

Dynamics and Research Trends in the Gig Economy (2015–2025): A Bibliometric Analysis and Implications for Labor Protection in the Digital Era

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ABSTRACT

The gig economy has become a central element in the transformation of the global labor market, particularly with the rapid growth of digital technology and online platforms. This study aims to map the dynamics and research trends on the gig economy over the last decade (2015–2025) through a bibliometric approach based on 328 selected articles from the Scopus database. The data were obtained through a systematic screening process of peer-reviewed journal articles published in English within the specified period. Bibliometric analysis was carried out using the Bibliometrics R-package, which involved descriptive statistics, co-authorship networks, co-occurrence mapping, and thematic clustering. The results indicate a sharp increase in publications after the COVID-19 pandemic, shifting research from conceptual discussions to critical issues such as labor protection, algorithmic management, and social inequality. The thematic analysis identifies four main clusters: regulation and worker protection, algorithmic management, innovation and digital economic growth, and human values in digital labor. This study highlights research gaps in employment policy, algorithm governance, and digital inclusion, especially in developing countries, and contributes to both theoretical development and policy design in line with Sustainable Development Goals (SDG 8 and SDG 10).

KATA KUNCI

Gig economy, Bibliometrik, Pekerjaan Digital, Perlindungan Tenaga Kerja, Algoritmik

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ABSTRAK

Fenomena *gig economy* telah menjadi bagian penting dari transformasi pasar tenaga kerja global, seiring dengan kemajuan teknologi digital dan meningkatnya penggunaan platform daring. Penelitian ini bertujuan untuk memetakan dinamika dan arah perkembangan kajian *gig economy* selama periode 2015–2025 melalui pendekatan bibliometrik terhadap 328 artikel terpilih dari basis data Scopus. Data diperoleh melalui proses penyaringan sistematis terhadap artikel jurnal berbahasa Inggris yang telah melalui *peer-review* dalam rentang waktu tersebut. Analisis bibliometrik dilakukan menggunakan perangkat lunak Bibliometrix berbasis R, dengan tahapan meliputi statistik deskriptif, analisis jejaring *co-authorship*, pemetaan *co-occurrence*, serta identifikasi kluster tematik. Hasil penelitian menunjukkan adanya peningkatan signifikan jumlah publikasi pasca-pandemi COVID-19, yang menggeser fokus kajian dari pemahaman konseptual ke isu-isu kritis seperti perlindungan tenaga kerja, manajemen algoritmik, dan kesenjangan sosial. Analisis tematik mengidentifikasi empat kluster utama, yaitu regulasi dan perlindungan pekerja, algoritmisasi kerja, inovasi dan pertumbuhan ekonomi digital, serta nilai kemanusiaan dalam kerja digital. Studi ini juga menyoroti kesenjangan penelitian pada aspek kebijakan ketenagakerjaan, tata kelola algoritma, dan inklusi digital, khususnya di negara berkembang, sekaligus memberikan kontribusi pada pengembangan teori dan perumusan kebijakan yang sejalan dengan Tujuan Pembangunan Berkelanjutan (SDG 8 dan SDG 10).

1. Introduction

The gig economy phenomenon has become an integral part of the transformation of the global labor market in the digital age. Defined as a system of short-term, flexible, and digital platform-based work, the gig economy creates broader employment opportunities, especially in the informal and technology sectors [1],

[2]. This development is inseparable from advances in information technology, increased digital connectivity, and the emergence of application-based platforms such as Gojek, Grab, Uber, Fiverr, and Upwork, which offer on-demand services [3], [4].

The gig economy is not only a new form of work, but also has a significant impact on labor protection systems

and the social structure of society [5], [6]. The COVID-19 pandemic accelerated the adoption of this model, as many individuals were compelled to seek additional income due to job losses or restrictions on physical activity [7]. In the context of sustainable development, this phenomenon is highly relevant to the achievement of the Sustainable Development Goals (SDGs), particularly SDG 8 (decent work and economic growth) and SDG 10 (reduced inequalities), as it concerns issues of labor justice, social protection, and equitable economic access [8].

This study aims to analyze the dynamics and direction of research on the gig economy over the past decade using a bibliometric approach. The research focuses on mapping literature that reveals publication trends, key actors in gig economy research, and the knowledge structure that has formed around [9]. In addition, this study also aims to provide a comprehensive overview of thematic developments, remaining research gaps, and potential directions for future studies on the gig economy. Thus, the results of this study are expected to enrich the scientific discourse on the gig economy and provide an empirical basis for policy-making and the development of relevant theories.

