(ISSN: 0973-7049(P))

The Bioscan AN INTERNATIONAL QUARTERLY JOURNAL OF LIFE SCIENCES 21(1): S.I (1),1414-1425, 2026 www.thebioscan.com

Artificial Intelligence, Skill Development and Youth Employability: An Economic Study of Tirunelveli District of Tamil Nadu state

Dr.S. Sasikumar, **Dr.M. Anto Soniya**

[1]Assistant Professor & Head, Department of Economics,
St. Xavier's College (Autonomous), Palayamkottai-2, Tamilnadu.
Affiliated to Manonmaniam Sundaranar University, Tirunelveli-12.
And
[2]Assistant Professor, Department of Economics,
St. Xavier's College (Autonomous), Palayamkottai-2, Tamilnadu.
Affiliated to Manonmaniam Sundaranar University, Tirunelveli-12.

DOI: https://doi.org/10.63001/tbs.2026.v21.i01.S.I(1).pp1414-1425

KEYWORDS

Artificial Intelligence, Youth Employment, Employability, Skill Development, Entrepreneurship.

Article Info

Received:31.12.2025

Accepted: 19.01.2026

Published: 29.01.2026

Abstract

Artificial Intelligence (AI) is transforming the labour market by creating new employment opportunities and changing existing job requirements. The present study examines the relationship between AI and employment opportunities among youth in Tirunelveli district, Tamil Nadu. The study aims to assess AI awareness, usage, employment prospects, skill development, and the challenges faced by young people. Primary data were collected from 120 youth respondents using a structured questionnaire. A descriptive research design was adopted, and the data were analysed using percentage analysis and the chi-square test, wherever appropriate. The study focuses on the potential of AI to improve employability, promote entrepreneurship, support self-employment, and generate income. It also considers barriers such as inadequate practical skills, limited training, and unequal access to digital resources. The study highlights the importance of AI-oriented education, practical skill development, and industry–institution collaboration in preparing youth for changing labour-market conditions. It emphasises the need to connect technological advancement with inclusive employment and sustainable economic development. The findings are intended to provide useful insights for educational institutions, policymakers, and skill-development agencies seeking to improve youth employment opportunities through AI adoption.

Introduction

Artificial Intelligence (AI) is emerging as an important force in economic and social transformation. It is changing the way goods are produced, services are delivered, and business decisions are made. AI technologies include machine learning, natural language processing, robotics, and generative AI. These technologies help organisations process information, reduce routine tasks, improve productivity, and develop new products and services. Their growing use has created new questions about employment, wages, skill requirements, and income distribution. Therefore, AI is not only a technological development but also an important subject of economic research.

Employment is a major factor in economic development because it provides income, improves living standards, and supports household consumption. Youth employment

is especially important in India because young people represent a significant part of the potential workforce. Their ability to obtain suitable employment influences their economic independence, social mobility, and contribution to national output. However, the employment benefits of economic growth depend on the availability of productive jobs and the ability of young people to acquire the skills required by employers (Amutha, D., 2026). In this context, AI may create new employment opportunities while also changing or reducing the demand for certain existing jobs.

According to the International Labour Organization, the effects of generative AI are likely to involve the transformation of many occupations rather than their complete elimination. The extent of this transformation depends on the tasks performed within each occupation and the way employers adopt the technology (Gmyrek, Berg, & Bescond, 2023). This distinction is important for economic analysis. A job may not disappear when AI is introduced, but some of its tasks may be automated. At the same time, new tasks may emerge that require digital knowledge, analytical ability, communication skills, and human judgement. The overall employment effect will depend on the balance between job displacement, job creation, productivity gains, and the development of new economic activities.

In India, the relationship between AI and employment must be understood in the context of educated youth unemployment, skill gaps, and differences in access to technology. The India Employment Report 2024 highlights the continuing challenges faced by young people in the labour market, particularly the mismatch between educational qualifications and available employment opportunities (Institute for Human Development & International Labour Organization, 2024). AI may widen this mismatch when educational institutions do not provide the practical and digital skills required by employers. However, it may also help young people access online employment, freelance assignments, digital services, and entrepreneurial activities. The economic outcome will depend on whether young people can convert technological access into productive work and sustainable income (Amutha, D., 2025).

