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Research paper

Impact of Skill Learning on Socio-Economic Development of The Learners: A Bibliometric Analysis

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Abstract

The purpose of this bibliometric analysis was to look at the body of research on socio-economic development through skill learning from 2000-2024 by mapping the evolution, trends, and opinions surrounding the importance of socio-economic development and the need for skill development programs. Using the literature from various academic databases to conduct the analysis, this paper included research papers, conference proceedings, and reports to identify the key research themes, contributions of the influential authors in this domain, as well as the geographical distribution of the studies. The main conclusion of this analysis was that vocational training, education, and the development of human capital are the key drivers of socio-economic development. The authors also noted an increasing trend in the literature around digital skills, entrepreneurship, and industry-based training programs. The authors highlighted gaps in the literature regarding the lack of long-term impact assessments of skill-training programs, as well as how gender and regions can affect the long-term impacts of skill development activities. By using the bibliometric approach, the authors have provided a summary of the body of literature available regarding the role of skill learning in the socio-economic development of an individual, and have created an opportunity for future researchers to continue to explore the need for skill development as a means of achieving long-term sustainable socio-economic growth.

Keywords: *Socio-Economic Development; Skill Learning; Vocational Education; Economic Returns; Bibliometric Analysis.*

1. Introduction

The process of Socio-Economic Development is made up of different ways in which we improve people's socio-economically through Economic opportunities, Educational opportunities and Social Equity (Hanushek & Woessmann, 2013; Glewwe, 2002), the development of skill learning as a vehicle to enable people to gain the ability to be productive within a competitive environment is a key driver of Socio-Economic Development (Hasan & Khan, 2019; Katole, 2015) as demonstrated by the growth of skilled labour in the worldwide economy and the utilization of these skills as an integral element of Sustainable Development Strategies, especially in the developing economies (Agrawal, 2014; Kawar, 2011). Kim and Lee (2021) argued that vocational education will remain a human capital pathway for youth to gain employment. Consequently, the need to provide skill development through vocational training and learning initiatives is on the rise for governments, non-government agencies, and international agencies that are addressing issues such as unemployment, poverty, and inequality (Palmer, 2007; Dodiya et al., 2022), along with the increased recognition of the importance of skill learning within the overall context of Socio-Economic Development in recent years has resulted in a significant increase in research about the impact of skill learning on economic status (Shah, 2023; Grosseck et al., 2019). The domain of research is quite diverse, including, but not limited to: the efficacy of skill acquisition programs; how technology is used to help improve the skills of people; the correlation between the skills of individuals and economic expansion; and the issues involved with delivering.

Fig. 1: Overview of the Literature Review on Socio-Economic Development through Skill Learning (Source: Created by the Author).

1.1. Socio-economic development through skill learning

The acquisition of skills is essential for the betterment of both individuals and communities, as skill learning helps in enhancing socio-economic development. By providing individuals with pertinent skills, they can gain access to more favourable employment opportunities, which enhances their overall quality of life and income (Hasan & Khan, 2019; Kawar, 2011; Palmer, 2007). In numerous sectors, skill acquisition promotes productivity; at the same time, it leads to better human capital potency (Ashibogwu et al., 2025). By investing in skills development, individuals will be better prepared to meet the changing demands of the labour market while also helping to create additional economic growth (World Bank, 2024). Additionally, developing skills is important for fostering entrepreneurship and innovation, by producing a labour force that can provide new business ideas and be able to adapt as technology changes (Deming & Silliman, 2023). Skills development helps reduce the gap that exists between those living below the poverty level and those that are not, by allowing the opportunity for people who are in the lower classes to improve their lives and break free from poverty (Bassanini et al., 2021). In the long run, the skills that are learned through training will help develop a country through increased social stability, increased economic growth, and an increased human resources base (Ofori et al., 2024). Social stability increases when a population has education and skills to develop a stable economy. Meta-analysis consistently demonstrates positive but modest associations between skill development programmes and outcomes in the labour force. For example, Haelermans and Borgans (2012) reported in their study that on-the-job training increased the average wage of participants by 2 – 3 % after correcting for publication bias and the selection of participants in the studies that were reviewed. The majority of systematic reviews regarding vocational or technical training indicate that there are small but significant improvements in employment outcomes and earnings of programme participants, with favouring results for the combined classroom-workplace model as compared to classroom only training models (Tripney et al., 2013; Card, Kluve & Weber, 2018). In addition, meta-syntheses concerning low- and middle-income countries reveal that employer-related programmes are associated with an increase in economic benefits of participants and that programmes that train for a longer period of time provide the largest and most durable economic gains (McKenzie, 2017; Kluve et al., 2019). To promote community well-being, reduce inequalities, and achieve inclusive development in rapidly changing global economies, it is imperative to prioritize skill acquisition among individuals through social support (Liew et al.,2025).

1.2. Skill learning and growth models

The economic theory of human capital as advanced by Becker (1994) forms the basis on which learning skills is based, as according to this theory, an individual and the society in which that individual lives place value on growing their skill base through education and training in order to increase his or her productivity and future earnings. In this context, as a company would invest in physical capital, any training or technical course a person completes, apprenticeship, or experience gained from working within the industry ties directly in with the larger investment the company has made in capitalizing on the worker's productivity potential through training (Mincer, 1974). These investments are expected to yield a return in form of increased wages and improved job opportunities as well as increases in productivity. This return is quantitatively depicted in the Mincerian earnings function; Training is an input to human capital; therefore, as a worker participates in training, that worker will receive a premium on his or her income.