Another objective of this study is to present a new perspective on how the gig economy phenomenon is not only viewed as an alternative work model, but also as an integral part of economic and social transformation in the digital age. Thus, this study does not merely document publication trends, but also offers an analytical foundation that can be used to strengthen theory, enrich scientific discourse, and serve as a reference for policymakers in formulating inclusive and sustainable employment strategies.

Specifically, this study has three main focuses. First, it analyzes trends in scientific publications on the gig economy between 2015 and 2025, reviewing the annual publication intensity and average citations per document. Second, it identifies key researchers and their affiliations that have made significant contributions to expanding the discourse on the gig economy, while also analyzing key articles that serve as important references. Third, it describes the interrelationship between social and economic factors, such as the impact of the pandemic, digital transformation, and labor policies, on the development of gig economy literature. This study is expected to provide a comprehensive understanding of the direction of this topic's development and to illustrate the research gaps that remain open.

2. Research Method

This study uses a bibliometric approach to analyze the dynamics and direction of research on the gig economy over the past decade. Bibliometric analysis was chosen because this method provides a comprehensive overview of publication patterns, author collaboration relationships, and thematic structures that develop

within a field of research. This approach is relevant in identifying scientific knowledge maps and evaluating the direction and potential of future research developments [10], [11].

2.1 Article data selection and methods

This study utilizes a bibliometric approach to examine the dynamics and direction of research on the gig economy over the past ten years. This approach was chosen because it is capable of mapping scientific publication trends, identifying key actors, and describing the thematic structure that is developing in a field of research. The data source was obtained from the Scopus database, which has broad coverage and high quality standards in the presentation of scientific publication metadata [12].

The search was conducted using the keyword “gig economy” applied to the title, abstract, and keywords of the article. Inclusion criteria included journal articles published in English that had undergone peer review. The publication range is limited to the period 2015–2025 because this phase represents the rapid growth of the gig economy, including the accelerated adoption of platform-based work models in the post-pandemic era. The initial search yielded 1,924 documents.

The screening process was conducted based on the suitability of the field of study and inclusion criteria, resulting in 328 articles that were eligible for analysis, which can be seen on Figure 1. This selection stage ensured that only relevant and credible literature was used in this study.

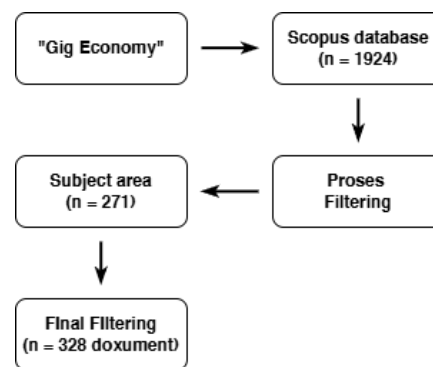


Figure 1. Step Research Procedure

2.2 Data Analysis

Bibliometric analysis was performed using Bibliometric software based on R. The analysis was conducted in several stages. First, a general description of publications was conducted, covering the number of documents per year, citation distribution, and author collaboration rates. Second, a network analysis was conducted that included co-authorship to identify collaborations between authors and between countries, as well as co-occurrence to map the interrelationships between frequently appearing concepts and themes. Third, a thematic analysis was conducted to identify the

main research clusters and observe themes that were emerging or beginning to decline in relevance.

The results of the analysis are visualized in the form of network maps and thematic maps to illustrate the relationships between concepts, the position of research in the scientific landscape, and the direction of development of the gig economy study focus. This approach allows for a quantitative description of publication trends as well as an in-depth evaluation of research gaps that have not been widely explored, thereby supporting the theoretical and practical contributions of this study.

3. Result and Discussion

3.1. Main Information



Figure 2. Primary database

Figure 2 presents data from Scopus database search results related to the topic of “Gig Economy” during the period 2015 to 2025. This study aims to represent the dynamics of scientific publication development each year and to highlight significant changes that have occurred in studies on the gig economy. Based on preliminary analysis, the average number of citations per document on this topic reached 36.04, reflecting a fairly high level of scientific relevance and influence.

