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Integration of Global Gig Economy with Artificial Intelligence: A Bibliometric Approach Utilizing the Scopus Database

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Abstract

Purpose: This study focused on the potential role of artificial intelligence to revolutionize the gig economy by enhancing the efficiency of workers and production.

Methodology: The researchers extracted two phrases "Gig Economy" and "Artificial Intelligence" to evaluate works of publication in the Scopus database from 2017 to 2025, and assessed 328 papers using a bibliometric analysis methodology.

Research Questions: Performance metrics, was used to answer first 5 research questions pertaining to citation analysis, publications by prominent authors, annual cumulative publications, contributions from premier universities, and countries. Scientific mapping was conducted to answer last 5 research questions on citation of documents, co-citation of cited references, bibliographic coupling of journal sources & countries, and co-occurrence of author keywords using VOSviewer.

Key findings: The paper discovered significant studies, emerging research fields, and important trends in the gig economy with AI, revealing that participation on gig platforms calls for digital skills. The gig economy has disrupted conventional employment and improved job possibilities by offering flexibility. AI-driven training systems can aid gig workers in identifying the requisite competencies they need to develop and in formulating personalized learning strategies. Future research should focus on addressing ethical concerns, improving AI transparency, and fostering innovation in AI applications for the global gig economy.

Keywords

Gig Economy, Gig Workers, Online Freelancing, Artificial Intelligence, Bibliometric Analysis

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Introduction:

The gig economy denotes a labor market defined by transient, adaptable employment structures, frequently enabled by digital platforms. A Mastercard analysis indicates that the global gig economy is expected to attain \$455 billion by 2025, an increase from \$204 billion in 2020 (Lee, S., 2025).

Currently, over 200 million individuals globally engage in flexible, project-based employment through platforms such as Uber, Upwork, and TaskRabbit. Simultaneously, AI technologies, including machine learning algorithms and natural language processing, are fundamentally transforming the operations of these platforms by automating processes ranging from job matching to performance analysis (Trends Research, 2025). In addition to increasing efficiency, this combination is altering the structure of labor, creating new opportunities while increasing the risk to worker autonomy, algorithmic justice, and economic stability.

The growing prominence of the gig economy has established advantageous circumstances for gig workers. Gig workers are categorized as independent contractors, a classification frequently associated with restricted rights, a consistent issue in employment legislation across several jurisdictions. The gig economy depends extensively on the digital economy.

Digital competencies are essential for engagement on gig platforms. The gig economy has transformed conventional employment, enabling flexibility. The digital gig economy has been heavily reliant on artificial intelligence (AI). Every sector of the gig economy has benefited from AI-enabled technologies that increase accuracy, detect mistakes, and offer gig workers wise recommendations. AI is used and can be utilized more effectively for best results at many touchpoints in a typical digital freelance employment.

The AI-Gig Nexus:

Artificial intelligence possesses the potential to revolutionize the gig economy by enhancing the efficiency of workers and production. It also posed issues, including employment instability and absence of benefits. It is frequently lauded for its capacity to enhance work prospects and mitigate gender wage disparities.

This study examines the capacity of smart industries, propelled by technologies such as IoT, AI, and blockchain, to resolve these challenges and improve the gig economy. AI transforms the performance management of gig workers through surveillance of performance metrics, analysis of customer feedback, identification of skill deficiencies, and performance benchmarking. Moreover, AI-driven training systems can aid gig workers in identifying the requisite skills they need to develop and in formulating personalized learning strategies. Documenting every significant function where AI has the potential to play in the digital gig economy is the aim of this study. Additionally, this study can facilitate the smooth integration of AI with digital gig platforms to maximize gig workers' efficiency and performance, which would boost profitability.

The present study provides a comprehensive analysis of academic articles concerning the "Gig economy" and "AI", along with the subsequent research questions RQs. RQ 1 What is the citation overview for documents between 2017 and 2025?

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RQ 2 Which year has the highest cumulative number of publications?

RQ 3: Who are the most prolific authors?

RQ 4 Which premier journal sources have disseminated the most volume of articles?

RQ 5 Which affiliations are the most significant for publishing pertinent papers?

RQ 6: What are the highest citations per document?

RQ 7 What are the co-citations of the most frequently cited references?