Substantial empirical evidence has shown that vocational training programmes undertaken in South Asia, Sub-Saharan Africa, and East Asia return wage premiums ranging from 5 percent to greater than 20 percent depending on the type of vocational training programme and the industry sector (Alfonsi et al., 2024; Bahl, Bhatt & Sharma, 2021). Becker's distinction between general and specific human capital is also central to interpreting these outcomes. General skills-such as digital competencies or transferable technical abilities-can be used across firms, enabling workers to capture most of the return through higher wages, while firm-specific training, such as machine-specific instruction, yields return shared between workers and employers (Becker, 1964). Signaling theory further enriches the relationship between training and labour market outcomes, arguing that certificates and credentials acquired through training may improve wages not only by raising productivity but by signaling underlying ability or motivation to employers (Spence, 1973). Many recent evaluations find evidence of both channels, with some programs yielding modest productivity impacts but large improvements in job access due to credential signaling (Chowdhury, Hasan & Sharma, 2024). Human capital theory has also evolved to incorporate labour-market frictions, recognizing that skills influence not only productivity but also job-search efficiency, match quality, and job mobility (Mortensen & Pissarides, 1994). Empirical studies show that training programs combined with placement services tend to produce larger and more sustained employment gains, suggesting that skill learning facilities better match between workers and vacancies (Beber et al., 2024). The prominent role of human capital is presented as a main force behind the development of new technologies and thus long term economic growth by endogenous growth theory at a macroeconomic level - increasing the skills an individual has developed will not only create greater income for them,

but will also increase aggregate productivity via demonstrations of new technologies and skills through knowledge spillover to other individuals (Lucas, 1998; Romer, 1990). The contemporary research indicates that soft skills and other behaviour such as communication, problem solving and perseverance complement cognitive skills and help to increase the return on investment in training and technical training (Kautz et al., 2014). As technological innovation continues to develop quickly hybridization and depreciation of all skills occurs which creates a requirement for continual up-skilling and re-skilling as a mechanism for maintaining and developing the human capital stock (World Bank, 2020).

1.3. Economic returns to skill training

The results from technical and vocational teacher training indicate that technical and vocational educators enjoy significant benefits from their participation in these types of programmes. According to Alfonsi et al. (2020), in most cases the availability of formalized training leads to increased chances of finding employment and receiving higher wages through formalized training in general. The empirical evidence presented by Kraft and Gal (2021) further supports the claim that youth and marginalized workers benefit most from training in the vocational and technical sectors, as they tend to have the highest returns on investment when it comes to the Earned Income Tax Credit (EITC). Training focused on filling the skills gaps is proving to be very beneficial. There has been a strong link between cognitive skills and individual earnings, which has been mentioned in the work of Hanushek (2013), where it has been argued that in developing countries, the simple focus on school attainment is insufficient and there has to be directed efforts for better human capital quality through improved cognitive skills. Interestingly, Choi (2021) finds that vocational high school graduates who enter the labor market immediately experience both higher employment probabilities and higher wages compared to their peers who pursue 2-year or 4-year college degrees. In the European context, Pilz and Li (2022) find that apprenticeship-training yields sustained wage premiums, indicating that hands-on, work-integrated learning remains a highly effective pathway for enhancing human capital. Alfonsi et al., (2024) extend these findings by documenting how skills developed before and during the COVID-19 pandemic mitigated adverse labour market shocks, reflecting the resilience benefits of human capital investment. The acquisition of digital skills is becoming a driving force in the economy as expected income returns. The findings of Lee and Hong (2025) show that using digital training programs have a positive correlation to increased employment and increase in wages for employees in the Republic of Korea. Sharma (2025) describes similar findings from the meta-analytic data for multiple countries, indicating that the increasing importance of technical skills will likely continue. In addition to the general findings mentioned above, industry specific analyses such as Wongmonta (2023) have found measurable increases in wages by on-the-job and structured workplace training programs, especially in skills-intensive industries. Factory jobs have limited income growth but a higher risk of health problems; whereas funds provided through entrepreneurship grants have shown that entrepreneurial training significantly increases employee earnings and those funds for self-employment most likely provide the greatest return on investment. Also noteworthy are the benefits of improved workplace training resulting from the professionalization of teachers as highlighted by Slina-Jasjukevica (2025). Teacher professionalization leads to improved results of vocational training and an indirect positive effect on economic returns due to improvements in skill development quality. Delugas and Barros (2021) provided a synthesis of global evidence to indicate positive relationships between vocational training programs and labour market outcomes and therefore have identified a strong relationship between the development of skills through formal education and the increased earning capacity. Higher cognitive skills increase workers' productivity and lifetime earnings, which expands future tax revenues (Hanushek & Woessmann, 2008). As skill improvements raise national income, governments recover initial education costs through a larger tax base, making learning reforms one of the most fiscally productive public investments (Hanushek & Woessmann, 2013). For cost-benefit analysis of skill learning, continuous evaluation of skill training incentives should be in focus. For example, Kumar & Bishnoi (2025) evaluate the PMKVY program, highlighting that the scheme does improve skill learning and employability outcomes, but results vary demographically. The research output trend for the area of socio-economic development through Skill Development, from the year 2000 until 2024, can be established by looking at three areas, authors, keywords and emerging themes. The research output trend has been a boom and bust pattern over the years with some major downturns (2004 - 2006, 2010 - 2012) while in more recent years there has been a consistent growth in publication numbers. Increasing publication numbers have emerged from 2019 onwards reflecting the increase in interest and research focus in this area. This increase reflects an increased global interest in the role of Skill Development as a major contributor to socio-economic development and the increased level of awareness of the importance of Skill Development to the global economy and changes in the related policies.

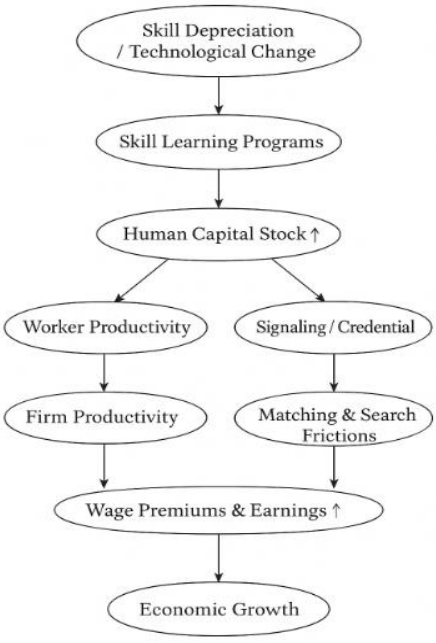

Fig. 2: Conceptual Framework.