In addition to the number of citations, the level of international collaboration is also an important indicator in measuring the development of gig economy research. The results of co-authorship analysis show that around 27.69% of publications involve cross-country

collaboration, with an average of 2.74 authors per document. This reflects a tendency for cooperation between institutions and countries in examining this issue more comprehensively. In addition, collaboration between developed and developing countries, such as India, Brazil, and Indonesia, shows a growing trend, particularly in studies related to informal employment and economic development strategies. This collaboration reflects the growing global concern about the impact of the gig economy in various socio-economic contexts, including in countries with high levels of labor informality. The involvement of developing countries in this discourse is important to provide a more inclusive perspective and enrich understanding of the dynamics of platform-based work globally.

3.2. Public Trends

Figure 3 shows an increase in the number of publications related to the gig economy throughout 2015–2025, with a significant surge after 2020. This trend indicates that platform-based employment is gaining scientific attention, especially after the COVID-19 pandemic accelerated the shift to digital work models. While research prior to 2020 mostly discussed the basic characteristics and flexibility of platform-based work, after 2020 the focus shifted to the issues that form the research questions in this study, namely worker vulnerability, lack of social protection, disparities in access to work, and the implications for labor policy.

The peak of publications in 2024 marks a growing concern about the long-term impact of the gig economy on labor market structures, social justice, and the need for new regulations [3]. This finding confirms the urgency of conducting bibliometric studies, as the development of publications reflects the increasingly broad discourse on the gig economy as a multidimensional phenomenon that affects social equality and labor protection in the digital economy era.

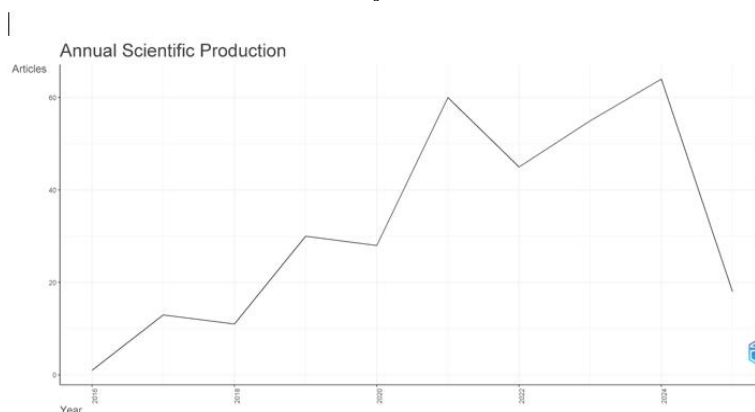


Figure 3. Annual Scientific Production of Gig Economy

Figure 4 shows the average citation pattern of articles on the gig economy between 2015 and 2025. In the early phase, articles published before 2020 had relatively high

citation rates because they offered a fundamental conceptual framework that became the main basis for subsequent studies. For example, Vallas and Schor's

article What Do Platforms Do? Understanding the Gig Economy has become one of the most influential articles because it provides a comprehensive understanding of how digital platforms are changing traditional work relationships, introducing high flexibility, but at the

same time creating structural inequalities between workers and platform providers. This article has been widely cited for its relevance in explaining the social impact of job insecurity and workers' limited access to social protection [6].

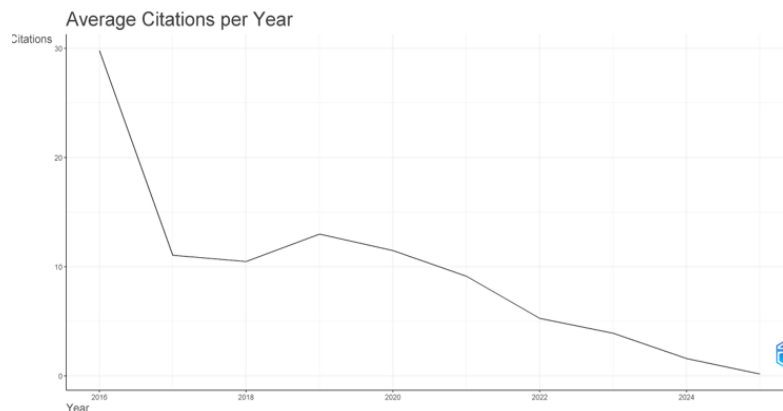


Fig 4. Average Citations per Year in Gig Economy

In addition, Meijerink and Keegan through his article Conceptualizing Human Resource Management in the Gig Economy, he provides a new perspective on platform-based work design and the challenges companies face in protecting the welfare of freelance workers [7]. This work is important in answering the main issue of this study, namely how the digitization of work systems affects job security, labor rights, and industrial relations balance. Another article that also had a major influence was the work of Graham, Hjorth, and Lehdonvirta, which highlights the impact of the gig economy in developing countries [13]. Their findings show that while the gig economy expands employment opportunities, it also widens the global wage gap and creates new uncertainties for workers who lack adequate social protection.