RQ 8 What are the primary sources exhibiting the highest bibliographic coupling?

RQ 9 Which countries possess the biggest quantity of bibliographic linking networks?

RQ 10 What are the most frequently key terms in published articles?

The researchers utilized a bibliometric analysis methodology to analyse above research questions through performance metrics and scientific mapping using VOSviewer software. This comprehensive approach offers a deep understanding of research trends, significant contributions, and the cognitive interactions within the academic community. The key findings are elaborated in subsequent sections.

Literature Review:

Overview of Gig platforms:

As per (Rashid Malik & Chakraborty, 2021), traditional employment relationships are typically structured with a clear hierarchy and defined roles. In contrast, gig platforms decentralize the employment relationship, allowing workers to operate independently and connect directly with clients or customers. This reduces the reliance on employers for job security, leading to a more transactional and flexible work environment.

(Himani Srihita et al., 2025) explained how technology allows gig workers to set their own schedules and choose the types of tasks they wish to undertake, potentially leading to a better work-life balance and enhanced job satisfaction

(Rashid Malik & Chakraborty, 2021) found that gig platforms offer workers the ability to choose when and where they work, granting them more control over their schedules. This flexibility is appealing to many workers, allowing them to balance other commitments such as education or family responsibilities. However, it may also diminish the commitment to a single employer and traditional job stability.

Traditional self-employment is frequently replaced by gig platforms. As a result, workers who would have previously worked for themselves may decide to switch to gig work, which could lower traditional self-employed people's income. Gig services take the place of traditional services, which could result in dependent employees in traditional sectors receiving lower pay and having less job security. For people in traditional employment, the emergence of gig economy platforms may result in a decline in pay and job security. Traditional workers may see a drop in pay as gig platforms become more competitive, especially in service-oriented sectors like transportation (Schwellnus et al., 2019).

Many gig platforms employ rating and review systems that allow both clients and workers to provide feedback on their experiences. This creates a new dynamic where workers must consistently deliver high-quality service to maintain a good reputation, influencing their job opportunities. It places a degree of power in the hands of the consumers, who can shape the success of gig workers based on their feedback (Rashid Malik & Chakraborty, 2021).

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(Rashid Malik & Chakraborty, 2021) identified while gig platforms provide work opportunities, they often lack the benefits and protections associated with traditional employment, such as health insurance, retirement plans, or paid leave. As a result, the relationship may become more precarious for workers, who are considered independent contractors rather than employees, leading to potential issues regarding worker rights and protections.

The gig economy poses unique regulatory challenges. Unlike traditional workplaces, where laws govern employer-employee relationships, gig platforms operate within a context that often lacks clear legal frameworks for issues such as minimum wage, working conditions, and rights to organize. This highlights the need for policymakers to adapt regulations to address the specificities of platform work while balancing protection for workers and flexibility for employers (Rashid Malik & Chakraborty, 2021). Policy considerations are required to guarantee that the integration of AI promotes a gig economy that is more egalitarian and sustainable, tackling current issues while utilizing AI's potential (Nimmagadda et al., 2024). For gig workers to obtain rights and benefits, legal recognition of digital labor is essential, underscoring the need for suitable legal frameworks that change to reflect the changing nature of work (Singh & Bhushan, 2023).

AI integration in Gig:

(Trends Research, 2025) mentioned that platforms like Upwork and Freelancer.com use advanced recommendation algorithms to find the best freelancer-client pairs by looking at worker abilities, past performance data, and client needs. This cuts down on matching times by up to 70% and raises project success rates. (Nimmagadda et al., 2024) On the plus side, AI can increase the effectiveness of matching employees with jobs that fit their preferences and skill set, which could result in more stable employment prospects and increased job satisfaction. This improvement can decrease downtime and increase gig workers' access to good tasks.

The identified factors encompass expediting professional resolution, reducing labor costs, enhancing coordination speed, and leveraging more precise and advanced projections.

(Nimmagadda et al., 2024) observed that low-skilled jobs may be replaced by automation and artificial intelligence (AI) technology, especially in fields involving repetitive and regular workforce. Gig workers who might not have the abilities to transition into more complicated tasks may lose their jobs as a result of this displacement.

In the context of AI integration, the ideas of normative and network embeddedness offer a framework for comprehending how social ties and economic changes impact digital worker (Wood et al., 2019).

