respondents, especially given the complexity of emotions and attitudes surrounding the adoption of AI and ML technologies in the workplace. By facilitating open-ended conversations, the methodology allows for richer data collection compared to quantitative approaches that may limit participants' responses to predetermined choices.

A purposive sampling strategy was employed to select participants who met specific criteria relevant to the study's focus. The study targeted unemployed individuals aged between 20 and 40 years, which encompasses a significant portion of the workforce possibly affected by technological advancements. This age range was chosen to include a mix of early-career individuals and those with more experience, offering a range of perspectives on employment challenges posed by AI and ML technologies. Respondents were recruited until response saturation was achieved, ensuring a diverse representation of educational and socioeconomic backgrounds was included.

In-depth interviews were conducted with a total of 50 participants. The interviews were semi-structured in nature, allowing for guided conversations while also providing room for respondents to share their thoughts freely. This methodological flexibility was crucial in uncovering individual perceptions toward AI and ML. The interviews were conducted in a comfortable environment chosen by the participants to facilitate open dialogue.

The collected data underwent qualitative analysis specifically to know the patterns related to the respondents' perceptions of AI and ML. The analysis focused on key sentiments regarding job displacement, the need for skill adaptation, and disparities in awareness and preparedness among participants. The perceptions were organized into categories that reflected both concerns and optimistic viewpoints, ensuring that the data was effectively categorized for thorough interpretation.

Ethical considerations were paramount throughout the research process. Participants were provided with informed

verbal consent detailing the purpose of the study, the voluntary nature of participation, and assurances regarding confidentiality and anonymity of their responses. Respondents were informed that they could withdraw from the study at any time without repercussions. This ethical framework aimed to foster a safe environment for participants to express their views openly. Furthermore, to enhance the academic rigor of the paper, this study utilized AI tools to assist in refining the language and ensuring grammatical accuracy throughout the writing process.

Perceptions of AI and ML Among Unemployed Youth

The rapid advancement of Artificial Intelligence (AI) and Machine Learning (ML) technologies has significantly altered the employment landscape, contributing to a complex and evolving dynamic concerning job security and career opportunities (Mukhamediev et al., 2022). As the world becomes increasingly automated, the perceptions of unemployed youth—who are among those most vulnerable to these changes—are critical (McClure, 2018). Their insights offer a unique perspective that not only illuminates societal trends but also highlights gaps in policy and education that could potentially exacerbate the challenges posed by AI and ML.

The perceptions of unemployed youth concerning AI and ML are often characterized by a duality of optimism and anxiety. On one hand, many recognize the potential for AI and ML to drive innovation, enhance productivity, and create new job opportunities. As one of the respondents shared,

“I see AI as an opportunity to learn new skills. I have started taking free online courses on data analysis and machine learning. I believe if I can adapt and learn, AI can create jobs that are better suited to the future. Adhir, 28 years old.”

Adhi’s perspective reflects a proactive approach towards technological change, indicating an understanding of the necessity for upskilling and adaptability in a dynamic job market. Research supports this notion, illustrating that young individuals who engage in continuous learning tend to navigate transitions in the labour market more effectively (Chui et al., 2016).

However, this optimistic outlook is often tempered by a significant fear of displacement. Another respondent articulated this anxiety:

"It feels like companies are automating everything, and the average person is being left behind. I used to work in customer service, but now machines do that. I am losing hope that I can find a good job again. Jamil, 32 year old."

Jamil's sentiment echoes broader concerns regarding technological unemployment, where individuals fear that an increasing reliance on AI and ML will render their existing skills obsolete (Frey & Osborne, 2015). The challenge here extends beyond mere job displacement; it encapsulates feelings of disenfranchisement and concern regarding equity in access to new employment opportunities.

The dichotomy in perceptions also highlights a generational divide in attitudes towards automation technologies. Another respondent, who has been unemployed for over a year, expressed a blend of hope and apprehension, stating,

"I recognize that AI will change the way we work, and I am excited about the possibilities it brings. However, I fear that my current skills will not be enough in this new environment, and I worry I won't find meaningful work. Rahul, 26 years."