Entering the period after 2020, the number of articles published increased significantly, in line with the major transformation of work patterns due to the COVID-19 pandemic. Many studies began to focus on issues in line with the research questions in this study, such as worker vulnerability, pressure due to algorithmic management, and the socio-economic impacts arising from shifting work relationship patterns. Article by Bucher, Fieseler, and Hoffmann which discusses algorithmic management (Algorithmic Management and Autonomy: How Algorithms Create and Constrain Work–Life Balance) was one of the most cited during this period [14]. The article reveals that the use of algorithms in platform worker management has reduced worker autonomy, increased psychological pressure, and reinforced asymmetrical working relationships between workers and platform company.

Although the number of publications continues to increase, the average number of citations per article has tended to decline since 2020. This does not indicate a decline in quality, but rather reflects the diversification

of research topics. If previously the research focus was predominantly on the conceptual understanding of the gig economy, then after 2020 the focus expanded to aspects of legal protection, social inequality, algorithmic fairness, and the long-term impact of the gig economy on the global labor system [15].

The articles with the highest citation rates in the 2020–2024 period reflect this new focus. For example, several studies discuss the need for new policies that protect gig workers so that they have access to social security and minimum wages, as triggered by the AB5 policy in California or the UK Supreme Court's decision regarding the status of Uber workers in 2021 Johnston, H., & Land-Kazlauskas, C [16]. This type of research directly addresses the research question, which highlights job insecurity, limited legal protection, and unequal access to decent work in the digital economy era [17].

Overall, the citation pattern in Figure 3 shows that early literature on the gig economy served as a basis for subsequent research that was more specific and focused on social, legal, and economic implications. This shift in focus supports the urgency of the bibliometric research conducted in this study, namely to map the direction of gig economy research development and identify gaps that remain, particularly regarding labor protection and social justice in the context of digital transformation.

3.3. Research profile and source title

3.3.1. Top writer

Table 1. List Top Writer

Authors	Articles	Articles Fractionalized
Graham M	9	2.30
Fieseler C	6	1.87
Bucher E	5	1.75

Bibliometric analysis identifies three leading authors who have influenced research on the gig economy: Mark Graham, Christoph Fieseler, and Elisabeth Bucher, which can be seen on Table 3. All three consistently produce work that contributes to the development of global discourse on platform-based work. Mark Graham has written extensively about the digital divide and the global economic impact of work platforms. In *Digital Labor and Development* in 2017, he shows how platforms expand access to work in developing countries, but also reinforce unequal working relationships. His research is relevant to SDG 10 on reducing inequality. Christoph Fieseler highlights the psychological and ethical aspects of flexible work. His article *The Digital Precariat* introduces the concept of gig workers as a vulnerable group due to a lack of social protection and job stability, in line with SDG 8 on decent work. Elisabeth Bucher examines the role of algorithms in regulating work through digital management. In *Algorithmic Management and Worker Autonomy* at 2021, he highlights how algorithmic systems reduce worker autonomy and create new forms of technological surveillance [18].

The influence of leading authors in gig economy research lies not only in the number of publications they produce, but also in their contribution to framing the discourse on the social and economic impacts of platform-based work models. Mark Graham's work highlights the digital divide and unequal access to employment, particularly in developing countries, showing how the gig economy can expand opportunities but at the same time widen the socio-economic gap. Meanwhile, Christoph Fieseler focuses on the welfare and vulnerability of workers, introducing the concept of the digital precariat, which describes gig workers as a vulnerable group due to their lack of social protection and income uncertainty. Elisabeth Bucher, through her study of algorithmic management, shows how the use of technology in work management can limit workers' autonomy and cause significant psychological pressure [19]. The contributions of these three authors are directly relevant to the research question, namely the importance of understanding the dynamics of labor protection, social justice, and regulations that are responsive to technological change.

3.3.2. Top Sources

Table 2. List top of sources

Source	H index	g index	m index	TC	NP	PY Start
Work, Employment & Society	13	17	1.444	2739	17	2017
New Technology, Work, and Employment	12	22	1.500	1024	22	2018
International Journal of Human Resource Management	8	9	1.600	437	9	2021

Their findings are not only descriptive but also normative, as they provide an argumentative basis for the formulation of more inclusive and equitable labor policies. Thus, the literature produced by these leading authors not only enriches scientific discourse, but also opens up opportunities for policy advocacy that supports the achievement of the Sustainable Development Goals (SDGs), particularly SDG 8 (decent work and economic growth) and SDG 10 (reduced inequalities).