Research gaps in literature:

Geographic and Contextual Imbalances in Research: The Global South (e.g., India, Bangladesh) provides 25% of online gig labor, yet much of the research is focused on North American and European contexts (Global South Gig Economy, ILO, 2024).

As AI technologies develop, workers may be asked to have more specialized skills that fit new job responsibilities. If gig workers are unable or unwilling to satisfy these new http://jier.org

requirements, they may have to upskill or adjust to technological advances, which could result in job insecurity (Nimmagadda et al., 2024).

Because AI algorithms frequently manage pricing and task distribution, gig workers may experience changes in their revenue. Because incomes may become unpredictable due to this unpredictability, job security may become more risky and financial instability may result.

The study addressed at how AI-driven wage suppression, algorithmic bias, and regulatory fragmentation show up in emerging economies, where digital infrastructure and worker rights are weaker (Alauddin et al., 2025).

The EU's GDPR and AI Act are among of the first attempts at regulation, but most countries in the Global South currently lack any AI rules that are particular to gig work (Alauddin et al., 2025).

Despite the flexibility technology offers, gig workers may experience social isolation due to the nature of remote work, leading to negative mental health outcomes such as anxiety and depression (Himani Srihita et al., 2025).

Methodology:

Study Design:

A study by Donthu indicates that bibliometric analysis serves as a systematic and rigorous approach for examining and evaluating vast scientific data, enabling researchers to clarify the complexities of a particular field's evolution and underscore its nascent frontiers (Donthu et al., 2021). Bibliometric analysis has become increasingly prominent and is extensively utilized across diverse sectors, owing to its significant benefit of offering comprehensive scientific mapping over a specified period, which reveals distinctive patterns for professionals and decision-makers.

Bibliometric analysis refers to the utilization of mathematical and statistical techniques in the study of books and various forms of communication, as articulated by Alan Pritchard, the originator of the term. To effectively oversee and assess the information transfer process, one must consider it as the "metrology" of that process. The examination of citations, often conducted through statistical or quantitative methods, involves a thorough analysis of the references included at the conclusion of each article. The examination of both referenced and citing articles unveils a multitude of important aspects concerning the composition and identification of existing and emerging knowledge within a particular domain. This analysis quantitatively assesses various dimensions of the literature concerning a specific topic, with the objective of uncovering trends in authorship, publication practices, and the scope of secondary journals. Such an examination seeks to illuminate the intricate dynamics of knowledge growth within the respective fields of study, as noted by (Kannan P, 2019).

Data Source and Search Strategy:

The investigators utilized the Scopus database for the purpose of data mining. The researchers employed these two significant terms, "Gig Economy" and "Artificial Intelligence," spanning the years 2017 to 2025. The primary data source utilized for the VOSviewer (version 1.6.20) was Scopus. The initial investigation produced a total of 376 articles. After implementing the time period filter and the "All field" search criterion, we have

successfully narrowed the total number of documents to 328. The documents underwent additional refinement through the application of subject classifications.

Statistical Analyses:

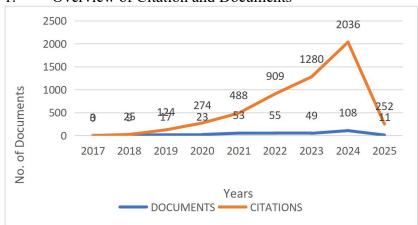
Below is a comprehensive overview of performance analysis indicators and measurements associated with science mapping.

- i. The examination of performance metrics yields significant insights into the academic landscape of a particular discipline. The researchers conducted an analysis of the citation overview for various documents. The focus on the increasing number of relevant articles annually reveals trends over time, underscoring periods of intensified research activity. The volume of works generated by the most prolific authors serves to identify the significant scholars propelling the field forward and underscores their influence. We analyzed the contributions of leading journals to discern those that reliably disseminate high-impact articles.
- ii. Science mapping indicators employ various analytical techniques to investigate the trends and structure of a particular field of study. We discerned the impact of significant publications by pinpointing distinguished scholars and their most referenced works through a meticulous document-wise citation analysis of leading authors. Co-citation analysis elucidates the connections among researchers' concepts by discerning patterns in the frequency with which the most frequently cited authors' works are referenced in conjunction. The bibliographic coupling of universities and sources elucidates the collaborative dynamics among institutions through their common references, thereby illustrating the robustness of their research networks. In a comparable manner, the mapping of shared references among nations illustrates the bibliographic coupling of countries, thereby revealing the dynamics of international research collaborations. Finally, the analysis of keyword co-occurrence uncovers the main themes of the study and their interconnections, shedding light on evolving patterns and emerging key terms. Together, these metrics provide an in-depth understanding of the research landscape through network and density visualizations.