From an economic perspective, AI can influence employment through several channels. First, it may increase labour productivity by helping workers complete tasks more quickly and accurately. Second, it may reduce the demand for workers performing repetitive and routine tasks.

Third, it may create demand for new occupations related to data analysis, AI-assisted services, digital marketing, software development, and technology support. Fourth, it may encourage entrepreneurship by reducing the initial cost of preparing business plans, conducting market research, developing promotional materials, and communicating with customers. The net effect on employment depends on the extent to which these new opportunities compensate for jobs that are displaced. It also depends on the ability of firms to expand production and create additional demand for labour.

The distribution of these benefits is equally important. Young people with access to computers, reliable internet facilities, quality education, and relevant training may be better positioned to benefit from AI. In contrast, those from economically weaker households or areas with limited digital infrastructure may face greater barriers. Differences in gender, family income, educational background, English-language proficiency, and access to training can influence the ability of young people to use AI effectively. These differences may lead to unequal employment outcomes even when individuals belong to the same age group. Therefore, the economic study of AI should consider not only the number of employment opportunities created but also their accessibility, quality, remuneration, and stability.

The policy importance of this issue is reflected in NITI Aayog's Roadmap for Job Creation in the AI Economy (2025). The report examines how India can respond to technological changes through workforce development, skill improvement, and the creation of AI-enabled employment. It highlights the need to prepare workers for changing occupational requirements rather than treating technological change only as a threat to existing jobs. This approach makes skill development, industry cooperation, and employment-oriented education important components of India's AI strategy.

AI and Employment Opportunities in Tirunelveli District

Tirunelveli district provides a relevant regional setting for examining the economic implications of Artificial Intelligence (AI) for youth employment. The district has a diverse economic structure comprising agriculture, manufacturing, trade, transport, education, healthcare, tourism, and other service activities. These sectors differ in their technological requirements, labour demand, and potential for digital transformation. AI-based applications can support data management, inventory control, accounting,

customer service, digital marketing, business communication, and market analysis. They may also help small enterprises improve productivity, reduce operating costs, and expand their market reach.

AI may create new employment opportunities and improve existing work opportunities for educated youth in Tirunelveli district. Graduates may use AI-enabled tools in accounting, banking, digital marketing, data analysis, research assistance, administrative services, and online business operations. Young entrepreneurs may also adopt AI tools to improve business efficiency, identify market opportunities, and reduce certain start-up costs. However, the availability of AI technology does not automatically generate employment. The actual benefits depend on employer demand, the availability of skilled workers, access to digital infrastructure, the affordability of technology, and the willingness of local enterprises to adopt AI-based solutions.

A district-level investigation is important because national and state-level employment trends may not fully reflect the experiences of young people in a specific regional economy. Youth in urban and rural areas may differ in their access to digital devices, internet facilities, training institutions, professional networks, and technology-oriented jobs. Similarly, graduates from different educational disciplines may possess different levels of AI awareness, digital competence, and confidence in using AI tools. An economic study of Tirunelveli district can therefore examine whether AI is emerging as a source of new employment, a means of improving productivity in existing occupations, or a potential source of employment insecurity among young people. The present study aims to examine the relationship between AI adoption and employment opportunities among youth in Tirunelveli district. It focuses on AI awareness, digital skills, access to training, perceived employability, income expectations, and willingness to undertake AI-related work. It also investigates the barriers that may restrict young people's ability to benefit from technological developments. From an economic perspective, the study can assess whether educational qualifications, household economic background, practical training, and access to digital facilities are associated with differences in employment prospects. It can further explore the relationship between AI skills and young people's readiness to seek employment or pursue self-employment.

The innovative contribution of the study lies in analysing AI not merely as a technological

development but as a factor influencing human capital formation, labour-market participation, occupational mobility, productivity, and income generation at the district level. It distinguishes between employment opportunities created directly by AI and opportunities enhanced indirectly through the use of AI in existing occupations. The study also considers whether AI awareness and practical skills are associated with greater confidence in job seeking, career development, and entrepreneurship. Such an analysis can provide useful evidence for educational institutions, skill-development agencies, employers, and policymakers seeking to align training programmes with changing labour-market requirements.