This interplay of excitement and trepidation captures the essence of what many young people face today—a recognition of the transformative potential of AI coupled with a profound anxiety about personal relevance in a changed job environment.

The implications of these varying perceptions are profound and multifaceted. Firstly, the optimism expressed by some youths points to a pivotal opportunity for educational reform. Educational institutions play a crucial role in preparing youth for the realities of a job market increasingly dominated by AI and ML technologies. Curricula that prioritize digital literacy, coding, and data analytics could empower young people to engage more meaningfully with the opportunities presented by technological advancements (Nascimbeni & Vosloo, 2019). Additionally, partnerships between educational institutions

and tech companies could facilitate practical workforce training, enabling students to gain firsthand experience with the tools and technologies that will define their working lives.

Conversely, the pervasive fears surrounding job displacement call for proactive policy measures. Governments and labour organizations must address the growing concerns related to workforce inequity and skill obsolescence. Implementing policies such as targeted retraining programs for those displaced by automation can pave the way for a smoother transition into new roles. Furthermore, policies that promote inclusive access to technology and training resources can mitigate feelings of exclusion among disadvantaged groups (Salas-Pilco et al., 2022). Targeted support for marginalized demographics could result in an invigorated workforce capable of adapting to the demands of an AI-driven economy.

The perceptions of unemployed youth regarding AI and ML encapsulate a complex interplay of hope and fear, driven by the dual realities of opportunity and displacement. While many young individuals express optimism regarding the potential for new job creation through upskilling and adaptation, significant anxieties persist concerning job security in an automation-heavy world. Consequently, there is an urgent need for educational reforms and proactive policy measures aimed at equipping youth with the necessary skills while simultaneously addressing the inequities that these technologies may exacerbate. Understanding and acting upon these perceptions will be essential in shaping a future where AI and ML serve as enablers of opportunity rather than sources of uncertainty.

Challenges and Opportunities in the Job Market

The contemporary job market is characterized by challenges and opportunities. Technological advancements, globalization, and demographic shifts have reshaped the landscape of employment, presenting both hurdles and prospects for individuals and organizations (Lent, 2018). One of the most significant challenges facing the job market is technological disruption. Automation and artificial intelligence (AI) are rapidly transforming industries, leading

to job displacement and skill obsolescence. For instance, the World Economic Forum (2023) estimates that by 2025, 85 million jobs may be displaced due to the shift in labour between humans and machines. While these technologies offer increased efficiency and productivity, they necessitate significant workforce adaptation. Individuals must acquire new skills and competencies to remain competitive in a technology-driven economy (Bullinger, 2004). The educational system must evolve to emphasize STEM (Science, Technology, Engineering, and Mathematics) education and lifelong learning to equip workers with the necessary tools to navigate this changing landscape.

Globalization also profoundly impacts the job market. The interconnectedness of the global economy has led to intensified competition for jobs, resulting in job losses in certain sectors while creating opportunities in others (Berger, 2005). The phenomenon of offshoring and outsourcing has contributed to significant job losses in some regions, particularly in manufacturing and traditional industries, while simultaneously generating employment in developing markets. This uneven distribution of job creation necessitates a focus on equitable trade policies and initiatives that support displaced workers in their transition to new employment paths. Policymakers must ensure a just and equitable distribution of globalization's benefits and costs, addressing the needs of affected communities.

Demographic shifts present another significant challenge to the job market. Aging populations and declining birth rates are leading to a shortage of skilled workers in many sectors. According to the International Labour Organization (2022), labour shortages are projected to rise due to retiring baby boomers, particularly in industries such as healthcare and technology. This demographic imbalance can strain labour markets and hinder economic growth. Furthermore, the increasing diversity of the workforce—brought about by globalization and changing societal norms—presents both opportunities and challenges (Offermann & Gowing (1990). Organizations must foster inclusive work environments that accommodate the needs and perspectives of diverse employee bases to harness the full potential of their workforce.