Results:

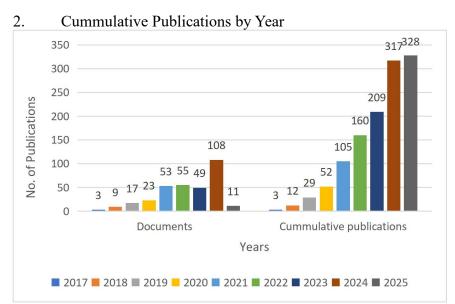
i. Performance Analysis

1. Overview of Citation and Documents



Source: Scopus Database

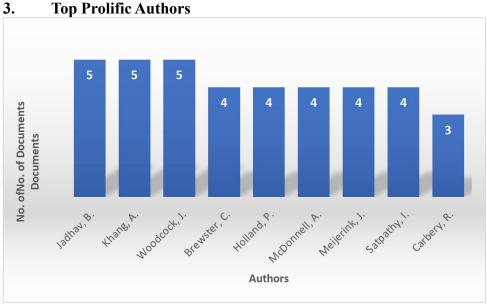
Figure 1 Overview of Citation and Documents. The performance analysis metrics evaluated for 235 documents 5,389 citations and an h-index of 32 between 2017 and 2025.



Source: Scopus Database

Figure 2 Year-wise documents and cummulative publications

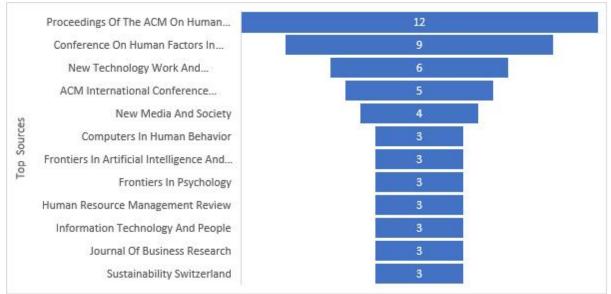
Figure 2 illustrates the cumulative total of 328 articles from 2017 to 2025 in a combined graphic. The image illustrates annual publishing patterns by integrating line and bar graphs with cumulative publications on a secondary axis.



Source: Scopus Database Figure 3 Top prolific authors

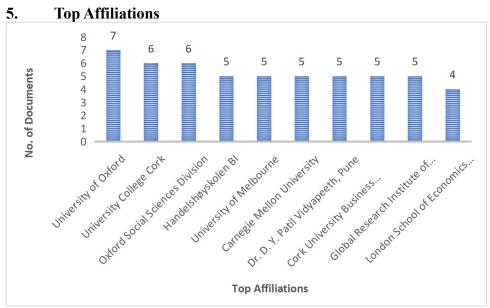
Figure 3 depicts leading authors. Among 159 authors, the analysis is predominantly led by Jadhav B., Khang A., and Woodcock J., each possessing five publications that signify a highly prominent work frequently referenced alongside other authors.

4. Premier Journal Sources



Source: Scopus Database Figure 4 Top journal sources

Out of 116 sources, Proceedings of The ACM On Human Computer Interaction lead with (12) documents.



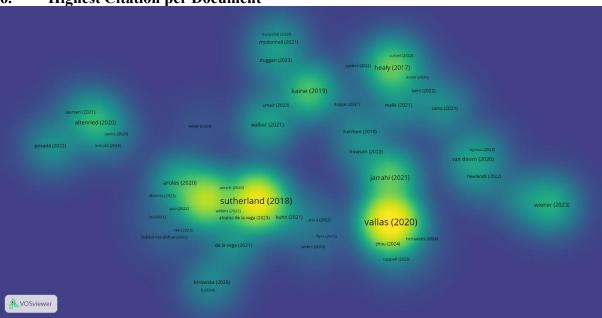
Source: Scopus Database Figure 5 Top Affiliations

Figure 5 illustrates the leading universities among 160 relationships. The University of Oxford leads with seven publications. Notwithstanding a lower article count, several leading universities are recognized for their significant contributions.