Table 2 presents three main sources that have contributed significantly to the development of research on the gig economy. The first source, *Work, Employment and Society*, has had the most notable influence, with 17 articles published since 2017. This journal has an h-index of 13 and the highest total citations (TC), which is 2,739. An m-index value of 1.444 indicates a stable level of productivity and consistency in annual publications that are influential in this field. The second source is the journal *New Technology, Work and Employment*, which has the highest number of publications, namely 22 articles since 2018. With a g-index of 22 and an m-index of 1,500, this journal demonstrates a high level of visibility and scientific impact even though its total citations (1,024) are below those of the first journal. These indices reflect the quality and wide distribution of citations from published articles. The third source, *The International Journal of Human Resource Management*, began

actively publishing articles related to the gig economy in 2021. Although it has fewer articles, namely 9 publications, this journal has an h-index of 8 and the highest m-index among the three, namely 1,600.

This indicates that despite its relatively recent involvement, this journal has been able to produce high-impact publications in a relatively short period of time. Overall, these three journals are key sources that are not only productive in terms of publication numbers, but also play an important role in shaping the direction and scientific contribution to the study of the gig economy through the quality and influence of the research they publish.

3.4. Knowledge Structures Analysis

3.4.1. Conceptual Structure

The conceptual structure analysis produced four main clusters based on color: blue, red, green, and purple, which can be seen on Figure 5. Each reflects a different research focus in the study of the gig economy. The blue cluster highlights the relationship between the gig economy, platforms, algorithmic management, and workers. Research in this cluster examines how technology and algorithms regulate work digitally, reduce worker autonomy, and replace traditional managerial roles [20]. This is closely related to SDG 8 because it concerns the quality and control of work in the digital age.

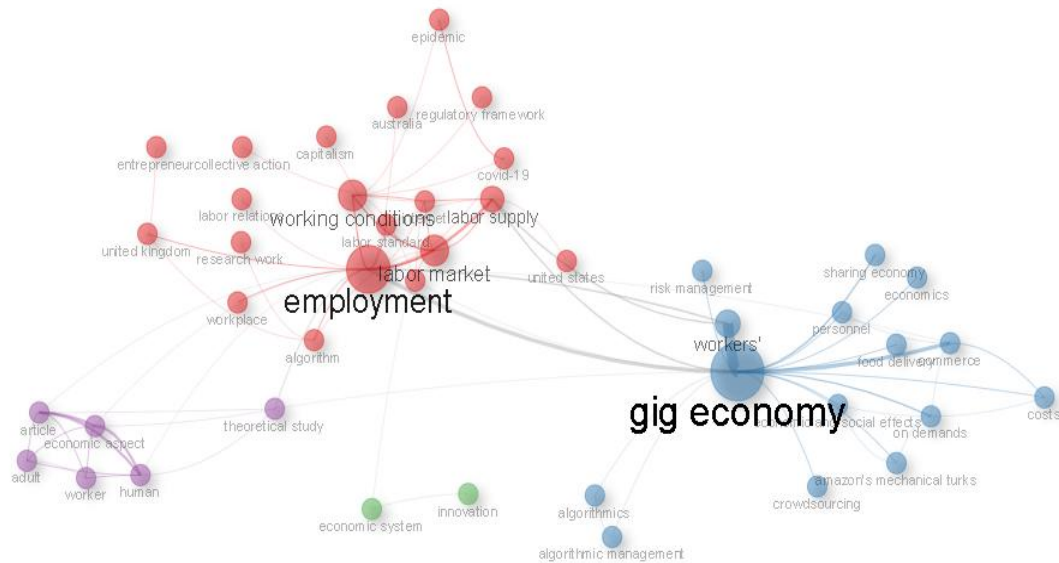


Figure 5. Relationships Between Concepts

The red cluster covers issues of employment, working conditions, and regulatory frameworks, especially in the context of crises such as COVID-19. Articles in this cluster highlight the need for regulations that protect gig workers, who have not been covered by formal legal protections [2]. This cluster supports SDG 10 as it targets inequality in access to labor rights.

The green cluster focuses on innovation, economic systems, and algorithmics, viewing the gig economy as part of the digital economic transformation. Research in this cluster positions flexible work as part of economic growth and efficiency strategies, in line with SDG 8 in promoting innovation and decent work [2].