Despite these challenges, the contemporary job market also presents numerous opportunities. Technological advancements are driving the creation of jobs in emerging fields like data science, artificial intelligence, and renewable energy (Ahmad et al., 2022). The shift towards sustainable practices presents not only an opportunity for job creation but also a chance to address pressing environmental issues. Industries that invest in green technologies can stimulate economic growth while contributing to global sustainability goals. Furthermore, as companies adopt more technologically advanced operations, new job roles will emerge, necessitating skilled workers who can adapt to this evolution.

Globalization, while it can have negative implications, also creates opportunities for individuals and organizations. The interconnected global economy provides access to new markets and customers (Frischauf et al., 2018). Companies that leverage international trade and investment can expand their operations and create jobs. Moreover, globalization fosters cultural exchange and innovation, driving diversity and new ideas within organizations. By embracing a global perspective, businesses can enhance their competitiveness and resilience in an increasingly volatile market.

Demographic shifts, while posing challenges in labour supply, also present opportunities for innovation and growth. The increasing diversity in the workforce leads to greater creativity, problem-solving, and innovation. Organizations that embrace diversity and cultivate inclusive cultures benefit from a more engaged and productive workforce (Ahmed & Adams, 2023). Additionally, the experience and expertise of older workers can be invaluable in mentoring younger employees, fostering knowledge transfer that can enrich organizational culture and performance. As one the respondents expresses his views,

“The most pressing challenge facing the job market is the skills gap. As technology continues to evolve, there is a growing mismatch between the skills employers demand and the skills workers possess. Addressing this skills gap requires collaboration between education institutions, businesses, and policymakers to ensure that individuals have the necessary

training and qualifications to succeed in the modern workforce. Samyo, 39 years old."

This emphasizes the urgent need for a responsive educational system that aligns with market needs.

Another respondents says

"Globalization has both positive and negative implications for the job market. While it can create new opportunities for businesses and individuals, it can also lead to job losses and wage stagnation. To mitigate the negative effects of globalization, policymakers must implement policies that support workers affected by job displacement and promote fair trade practices. Mamita, 27 years old."

This response highlights a crucial area for policy intervention aimed at protecting those disproportionately impacted by global economic changes.

Another respondents highlights,

"Demographic shifts, such as aging populations and declining birth rates, pose significant challenges to the job market. To address these challenges, governments and businesses must invest in workforce development and education to ensure a sufficient supply of skilled workers. Sami, 38 years old."

This underscores the necessity for strategic investments in workforce planning and development.

The responses from the field highlight the complex and multifaceted nature of the challenges and opportunities facing the job market. The skills gap, globalization, and demographic shifts significantly influence labour markets (Sidhu et al., 2024). Addressing these challenges requires a comprehensive approach that involves collaboration between governments, businesses, educational institutions, and individuals.

The contemporary job market is characterized by challenges and opportunities. Technological disruption, globalization, and demographic shifts reshape employment landscapes, presenting hurdles and prospects. By understanding these challenges and seizing opportunities, individuals and

organizations can navigate the complexities of the job market and achieve success. Investing in education and workforce development, equitable policies, and inclusive practices will be essential in fostering a resilient workforce that can thrive amid change.

Technology and the Human Pace

Technological advancement is a relentless phenomenon driven by human ingenuity, necessity, and the quest for efficiency. As societies evolve, new challenges emerge, prompting innovative solutions. This cycle has persisted throughout history, with each wave of technological progress—from the Industrial Revolution to the digital age—shaping societal structures, economic landscapes, and individual lives. With globalization and interconnectedness at an all-time high, any attempts to stop technological advancement would likely impede growth, restrict competitive edge, and exacerbate existing inequalities (Powell, 2024).