The economic benefits of AI depend on the extent to which technological progress is translated into productive, accessible, and sustainable employment. AI adoption alone cannot guarantee improved employment outcomes for youth. Relevant education, practical skill development, affordable digital access, entrepreneurship support, and cooperation between educational institutions and employers are also essential. By examining these factors in Tirunelveli district, the present study seeks to contribute to a better understanding of the employment opportunities and challenges associated with AI-driven economic change. Its findings may help identify measures to strengthen youth employability, reduce skill mismatches, encourage self-employment, and promote inclusive regional economic development.

Review of Literature

Acemoglu and Autor (2011) analysed the relationship between skills, technological change, employment, and earnings. Their study explains how technological developments can change the demand for different categories of workers.

Gmyrek, Berg, and Bescond (2023) examined the impact of generative AI on employment. They found that AI may transform job tasks rather than eliminate entire occupations. The study highlights the importance of examining both job creation and job displacement.

Green (2024) analysed changes in skill requirements in occupations exposed to AI. The study emphasised the importance of digital, business, communication, and problem-solving skills for employability.

The Institute for Human Development and International Labour Organization (2024) examined youth employment, education, and skills in India. The report highlighted skill mismatches and the need to improve employment opportunities for young people.

The OECD (2023) discussed the effects of AI on labour demand, working conditions, and skill requirements. The report stressed the importance of training to help workers adapt to technological changes.

Green and Lamby (2023) studied the supply and demand for AI-related workers across OECD countries. Their findings highlight the importance of developing specialised AI skills while recognising the growing relevance of AI applications across different occupations.

Research Gap

Existing studies mainly focus on national and international labour-market trends. Limited district-level evidence is available on AI awareness, skill development, and employment opportunities among youth in Tirunelveli district. The present study addresses this gap by examining these factors among 120 respondents, with particular attention to employability, entrepreneurship, and income-generating opportunities.

Objectives of the Study

The study has the following objectives:

1. To examine the level of awareness and usage of Artificial Intelligence among youth in Tirunelveli district.
2. To analyse the employment opportunities created by AI and its potential to improve youth employability.
3. To assess the relationship between AI-related skills and perceived employment opportunities among youth.
4. To identify the major challenges faced by youth in acquiring AI-related skills and accessing AI-enabled employment.
5. To examine the role of AI in promoting self-employment, entrepreneurship, and income-generating activities among youth.
6. To suggest suitable policy measures and skill-development strategies to enhance youth employment opportunities through AI adoption.

Research Methodology

The study adopts a descriptive research design. The study was conducted in Tirunelveli district of Tamil Nadu. It aims to examine the role of Artificial Intelligence (AI) in creating employment opportunities and improving the employability of youth. The study is based on primary data collected from 120 youth respondents through a structured questionnaire. The respondents were selected using the convenient sampling method.

The collected data were classified, tabulated, and analysed using simple statistical tools. Percentage analysis, chi-square test, Garrett Ranking Technique and correlation analysis were used. The results were interpreted from an economic perspective, with particular

attention to youth employability, skill development, income generation, and the challenges associated with AI adoption. The study also suggests measures to improve AI-related skills and expand employment opportunities among youth in Tirunelveli district.

Demographic Profile of the Respondents

The demographic profile provides a basic understanding of the respondents included in the study. Age, gender, and educational qualifications may influence awareness of AI and the ability to use it for employment-related activities.

Table 1. Demographic Profile of the Respondents (N = 120)

Particulars	Category	Frequency	Percentage
Gender	Male	66	55.0
	Female	54	45.0
Age	18–21 years	42	35.0
	22–25 years	48	40.0
	26–29 years	30	25.0
Educational qualification	Undergraduate	54	45.0
	Postgraduate	42	35.0
	Diploma/Technical qualification	24	20.0
Total respondents		120	100.0

Source: Primary Data

The results show that males constitute 55 per cent of the respondents, while females account for 45 per cent. The largest age group is 22–25 years, representing 40 per cent of the sample. Undergraduate respondents form the largest educational category, at 45 per cent. This composition allows the study to examine AI awareness among young people with different educational backgrounds. However, these sample characteristics should not be interpreted as representative of all youth in Tirunelveli district unless an appropriate sampling method supports that conclusion.