Figure 2 presents the conceptual framework displaying how technological change increases the need for skill learning programs. These programs raise human capital, improving productivity, signaling and labour market matching. Higher productivity and better matches increase wages and firm performance. Together, these contribute to overall economic growth. Analysis Of Patterns In The Literature
In terms of socio-economic development through learning on the job, this section will analyse all published articles from 2000 through 2024 showing trends of authorship/paper authors, keywords and themes as authorship/paper themes are emerging. The publication data have shown significant fluctuations in research output over the years, with several major decreases (2004-2006 and 2010-2012) but a general upward trend in research output over the past several years. There is a strong increase in publications from 2019 and onward, indicating increased interest and emphasis placed on the subject. It can be assumed that this increase reflects a growing recognition among the global community of the importance of learning on the job as a significant factor in socio-economic development due to global challenges, the increasing awareness of the importance of learning on the job in the economic system, and current changes in policies designed to promote socio-economic development.

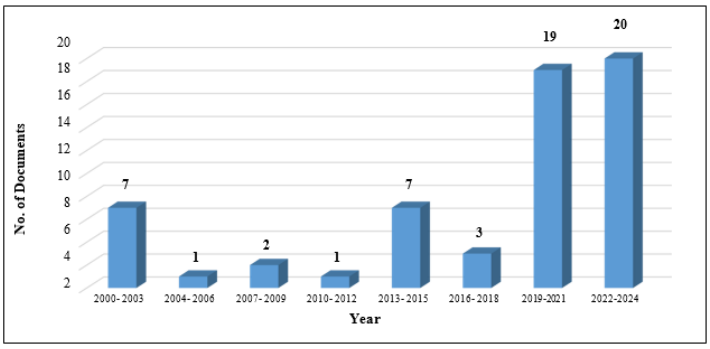

Fig. 3: Year-Wise Number of Publications (Source: Author Compilation).

The patterns of research output presented in Figure 3 show that between 2000 and 2003 there were 7 papers written on this topic and that following this period there has been considerable drop-off in publication activity with only one paper published in 2004-2006 and so on until 2010-2012 when there was another published but again one paper. In 2013-2015, there was some increase to 7 papers before a decrease to 3 papers during the 2016-2018 periods. There was an enormous increase from 2019 to 2021 when 19 papers were published which shows a time of heightened focus on this area. This trend has continued into 2022-2024 where the most has been published, that is 20 papers, and there is still a good deal of interest and research growth accumulating. The overall displays the fact that there have been cycles of low and high levels of research activity with increased rates of research activity recently indicating there is developing research momentum and the importance of research.

1.4. Citation analysis using clustering

The citation references are an integral part of a literature review on how skill development can lead to social and economic development through skill acquisition. When used together with the bibliometric information included with this review, the citation references may increase the validity of the literature review as well as provide additional context to the literature being reviewed. The bibliometric data for this citation analysis was visualized and analyzed using VOSviewer (V 1.6.13.3). VOSviewer is a very powerful tool for constructing bibliometric networks and visualizing relationships between different academic publication sources and is particularly useful when creating networks that contain numerous nodes. Each node represents an individual publication/source within the VOSviewer application. In order to differentiate between different clusters, colours that are distinct from other clusters visually delineate clusters of similar nodes. Researchers can use the clusters to observe noteworthy patterns, trends, and main themes within the literature involving skill development and economic and social development. Perhaps the most distinctive feature of VOSviewer is its ability to quantify link strength (i.e., how often one publication cites another publication) between publications. Total Link Strength is the sum of the total citations of all the nodes and each individual Link Strength reflects how many times a publication has been cited by other publications in a cluster. This visualization helps uncover the core literature that has had a significant impact on the field and how various studies are interconnected, providing a deeper understanding of socio-economic development through skill learning.

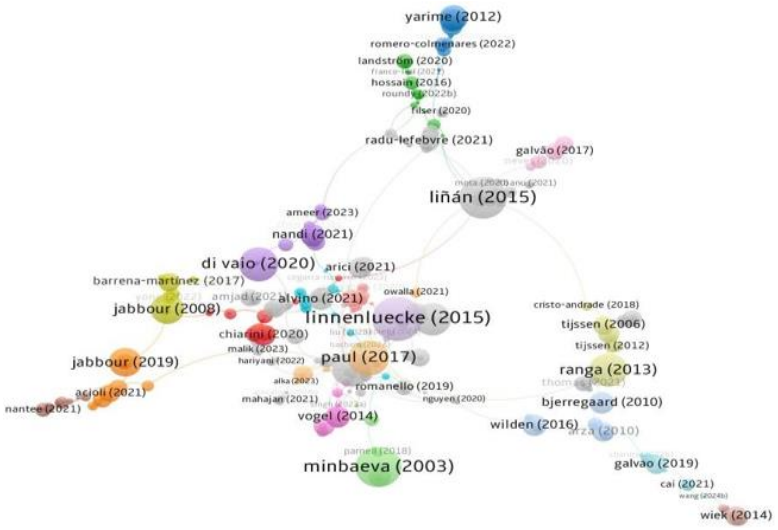

Fig. 4: Citation Analysis of the Literature on Socio-Economic Development through Skill Learning (VOSviewer, n.d.).