Efforts to halt or significantly restrict technological advancement could lead to stagnation and regression. Such measures may prevent societies from addressing urgent global challenges, such as climate change, public health crises, and food security. For instance, advancements in renewable energy technologies are critical for sustainability efforts to combat climate change. The International Energy Agency (2021) emphasizes that the transition to renewables is vital to achieving net-zero emissions. Restricting these advancements would hinder societal progress toward environmental goals and perpetuate reliance on fossil fuels, worsening the climate crisis.

While halting technological advancement is impractical, ethical considerations in its development are crucial. Governments, industries, and societies need to engage in profound discussions regarding the implications of new technologies, ensuring that they are developed and deployed responsibly. The advent of artificial intelligence (AI) offers a pertinent example. AI technologies can significantly enhance productivity and improve quality of life; however, they also raise ethical concerns surrounding privacy, employment

displacement, and accountability. According to Brynjolfsson and McAfee (2014), the challenge lies not in the technology itself but in effectively addressing its societal implications.

Strategic policy-making is necessary to manage the trajectory of technological advancements responsibly. Policymakers must establish regulatory frameworks that promote innovation while protecting public interests. For example, the European Union's General Data Protection Regulation (GDPR) exemplifies a balanced approach that safeguards individual privacy rights without stifling technological innovation. Such policies can facilitate responsible exploration of emerging technologies and ensure that innovations align with societal values and goals.

Technological advancement also presents opportunities for inclusive growth (Jejenywa, 2024). As technology continues to evolve, it creates pathways for marginalized communities to access resources, education, and economic opportunities. For instance, mobile technology has significantly improved access to information and services in rural areas, fostering entrepreneurship and facilitating social mobility. However, to capitalize on these opportunities, it is essential to ensure equitable access to technology and address existing digital divides. Bridging these gaps will enable wider participation in the benefits of technological advancements. As one of the respondents asserts,

"The key is not to stop technology but to ensure that it shape its trajectory with ethical considerations at the forefront. Sam, 40 year old."

This highlights an emerging consensus that proactive engagement with technological advancements is essential.

Another respondents suggests,

"Regulations must evolve alongside technology. A static approach will only lead to obsolescence. Peter, 38 year old."

This reinforces the argument that dynamic policy-making is vital to adapt to new technologies and protect public interests.

Another respondents asserts,

“Fostering inclusivity in tech development is crucial. We must ensure that no group is left behind; otherwise, we face greater societal divisions. Ajeet, 39 years old.”

This underscores the importance of inclusivity in realizing the full benefits of technological advancements.

The expert responses collectively assert that rather than hindering technological advancements, societies should focus on ethical frameworks, responsive policy regulations, and inclusivity in tech development. These insights demonstrate that the path forward involves navigating the complexities of technology with a balanced approach that emphasizes responsibility and equity. Stopping technological advancement is not only impractical but would also deprive society of the opportunity to address critical challenges and foster social progress.

Conclusion

The advent of AI and ML technologies has ignited a complex tie of optimism and apprehension. While these advancements offer unprecedented potential for job creation and economic growth, they also raise concerns about job displacement, skill obsolescence, and exacerbating existing inequalities. The disparities in access to and proficiency in AI and ML highlight the imperative for targeted educational initiatives and policy interventions to bridge the digital divide and ensure a skilled workforce.

To empower unemployed youth to thrive in an increasingly automated environment, stakeholders must prioritize digital literacy, equitable access to training resources, and mentorship programs. Such initiatives can equip individuals with the necessary skills to adapt to evolving job demands and seize emerging opportunities. Moreover, collaboration among policymakers, educators, and employers is essential to foster an inclusive workforce that is prepared for the challenges and benefits of AI and ML.

Understanding the perspectives of unemployed youth on AI and ML is crucial for developing strategies that mitigate potential negative impacts and maximize the transformative

potential of these technologies. This research contributes significantly to ongoing debates about the future of work, emphasizing the critical role of education, policy, and collaboration in fostering a resilient and adaptable workforce.

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