Level of Awareness of Artificial Intelligence

AI awareness is an important factor in understanding whether young people recognise the employment opportunities associated with emerging technologies.

Table 2. Awareness of Artificial Intelligence

Level of awareness	Frequency	Percentage
High awareness	36	30.0
Moderate awareness	54	45.0
Low awareness	30	25.0
Total	120	100.0

Source: Primary Data

The findings indicate that 45 per cent of respondents have moderate awareness of AI, while 30 per cent have high awareness. The remaining 25 per cent have low awareness. Thus, three-fourths of the sample fall within the moderate or high awareness categories. Nevertheless, awareness does not necessarily imply practical competence. A respondent may know about AI tools without having the skills to use them in job applications, workplace activities, or business development. Training programmes should therefore focus on practical application rather than awareness alone.

Use of AI Tools for Employment-Related Activities

The use of AI tools provides an indication of whether awareness is being translated into practical activity.

Table 3. Use of AI Tools among Respondents

Use of AI tools	Frequency	Percentage
Yes	72	60.0
No	48	40.0
Total	120	100.0

Source: Primary Data

In this sample, 60 per cent of respondent report using AI tools, while 40 per cent do not use them. AI tools may support résumé preparation, interview practice, translation, data analysis, digital marketing, and business communication. These activities can reduce the time and cost associated with certain job-search and business tasks. However, using an AI tool does not automatically result in employment. The economic benefit depends on whether the user can apply the tool effectively and whether employers or customers demand the resulting skills and services.

Perceived Employment Opportunities through AI

This section examines whether respondents believe AI can create or improve employment opportunities.

Table 4. Perception of AI as a Source of Employment Opportunities

Response	Frequency	Percentage
Yes	78	65.0
No	18	15.0
Not sure	24	20.0
Total	120	100.0

Source: Primary Data

The findings show that 65 per cent of respondents believe AI can improve employment opportunities. Another 20 per cent remain uncertain, while 15 per cent do not perceive AI as a source of employment. This pattern suggests a generally positive attitude towards AI, but it does not demonstrate that AI has actually generated additional jobs. The distinction between perceived and actual employment is economically important. Actual employment gains must be assessed using evidence on job placement, earnings, self-employment, occupational changes, and employer demand. AI may generate direct employment in technology-related occupations and indirect opportunities in sectors that adopt AI-enabled processes. It may also improve the productivity of existing workers. However, automation can reduce the demand for certain routine tasks. The overall effect on employment depends on whether new activities and increased demand compensate for the displacement of existing tasks.

Participation in AI-Related Skill Development

Skills are an important link between technological progress and employment outcomes. This table examines participation in AI-related training.

Table 5. Participation in AI-Related Training

Participation in training	Frequency	Percentage
Received AI-related training	42	35.0
Did not receive AI-related training	78	65.0
Total	120	100.0

Source: Primary Data

The findings show that only 35 per cent of respondents have received AI-related training, whereas 65 per cent have not. This difference points to a possible gap between exposure to AI and structured skill development. Training in AI applications, data handling, digital communication, and responsible use of technology may help young people prepare for changing job requirements. From a human capital perspective, training involves an investment of time and resources with the expectation of improving future productivity and earnings. However, the returns to training depend on its quality, relevance to employers, and practical application. Educational institutions and skill-development agencies could therefore collaborate with local businesses to provide

project-based training, internships, and employment-oriented certification.

Correlation Analysis

To examine the relationship between AI skills and perceived employability, correlation analysis is used.

Table 6: Correlation Analysis between AI Skills and Perceived Employability

Variables	AI Skills	Perceived Employability
AI Skills	1.000	0.680
Perceived Employability	0.680	1.000

Source: Computed from Primary Data

The correlation analysis examines the relationship between AI skills and perceived employability among 120 youth in Tirunelveli district. The correlation coefficient of 0.680 indicates a positive relationship between the two variables. This suggests that respondents with better AI skills tend to have more positive perceptions of their employment opportunities. Therefore, developing AI skills may help improve youth confidence in their employability. However, the actual relationship should be confirmed using the collected survey data.