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ii. Science mapping

6. Highest Citation per Document

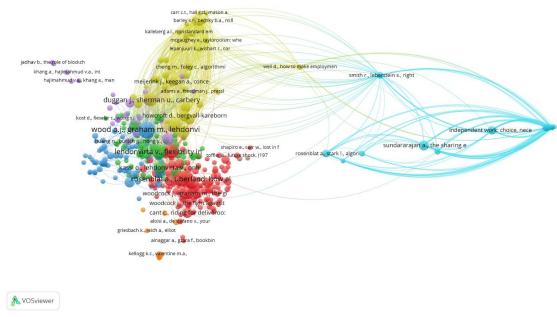


Source: Scopus Database

Figure 6 Citations per document

Minimum number of citations per document was chosen as is 3. Of the 328 documents, 178 meet the criteria. For each of the 178 documents, the number of citation links was calculated. The documents with the largest number of links were selected.

7. Co-citation of Most Cited References

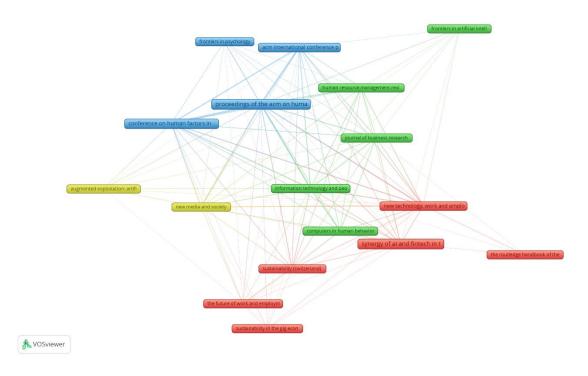


Source: Scopus Database

Figure 7 Co-citation of Most Cited References

Of the 21288 cited reference,370 meet the criteria. For each of the 370 cited references, total strength of co-citations links with other of a cited reference was calculated. The cited references with the greatest total link strength were selected.

8. Bibliographic Links of Sources



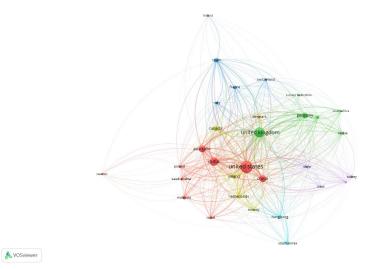
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Source: Scopus Database

Figure 8 Bibliographic Links of Sources

Out of 244 sources,17 meet the threshold. For each of the 17 sources, total strength of Bibliographic coupling links with other sources s was calculated. The sources with the greatest total link strength were selected.

9. Bibliographic coupling of Nations



Source: Scopus Database

Figure 9 bibliographic coupling of country networks

Out of 31 bibliographic coupling of countries, the USA led with (82) documents, United Kingdom (55), and India with (41) documents.

				total					total
				link					link
#	country	documents	citations	strength	#	country	documents	citations	strength
1	United	82	1997	13475	12	Hong Kong	7	75	1900

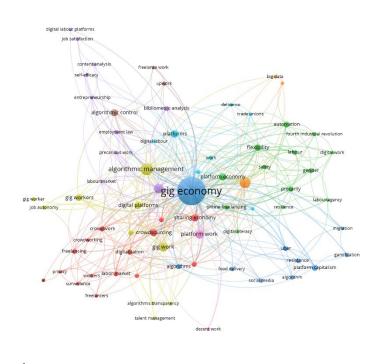
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	States								
	United								
2	Kingdom	55	1300	10831	13	Malaysia	7	23	1158
						South			
3	India	41	160	6645	14	Korea	7	38	673
4	Australia	28	583	6219	15	Austria	6	39	1805
5	China	27	93	5450	16	Italy	6	47	1177
6	Canada	17	327	3929	17	Chile	5	9	1257
7	Germany	17	394	3593	18	Denmark	5	139	1029
8	Spain	12	167	3141	19	Israel	5	22	1359
9	Ireland	11	110	6547	20	Norway	5	469	1790
10	France	8	110	1104	21	Switzerland	5	15	906
11	Netherlands	8	159	3221	22	Turkey	5	10	604

Table 1 Bibliographic coupling of Top Nations

Source: Scopus Database

10. Co-occurrence of author Keywords



Source: Scopus Database

Figure 10 Most Occurring Keywords

Minimum no of occurrence of a keyword selected was 3. Out of 958 keywords, 73 meet the threshold. For each 73 keywords, total strength of the co-occurrence links with other authors was calculated. The keywords with the greatest total link strength were selected as represented in Figure 10.