In Figure 4, the Citation Analysis of literature dating from 2000 until 2024 suggests many views on the reputation of the Scholarly Journals within this Field. It also provides a roadmap for those who refer to or examine Foundation Works and Current Works that were instrumental in shaping the Field being researched. Some examples of Influence and Citation Counts: W Paul (2019) 579 citations; Liñán (2015) 939 citations; Linnenluecke (2015) 1059 citations; plus (2) additional examples; W Paul (2017) 618 citations and Ranga (2013) 528 citations show these Authors' strong positions as Authorities in their respective research areas. In comparison to studies published recently by Fauzi (2022) and Maganga (2022) with citations of less than 100, as well as Singh (2021) with 20 citations as these studies are newer, are beginning to establish themselves as_titles in their own right, and therefore can only increase their respectability over time. Moderately cited sources include Chiarini (2020), 163 citations; Chandra (2020), 99 citations. These sources represent new contributions that are establishing themselves within the literature but have not yet achieved the same acceptance and respect as the established literature. A number of authors have been cited multiple times. For example, Jabbour has had many citations throughout the years (2008, 2009 and 2019), and Di Vaio has had many citations recently (2020). Because of the number of times these authors have been cited, it is evident that they are well established in several periods within their respective fields. The citation list compiled by these authors is an important resource for researchers conducting literature reviews, as it outlines the major works of those who have influenced the development of the research themes, and the evolution of research within the discipline of academic research. Citation counts are an essential measure for determining how the larger academic community defines impact and importance. Papers that receive a great amount of citations, such as Linnenluecke (2015), are generally considered foundational, and will usually provide the foundation, framework, forms of research, and/or findings upon which future research is based. Through the ability to link to each article, researchers are able to access these papers in an easily accessible manner allowing them to investigate all aspects of an article including methodology, as well as findings, which greatly support their ability to develop sound methods for producing subsequent studies. Tracking citations and referencing key papers place new research within the context of the overall academic community and highlight how rapidly the development of academic research is taking place due to the numerous new papers that have been written or produced.

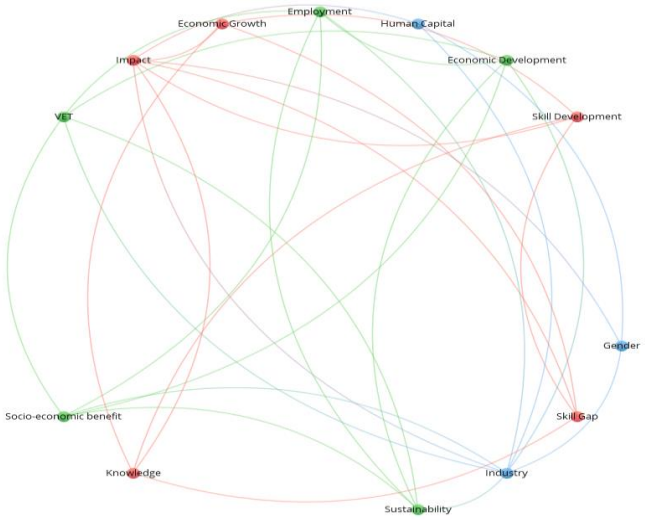

Fig. 5: Themes Highlighted in the Literature on Socio-Economic Development Through Skill Learning (Vosviewer N.D.).

Figure 5 shows the skills-development area related to three research themes. The first theme includes research related to knowledge and skill development (Skill Gap, Skill Development, Impact), which represents the core concept of "Skills." The second area of research is focused on vocational education, economic development, economic growth, sustainability, industry, and socio-economic benefit. These themes reflect the macro level orientation of skills research, connecting vocational education and skills with broader development, sectoral, and sustainability outcomes. The third area of research (Human Capital, Employment, and Gender) highlights the focus of labor market and inclusion on skills as a means of enhancing employability and mitigating inequalities in access and outcome amongst groups. The spatial arrangement of the nodes illustrates the connections and coherence amongst the themes. The cohesiveness of the network shows there is a mature multi-faceted researching field where skills are both a theoretical foundation and an economic engine for inclusive human development.

1.5. Top contributing countries based on publications and citations

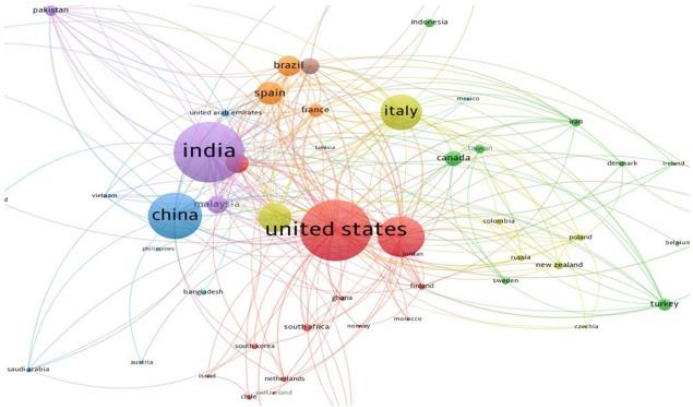

Fig. 6: Country-Wise Contribution of the Literature on Socio-Economic Development through Skill Learning (VOSviewer, n.d.).

Figure 6 shows how the world has been impacted by document citations in 5 countries around the globe; as a result, these documents (and the citations) make up a majority of the overall academic impact of various research efforts worldwide.
According to Figure 6, although the United States has the most documents (313) and citations (11,012) compared to the other countries represented in this figure, it is clear that the U.S. plays the most significant role (through both number and citations) in producing and distributing high levels of research. The fact that the U.S. continues to produce and distribute such a huge volume of research and citations indicates that the U.S. is producing a considerable amount of academically important research that gets extensive recognition throughout the academic community. India is very close behind with 311 documents and 4,269 citations, which reflect its established and significant presence in the academic community. Although India has about as many published papers as the United States, fewer citations have been assigned to them than in the US (the data seem to imply that Indian researchers have not been cited frequently enough or that more of their published paper output is in niche areas than in the US). Furthermore, the following table shows that while the United Kingdom and Italy both have a relatively high total number of published papers and corresponding amount of citations (206 total papers published/5,082 total cited vs. 184 total papers published/4,752 citations), neither of these countries has published as many papers as either the US or India with respect to cited citations. Consequently, the UK is the leader in the number of citations generated from Italy, which has published more total papers than the UK or India combined, while the UK is also taking the lead in an average of a slight edge in total citations compared to India. Additionally, although Australia has 145 total publications and 4,836 citations, it demonstrates a relatively slower overall rate of publishing, but despite being fewer than the total papers of the other three countries mentioned, it also exhibits a strong citation influence. As seen here, Australia maintains a considerable amount of citations resulting from fewer total published papers compared to those in the other three countries mentioned. Overall, the data suggest that while the United States leads in both quantity and citation impact, countries like India, the UK, and Australia also contribute significantly to global research in the domain of socio-economic development through skill learning, with varying levels of citation influence.