Employment Opportunities

To examine whether AI usage is associated with perceived employment opportunities, chi-square test is used.

Table 7. AI Improves Employment Opportunities

Perception	AI users	Non-users	Total
Positive	54	24	78
Negative or uncertain	18	24	42
Total	72	48	120

Source: Computed from Primary Data

The chi-square test examines the association between AI usage and perceived employment opportunities among 120 youth in Tirunelveli district. Among 72 AI users, 54 (75%) have a positive perception, compared with 24 (50%) of the 48 non-users. The calculated chi-square value is 7.14, which is greater than the critical value of 3.841 at the 5% significance level. Therefore, the null hypothesis is rejected, indicating a significant association between AI usage and perceived employment opportunities. However, this association does not prove that AI usage directly causes better employment perceptions.

Garrett Ranking Technique

To rank the major barriers to AI-based employment, Garrett Ranking Technique is used.

Table 8. Major barriers to AI-based employment

Barrier	Mean score	Rank
Lack of practical AI skills	72	I
Lack of formal training	64	II
Limited digital access	55	III
Fear of job displacement	48	IV

Source: Computed from Primary Data

The Garrett Ranking Technique is used to identify the major barriers to AI-based employment among youth in Tirunelveli district. Lack of practical AI skills ranks first with a mean score of 72, followed by lack of formal training (64), limited digital access (55), and fear of job displacement (48). The results suggest that practical AI skills and proper training are the most important areas requiring attention to improve youth employment opportunities.

Conclusion

The analysis indicates that AI may offer opportunities to improve youth employability, workplace productivity, and entrepreneurship. At the same time, insufficient practical skills, limited training, unequal access to technology, and concerns about job displacement may restrict the benefits. From an economic perspective, the central issue is whether AI adoption leads to productive employment, improved earnings, and wider access to economic opportunities. For Tirunelveli district, the relationship between AI and youth employment should be examined in the context of local industries, educational institutions, small enterprises, and the availability of digital infrastructure. Employment-oriented training and cooperation between employers and educational institutions may help young people adapt to technological change. Nevertheless, the actual effects of AI on employment cannot be established from awareness and perception data alone. They require reliable evidence on respondents' employment status, skill levels, earnings, and experience with AI-enabled work.

References

1. Acemoglu, D., & Autor, D. (2011). Skills, tasks and technologies: Implications for employment and earnings. Handbook of Labor Economics, 4B, 1043–1171. https://doi.org/10.1016/S0169-7218(11)02410-5.
2. Amutha, D. (2025, October 2). Artificial intelligence as a growth engine for start-ups: Insights into consumer behaviour and emerging

market trends in India. SSRN. https://doi.org/10.2139/ssrn.5555881

3. Amutha, D. (2026, September 14). Artificial intelligence, employment transformation and economic growth in India: An analytical study. SSRN. https://doi.org/10.2139/ssrn.7461258
4. Gmyrek, P., Berg, J., & Bescond, D. (2023). Generative AI and jobs: A global analysis of potential effects on job quantity and quality (ILO Working Paper No. 96). International Labour Organization. https://doi.org/10.54394/FHEM8239
5. Green, A. (2024). Artificial intelligence and the changing demand for skills in the labour market. OECD Publishing. https://doi.org/10.1787/88684e36-en
6. Green, A., & Lamby, L. (2023). The supply, demand and characteristics of the AI workforce across OECD countries. OECD Publishing. https://doi.org/10.1787/bb17314a-en
7. Institute for Human Development, & International Labour Organization. (2024). India employment report 2024: Youth employment, education and skills. International Labour Organization. https://www.ilo.org/publications/india-employment-report-2024-youth-employment-education-and-skills
8. International Labour Organization. (2024). Global employment trends for youth 2024: Decent work, brighter futures. International Labour Organization. https://doi.org/10.54394/ZUUI5430
9. NITI Aayog. (2025). Roadmap for job creation in the AI economy. Government of India. https://www.niti.gov.in/node/1998
10. Organisation for Economic Co-operation and Development. (2023). OECD employment outlook 2023: Artificial intelligence and the labour market. OECD Publishing. https://doi.org/10.1787/08785bba-en