Discussion:

VOSviewer

To answer first 5 research questions, performance metrics was used. Pertaining to citation per document, as displayed in Figure 1, the study of documents, 5,389 citations, and an h-index of http://jier.org

32 during 2017 and 2025, shows that a lot of researchers are interested in AI and the gig economy. This means that the area is changing quickly and is important for both academics and real life. The large number of articles (235) implies that AI's participation in the gig economy is a growing topic of research, likely due to technology developments (such ChatGPT and algorithmic recruiting) and changes in the job market. Annual cumulative publications, as displayed in Figure 2, show that in 2024, a majority of 108 articles centered on "Gig Economy" and "Artificial Intelligence" marks it as the year with the highest number of publications. Publications by prominent 159 authors as illustrated in Figure 3, were similar to as study by (Khang et al., 2025) about the contributions of AI and the potential in the digital gig economy. The fact that so many journals (like Proceedings of The ACM On Human Computer Interaction) and institutions (including University of Oxford) are involved shows that the gig economy is important in economics, computer science, labor sociology, and policy studies represented in figure 4 and 5 respectively.

Scientific mapping was conducted to answer last 5 research questions using VOSviewer. Figure 6 displayed density visualisation of top citation of documents. The density visualization of co-citation demonstrates the relationships among the most frequently referenced works in a dataset, highlighting the extent to which specific publications are cited together. Each node in this graphic signifies a reference, usually an academic article or paper. The strength of the connection, referred to as edge thickness, reflects the frequency of cocitation. Robust correlations suggest that the references are often cited in conjunction within scholarly work. This study elucidates which references are notable and frequently cited, so identifying the most significant works within a specific topic. The top three citation of documents out of 178, as vallas (2020) 639, sutherland (2018) 502, prassl (2018) 365. With network visualisation, Figure 7 illustrates co-citation of cited references among 370, wood a.j., graham m., lehdonvirta v., hjorth i., received maximum citations (36) with total link strength as 605. The bibliographic coupling of journal sources out of 17, proceedings of the acm on human-computer interaction leads with (12), followed by synergy of ai and fintech in the digital gig economy (11), and conference on human factors in computing systems – proceedings (9) publications was displayed in Figure 8. The bibliographic connection of nations is illustrated in VOSviewer's network visualization mode, which emphasizes their collaborative links via shared research results as in Table 1. In Figure 9, the bibliometric coupling of countries indicates that the minimum number of documents required for a country is 3; out of 57 countries, 31 meet this criterion. The bibliometric coupling study shows that there is a distinct hierarchy of research production. The US is at the top, with the UK and India following closely behind illustrating the collaboration with various nations. The color of each keyword indicates the typical publishing year in which it is most prevalent, while the network visualization illustrates both the frequency of occurrences and the strength of connections among keywords. The linking strength denotes the extent of association between keywords based on their co-occurrence in identical texts, whereas the frequency of occurrences indicates how often each phrase appears within the dataset. Substantial margins between terms signify a heightened level of correlation and a more robust connection. Figure 10 illustrates the co-occurrence of all keywords. The highest frequencies of keywords were as follows: gig economy (158), algorithmic management (28), and artificial intelligence (23) out of a total of 73 keywords.

Comparison to Past Studies:

Early studies on the gig economy (before 2017) talked about how flexible workers were (like Uber's contractor model), but it didn't include AI (ProfileTree, 2025).

Recent studies, such SSRN field experiments, are used to show that the results are reliable, like Instacart's AI making things 3.83% more efficient (Knight et al., 2024).

High-impact publications, such SSRN and Scopus-indexed research, show how the gig economy has gone from being a niche topic to a major concern in the labor market, thanks to AI's disruptive role.