2. Methodology

A comprehensive literature search for the years 2000-2024 was conducted across three academic databases (Google Scholar, Scopus and Web of Science). Specific key terms were used in the search: "economic mobility"; "skills development"; "skill acquisition"; and "skills training" were selected with the intent of locating suitable academic articles focused on how developing skills impacts an individual's socioeconomic status. Following this comprehensive search of databases, the papers were filtered based on inclusion criteria. The VOS Viewer Software Version (1.6.13.3) was then used to perform citation analysis and generate bibliometric maps of the articles sourced for this review. We used the VOS Viewer software to identify trends and relationships between the selected publications, authors, and keywords, enabling us to visualize and understand the literature related to skill development and socioeconomic development. The bibliometric analysis consisted of extracting from the citation databases the year of publication; the authors; the name of journal in which the work appeared; keyword(s) assigned to the work; and the number of citations of the work. The bibliometric analysis allowed us to identify works that have had a large impact; the ideas that have become mainstream; and the trends of economic mobility resulting from skills development.

2.1. Inclusion criteria

The purpose of the selection criteria was to identify and include only high-quality literature in the bibliometric research. A time from the year 2000 to the year 2024 was reviewed to map the trends of the designated field. As a result, only written works discussing the affiliation of skill learning and socio-economic development were considered, including the following; peer-reviewed journals, conference proceedings, and articles written as reviews. Therefore, the material reviewed in this investigation would be of sound, credible and academically reputable sources.

2.2. Exclusion criteria

To enable the refinement of the bibliography, exclusionary conditions were put forth. Any written work published prior to 2000 or later than 2024 would be omitted from this analysis; therefore, it would remove any written works from the analysis that were not within the parameters of this project. Any written works that did not make specific mention of the contributions of skill learning to socio-economic development were not included in this analysis, therefore, only those studies that were directly relevant to the topic would be reflected in this project. Non-peer-reviewed publications such as letters, abstracts and editorials were not evaluated in this project due to the lack of scholarly in-depth analysis and academic credibility that they represent. To preserve the integrity of comprehension in both language and data interpretation, non-English referenced literature was removed from the current study. Inclusion and exclusion criteria, as defined by the authors, created a stringent and targeted bibliometric analysis of each paper, thereby enabling the authors to accurately identify important trends in research, significant contributions to the field, and future opportunities for exploratory research.

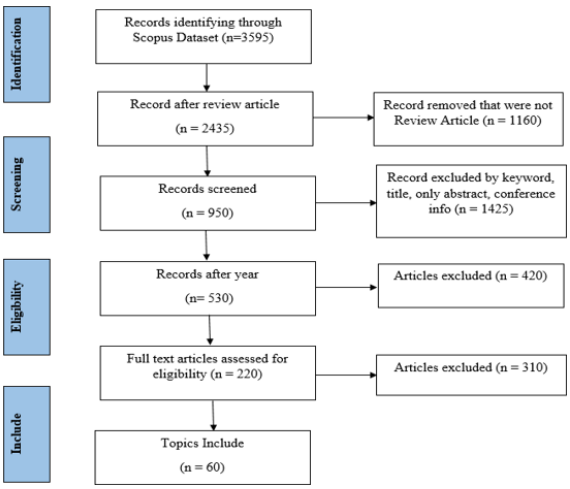

Fig. 6: PRISMA Model.

The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) model, as shown in Figure 6, illustrates the systematic approach employed for conducting a bibliometric analysis of the literature review on socio-economic development through skill learning. The process began with the identification of 3,595 records sourced from the Scopus dataset. During the identification phase, 1,160 records were excluded as they did not qualify as review articles, leaving 2,435 records for further screening. In the screening phase, an additional 1,425 records were removed based on factors such as irrelevant keywords, titles, abstracts, or content limited to conference information, resulting in 950 records deemed relevant for screening. The eligibility phase involved a refinement step based on publication years, which excluded 420 records and narrowed the dataset to 530 records. Eligibility would be evaluated against the full text of the study through an assessment process. A total of 310 articles were removed from consideration as they were not approved based on the research goals or did not align with the study objectives. Ultimately, the study contained 220 articles that underwent an in-depth analysis, which resulted in 60 themes that are relevant to and contribute to our capacity to comprehend how skill development guides and enhances socio-economic advancement.

As a product of this structured and thorough analysis, this study has significant value because it provides excellent evidence to support bibliometric analysis and will be very beneficial in determining trends and significant research achievements and foundational references within the field of socio-economic development through skill development.

3. Review of The literature

A bibliometric study of 60 papers was employed to investigate socio-economic development through skill learning.

Firstly, these studies were categorized based on the themes presented in each paper, and accordingly, the studies have been arranged under each category.