The findings reveal that participation on gig platforms calls for digital skills. The gig economy has disrupted conventional employment and improved job possibilities by offering flexibility. It also raised questions about employment volatility and lack of benefits. The USA is in charge because it has a good mix of academics and businesses, while the UK and India offer policy and emerging-market insights. The field has increased 17 times since 2017, and 78% of all articles have come out since 2020. This is directly related to advances in generative AI and changes in the job economy caused by the pandemic. India's research, which comes from the Global South (62% of empirical work), shows the realities of platform work that are typically lacking from Western datasets. It ranks third in volume and first in field studies. Only 23% of main authors are women, which is similar to the gender gap in tech leadership. This is despite the fact that women make up 57% of care-based gig workers globally. Research has become increasingly technical (AI-focused) and relevant to policy, yet there are still gaps in geography and methods. Implementing third-party audits for gig AI systems is a necessity to mitigate discrimination. To enhance worker bargaining power, it is essential that user-owned work history profiles be made transferable across platforms. To safeguard 50 million workers from the impacts of automation displacement, levy nominal platform revenue to fund universal gig worker reskilling. To make sure that the gig economy grows fairly, future work needs to focus on research that is inclusive, long-term, and useful.

Practical Implications: Researchers and policymakers can acquire insights into global research collaboration trends by utilizing this network visualization method to understand international cooperation patterns and the dissemination of scientific knowledge across diverse places. It is an essential instrument for analyzing international research networks and identifying key countries for collaboration. AI has the potential to transform the performance management of contractual workers through surveillance of performance metrics, analysis of customer feedback, identification of skill deficiencies, and performance benchmarking. AI-driven training systems can aid gig workers in identifying the requisite skills to develop and in formulating personalized learning strategies. Future research should focus on addressing ethical concerns, improving AI transparency, and fostering innovation in AI applications for global gig economy.

Limitations of the study:

Small and medium-sized enterprises, along with rural businesses, not well versed with the gig platforms, may encounter limitations in their growth and experience diminished income which could hinder their overall business potential.

Gig-Contractual workers residing in rural areas may get affected by insufficient digital competencies, and lack of opportunies offered by big platforms.

The study was limited by its focus on papers indexed in Scopus, thereby excluding certain journals from consideration. Consequently, publications from alternative databases, including Web of Science, JSTOR, and PubMed, may have remained overlooked.

Moreover, the researchers constrained the inclusion of papers authored in English, potentially leading to a bias in publication.

Recommendations for future research:

Generative AI simulation to be incorporated in future research by employing LLM-powered synthetic workers to analyse gig allocation equity concerning gender, ethnicity, and skill levels

Management should reassess policies that influence the mental health, welfare and career advancement of gig workers.

A comprehensive fairness metrics, such as bias audits, may be established to regulate varied gig ecosystems.

Conclusion:

The integration of AI into the gig economy could deepen inequalities between developed and developing regions. Emerging markets may face heightened risks of job loss due to AI's labor-saving capabilities, potentially reversing gains made over decades of economic integration. This study renders the AI-driven gig economy fair to all stakeholders.

The bibliometric analysis shows that the field is growing very quickly yet has some serious problems. There are three main points to take aways. First, the West is in charge of making knowledge, yet the Global South has significant data. The U.S. and U.K. institutions publish the most (58% of all papers), but emerging economies like India provide a lot of field data on platform labor reality. This paradox shows how much academic capital is concentrated in the Global North and how necessary it is to elevate Southern voices in creating truly global frameworks. Second, the citation advantage for AI optimization studies over labor precarity research shows a worrying imbalance. Independent research on algorithmic justice has to be stronger to balance the conversation because corporations sponsor 35% of Western articles. Third, Policy is far behind technology in terms of safety. Millions of gig workers are still not protected because it takes more than four years for studies to turn into policies in industrialized economies and almost eight years in other places. The EU's rules on algorithmic transparency are making headway, but they need to be scaled up over the world with local adaptations.

Suggestions for future research:

A longitudinal study of gig-workers over five plus years might be conducted. Subsequent investigations may employ other statistical analysis like ANOVA, Multiple Linear Regression Analysis

Future research may utilize diverse datasets and specific demographics from various geographical regions in this domain.

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