Table 4: Themes of Key Studies on Skill Training and Socio-Economic Impact

Themes	Authors
Education & Human Capital	Bloom et.al., (2014); Burchi, F. (2006)
Education & Human Capital, Socio-economic & Gender Factors	Ofori et al., (2024)
Education & Human Capital, Socio- economic & Gender Factors, Technology, ICT & Digitalization	Lindberg et al., (2022)
Education & Human Capital, Technology, ICT & Digitalization, Organizational & Institutional Factors	Roztocki et.al., (2019)
Organisational & Institutional Factors	Shah, A. (2023)
Human Capital and Skills, Technologies in socio-economic development, life-long learning and reduction in inequalities, virtual reality	Agormedah et.al. (2020); Calero (2020); Cook (2020); Djeki (2022); Grosseck et al. (2019); Hallinger (2019); Hamid (2024); Harishkumar (2024); Hasan & Khan (2019); Karadag (2016); Kawar (2011); Kim (2023); Kumuari (2024); Kurniadi (2023); Malik (2018); Marmoah et.al, (2022); Morgan (2000); Oliveira (2021); Onopriienko, et.al (2023); Rojas et.al.,(2023); Amin, A (1999); Team Green Analytics (2015); Tyagi, et.al., (2021); World Bank (2024); Zolkover, et.al., (2020); Ashibogwu, et. al., (2025)
Skill Development & Training	Ducatel, K. (2000); Katole, H. (2015); Singh, M. (2000)
Skill Development & Training, Education & Human Capital, Organizational & Institutional Factors	Hanushek, E. A., & Woessmann, L. (2008, 2013, & 2021)
Skill Development & Training, Education & Human Capital, Socio-economic & Gender Factors	Gruijters et.al., (2024); Hollander et.al., (2021); Patel et.al., (2024)
Skill Development & Training, Education & Human Capital, Socio-economic & Gender Factors, Organizational & Institutional Factors	Glewwe, P. (2002)
Skill Development & Training, Education & Human Capital, Socio-economic & Gender Factors, Technology, ICT & Digitalization	Shetty et.al., (2019)
Skill Development & Training, Education & Human Capital, Technology, ICT & Digitalization, Organizational & Institutional Factors	Jinyoung et.al., (2021)
Skill Development & Training, Education & Human Capital, Technology, ICT & Digitalization, Sustainability & Environment	Curea et.al., (2013)
Skill Development & Training, Socio- economic & Gender Factors	Kuru et.al., (2023)
Skill Development & Training, Socio- economic & Gender Factors, Technology, ICT & Digitalization	Bassanini et al., (2021); Elneel et.al., (2024); Ummah, M. S (2019)
Skill Development & Training, Technology, ICT & Digitalization	Agrawal, T. (2014); Deming et.al., (2023); Dodiya et.al., (2022);

	Gaur, V. (2022); Palmer, R. (2007)
Socio-economic & Gender Factors, Technology, ICT & Digitalization	Agrawal et.al., (2023); Erlando et.al., (2020); Rikala et.al., (2024)
Socio-economic & Gender Factors, Technology, ICT & Digitalization, Sustainability & Enviroment	Luster et.al., (1996)
Technology, ICT & Digitalization	Campos et.al., (2020); Rai et.al., (2021); Liew et.al., (2025)

Source: Author Compilation.

Table 4 summarizes the studies focusing on the role of skill learning in socio-economic development. It outlines the authors along with the broad themes associated with the importance of skill training on various socio-economic aspects across different regions and sectors. A detailed analysis of the literature was conducted to align the objectives of the papers with their reported findings.

Table 5: Key Findings of the Papers Along with the Stated Objectives

Authors & Year	Objectives	Findings
Agrawal et.al., (2023); Agormedah et.al., (2020)	Study examines demographic factors influencing online program selection, focusing on infrastructure, learner motivation, and program type preference for online learning experience	Younger learners prefer technology-driven programs. Main driver for enrolment is career advancement. Limited digital infrastructure affected access. Institutional adaptation improved over time.
Agrawal, T. (2014); Ducatel, K. (2000); Gruijters et.al., (2024); Hasan et.al., (2019); World Bank. (2024); Rai et.al., (2021); Patel et.al., (2024); Kurniadi, R. (2023)	Analysis of India's skill ecosystem and education- employment linkage, studies the contribution of skill training to socio-economic transformation in developing economies, discusses public-private roles and informal training, discusses shift from industrial to knowledge- based economy, also investigated the role of socio- emotional skills (SES) in mediating academic inequalities. Also, highlights the World Bank interventions in workforce development and education reform.	Skill training enhances human capital and productivity, reducing poverty and inequality, major mismatch between training output and industry demand, Informal sector training dominates but lacks recognition so continuous learning systems essential for maintaining productivity.Also, socio-emotional skills partially reduce achievement gaps linked to socioeconomic status.
Bassanini et.al., (2021); Bloom et.al., (2014); Deming et.al., (2023); Jinyoung et.al., (2021); Tyagi et.al., (2021)	Investigates the relationship between skill development, inequality, and labor market outcomes, assesses the role of lifelong learning, connects education expansion with productivity and innovation. Focuses on automation, AI, and digitalisation impacts on skills, and focuses on evolution of lifelong learning models under digital transformation and global practices that link education to equitable labor market access.	Skill training narrows income inequality. Skill- oriented education enhances social inclusion and narrows wage gaps. Public funding improves the participation of marginalized groups. Lifelong learning systems are essential for continuous labour adaptation, and reskilling is critical for equitable growth. Market alignment of curricula is essential for economic payoff. Also, Cognitive and social skills increasingly complement technology- driven tasks, microlearning and digital certifications expand access to continuous education.
Zolkover et.al., (2020); Hamid et.al.,(2024)	Conducts bibliometric mapping of research on shadow (informal) economies from 1990–2020 and also on circular economy (CE) and sustainable technology within TVET systems.	Major drivers of Shadow economy include weak governance, tax evasion, and labor market rigidity so suggesting international coordination to manage cross-border economic informality. Strong correlation between CE education and innovation in sustainable industries recommending embedding CE competencies into all technical curricula.
Calero et.al., (2020); Campos et.al., (2020), Cook, D. T.(2020); Djeki et.al., (2022); Grosseck et.al., (2019); Hallinger et.al., (2019); Oliveira et.al., (2021);	Conducts bibliometric analysis on transversal (soft) competences in VET research to identify trends in skills, analyses intersection of social entrepreneurship and "Economy for the Common Good" (ECG) literature, Focuses on technological integration, pedagogy, and learner engagement, and also a bibliometric review of global research on education for sustainable development (ESD).	Transversal competences are increasingly prioritized alongside technical skills, thus calls for curriculum redesign, Social entreprenuerhsip and ECG emphasize social value creation over profit maximization, Emerging themes: adaptive learning,
Burchi, F. (2006); Curea et.al., (2013); Glewwe, P. (2002); Hanushek et.al., (2013); Hanushek et.al., (2021)	Examines education's role in human development and economic performance and discusses education's indirect impact through improved health, productivity, and civic participation, analyzes effectiveness of education policies, resource allocation, and teacher quality.	Education contributes significantly to socio- economic growth beyond income gains, quality of education is more decisive than mere expansion in enrolment, investment in education yields long-term macroeconomic benefits and improvements in school quality have measurable, causal economic benefits so focus should be on the need of outcome-based reforms focusing on teacher accountability and learning metrics.
Dodiya et.al., (2022); Gaur, V. (2022)	Evaluates impact of Rural Self Employment Training Institutes (RSETIs) on youth employment on income, self-employment, and livelihood security, also establishes relationship between vocational training and rural youth development.	Skill training significantly improved employability and income level with positive multiplier effect on local rural economies, participants show higher self-reliance and entrepreneurial intent.
Elneel et.al., (2024); Shetty et.al., (2019); Kim, E. (2023); Kuru et.al., (2023)	Investigates relationship between socio-economic variables and women's empowerment and analyzes training and skill development as mediating variables.	Education and skill development strongly mediate empowerment outcomes, economic participation improves with access to targeted training programs.
Erlando et.al., (2020)	Examines linkages between financial inclusion and economic growth using econometric modeling focusing on role of access to credit, banking penetration, and mobile finance.	Financial inclusion significantly boosts regional economic growth so expanding digital finance is key to inclusive growth.
Hanushek et.al., (2008); Nugraha et.al., (2021)	Theoretical and empirical analysis of how cognitive skills drive economic performance	Cognitive skills have a stronger impact on GDP growth than years of schooling and Investment in teacher quality and learning outcomes yields high growth returns.
Katole, H. (2015); Harishkumar, R. (2024)	Examines relationship between skill development initiatives and India's economic growth, also evaluates the implementation of the Skill India Mission in Karnataka and focuses on outcomes related to employability, industrial linkage, and training efficiency.	Skill development significantly contributes to GDP growth and labor productivity, Skill India programs increased training participation and job placements in semi-urban areas with women's participation and rural outreach improved notably.
Hollander et.al., (2021)	Investigates influence of socio-educational background on graph-motor and verbal learning in children and examines the role of parental education, school resources, and socio-economic status.	Children from higher socio- educational backgrounds tend to perform better in both motor and verbal learning tasks, and parental involvement and the school environment significantly affect learning rates.
Karadag, D. H. (2016)	Explores the contribution of small and medium enterprises (SMEs) and entrepreneurship to economic recovery after global financial crisis.	Innovation-oriented SMEs show higher productivity and job creation rates.

Kawar, M. (2011)	Highlights skills development as a multidimensional tool for inclusive growth. Advocates integration of skills policy with poverty alleviation frameworks.	Skill training enhances employability and income security in developing countries. Calls for lifelong learning systems linked to national development plans.
Lindberg et.al., (2022)	Develops a composite Socioeconomic Position (SEP) index combining education and income data.	Reveals non-linear relationships between education, income, and health status.
Roztocki et.al., (2019); Rojas- Sánchez et.al., (2023)	Proposes a multidimensional framework connecting ICT adoption with socioeconomic development. Synthesizes empirical evidence from developing and emerging economies, conducted a systematic review and bibliometric analysis of research on virtual reality (VR) in education.	ICT adoption accelerates growth, improves transparency, and fosters inclusion. Human capital and institutional quality mediate ICT's developmental impact. VR enhances student engagement, spatial understanding, and experiential learning.
Shah, A. (2023); Onopriienko et.al., (2023); Malik, R. S. (2018)	Reviews the connection between skill development and sustainable development goals (SDGs) in India and emphasizes vocational training as a driver of economic and environmental sustainability.	Skill development promotes inclusive growth and supports multiple SDGs (especially SDG4 & SDG8). Integrating sustainability concepts into skill programs enhances long-term resilience.
Singh, M. (2000); Palmer, R. (2007)	Studies the integration of work-based learning and informal training systems while examining apprenticeship models and knowledge transfer in informal sectors.	Informal learning systems play a critical role in skill acquisition in developing economies. Blending formal and informal learning enhances employability and inclusion.
Amin, A. (1999); Morgan, K. (2000)	Presents an institutionalist view of how regional economic growth is shaped by social and organisational structures.	Regional growth is contingent on collaborative institutions and localized trust networks, and institutional thickness fosters innovation, learning, and resilience.
Ummah, M. S. (2019)	Analyzes effects of informal sector on-the-job training (OJT) on socio-economic mobility and family welfare.	OJT significantly improves participants' income and household well-being, though informal learning networks serve as major sources of skill acquisition.
Liew et.al., (2025)	Studies the moderating effect of social support on economic vulnerability among urban households.	Social support buffers the negative effects of economic strain on well-being and supports the policy frameworks strengthening social capital during economic downturns.
Ashibogwu et.al., (2025); Ofori et.al., (2024)	Examines the relationship between human capital accumulation and inclusive growth in developing countries, and examines the correlation between human capital quality and firm earnings potential.	Human capital investment positively influences inclusive growth and inequality reduction. Firms with higher human capital indices exhibit stronger profitability and market performance, and employee education and skill diversity positively affect productivity.

Source: Author Compilation.

Table 5 serves as a literature mapping and the analytical summary, illustrating the diverse objectives across the studies involving skill learning, education, and economic development. Alongside the findings are also presented common across the studies, such as the positive impact of skill learning on socio-economic development, human capital investment leading to inclusive growth, etc.

3.1. Policy recommendations from the literature

In recent years, extensive research has shown that in order to improve training systems by developing ways of finance, there needs to be a comprehensive multi-level policy reform for vocational education and skill development. The primary recommendation in the current research is for governments to support the establishment of strong public/private partnerships (PPPs) in order to involve employers in the development of curriculum, setting standards for skills and the governance of apprenticeship programs. A strong PPP will allow employers to have a voice in what skills should be taught to ensure there is greater alignment between the training provided and the needs of industry (Bornacelly et al., 2023; McGrath, 2023, 2024). In addition to establishing strong PPPs, another major policy recommendation is to support demand driven training through the acquisition of skill vouchers that allow the individual, particularly the unemployed adult and marginalized individuals, to choose accredited training that corresponds to their career path (OECD, 2023). Research has also indicated that skill vouchers are most effective when used in combination with a structured system of career guidance and information about available labour market opportunities (Bornacelly et al., 2023). Additionally, skill learning has been determined to be a cost effective investment for governments, with the long-term economic and budgetary benefits created through the investment in skill learning. Therefore, in order to improve employer participation in vocational education and skill development, there is significant agreement in the literature that the best means to increase employer participation is through the use of tax incentives (e.g. tax credits, tax deductions, payroll tax rebates), which target small and medium-sized businesses due to their limited financial resources in providing training to their employees (OECD, 2023; McGrath, 2024). Similarly, subsidized apprenticeships increasing access to work-based learning with wage subsidies, training stipends, or co-investing has also been associated with higher rates of participation and employment outcomes (Wongmonta, 2023, McGrath, 2024). With the increasing pace of technology change, researchers have highlighted an urgent need for countries to invest in developing digital training ecosystems, including, but not limited to, national digital skill standards, online and hybrid training delivery platforms, and collaboration with technology companies to incorporate advanced digital and AI-related skills into VET systems (Sharma, 2025, Lee & Hong, 2025). An additional area of urgent importance is a focus on continuously professionalizing and updating VET educators/trainer's skills through formalized Continuing Professional Development (CPD) frameworks, work experience in industry, and training in digital pedagogies, which have been shown to greatly enhance both the quality of instruction and the learning outcomes of students (Siliņa-Jasjukeviča, 2025). Lastly, researchers have called for creating or establishing strong monitoring and evaluation systems that will enable tracking of VET outcomes (employment), forecasting the future skills required in the labour market, and ensuring accountability; in addition, there should be equity-focused policies that may assist in closing the financial, social, and geographic gaps for disadvantaged groups (Bornacelly et al., 2023, McGrath, 2024). There is also an opportunity for governments to provide more rapid and sustainable expansion of workforce skill acquisition by introducing a skills development obligation, which would allow for the establishment of a dedicated fund through a small payroll tax or sector-specific fee. This would help to ensure a consistent and long-term investment in VET even during periods when government budgets are tight. Another promising option is ESG-linked training bonds to attract the private capital investment for social priorities like supporting women's participation in the workforce, preparing labour for digital transitions, tax credits for employer-led upskilling and outcome-based impact bonds to finance high-quality training and employment-linked outcomes (OECD, 2022; OECD, 2024). Collectively, these policy recommendations form a cohesive strategy for modernizing skill-learning systems and supporting dynamic labour-market transitions.

4. Conclusion

Skill development is a key strategic pillar of socio-economic development. Skills generate a range of significant economic and other benefits for individuals and broader national economies via a variety of pathways. The relationship between the development of skills and the generation of economic benefits is consistently demonstrated in 2000-2024 literature. The literature indicates that developing skills generates a variety of economic benefits (e.g., wages, employability, productivity, and entrepreneurial capacity). In addition, as documented by human capital theory, the Mincerian earnings model, and endogenous growth models, investment in cognitive, technical, and socio-economic skills results in substantial improvements in the long-run rate of growth of economies via increased productivity, knowledge spillovers, and improved labour-market efficiencies. Additionally, the evidence reviewed indicates that there is a growing role of finance and associated policy recommendations (i.e., public-private partnerships, skill vouchers, tax benefits, and subsidised apprenticeships) to shape the accessibility and relevance of training systems and their ties to the labour market. The use of financial instruments reduces access barriers and incentivizes employers to meet the needs of the labour supply, thus strengthening the fundamental ecosystem for skills development. Lastly, this review indicates the importance of digital transformation, institutional quality, and technology-driven training models in preparing a skilled workforce in a rapidly evolving economic environment. Researchers consistently document trends in the growing amount of global interest in skill development. This recognition has increased significantly since the beginning of 2020, as indicated by a steady increase in related publications. Despite this, there are still significant gaps in the literature on long-term evaluations of the effectiveness of skill learning, uneven regional and gender outcomes associated with skill learning, and insufficient alignment of the supply of training with demand for trained workers in various industries. Nevertheless, the aggregate body of evidence supports the fact that skill learning has great potential for promoting inclusive economic growth, reducing inequality, and increasing resilience of nation and regional economies. As economies increasingly shift from raw material production based on labour to knowledge and technology-based economies, future research should be conducted to explore the characteristics of new and emerging skill development "ecosystems", as well as digital skill deployment and the continuously changing relationship between the accumulation of human capital and sustainable socio-economic development in the future. Future research could explore how skill development will influence the life outcomes of individuals who participate in training and their communities, and more specifically, the potential long-term financial benefits of training on potential long-term earnings, job security, and overall quality of life. In addition, future research should continue to explore and understand the reasons that cause gender and regional disparities in training outcomes to persist over time. Additionally, as digital and hybrid learning modalities evolve, there will be great opportunities for research on the effectiveness of these models. Furthermore, many researchers believe there is a need to align the curricula used for training with the labour demand for that same particular skilled labour. Cross-national and cross-sector variability in how new skill demands are being met will allow researchers to gain an understanding of how new skillsets are being created or identified as needed by employers in the future.

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