The purple cluster is more reflective and theoretical, with keywords such as human, labor, and theoretical study. It focuses on human values and labor exploitation in platform systems, as discussed in precariat theory. This cluster reinforces the importance of ethical and humanistic approaches in building fair work systems.

Overall, these four clusters show that the gig economy is multidimensional and constantly evolving. Each cluster offers important insights into understanding the challenges of digital work and developing socially just policies that support the achievement of the SDGs.

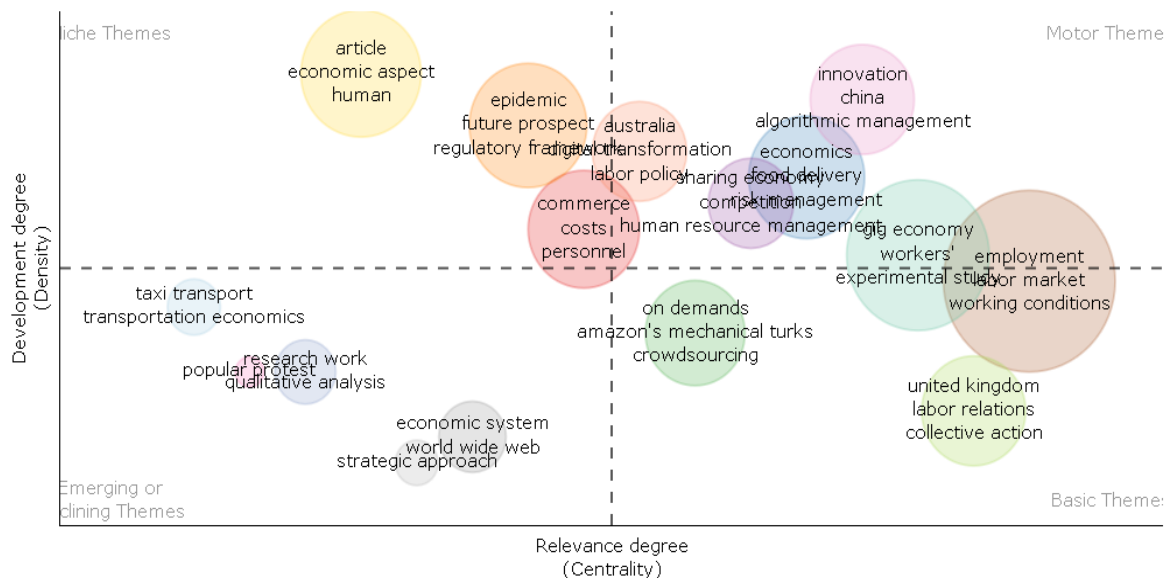


Figure 6. Thematic Map of Relevance Degree Algorithm

Figure 6 shows a Thematic Map depicting the distribution of main themes in the literature related to the gig economy based on two main dimensions: density (degree of topic development) and centrality (the level of relevance or connection between topics and other themes). This visualization is divided into four quadrants, each representing the strategic role of each theme: motor themes, basic themes, niche themes, and emerging or declining themes.

At Motor Themes, there are themes that have high levels of density and centrality. These themes reflect topics that are mature and highly relevant conceptually and methodologically. They include terms such as *innovation, algorithmic management, economics, delivery, control management, and China*, indicating that the dynamics of the gig economy are closely linked to technological developments and innovation, as well as specific geopolitical contexts. The emergence of topics such as algorithmic management also signals growing attention to algorithm-based management systems as the backbone of the digital platform economy.

At Basic Themes, there are important themes with high relevance, but their development is not yet optimal. Themes such as the *gig economy, workers, employment, labor market, working conditions, collective action, and the United Kingdom fall into this category*. Although often discussed in the literature, these themes still require further exploration in terms of theoretical depth and analytical framework development.

The emergence of terms such as labor relations and experimental study also indicates the need for a more systematic empirical approach in assessing the impact of the gig economy on working conditions and industrial relations. Meanwhile, Niche Themes covering topics such as *economic aspects, human aspects, and articles*, which show a high level of development but have low relevance to other main themes. These themes tend to be specific and serve as conceptual elaborations within a limited scope.

Last Emerging or Declining Themes containing themes such as *economic system, world wide web, strategic approach, transportation economics and qualitative analysis*. These themes have low relevance and development, which can be interpreted as topics that are developing but have not yet received widespread attention, or are themes that are beginning to be abandoned because they are less relevant to the current direction of research.

Thematic Map provides deep insights into the intellectual structure of studies on the *gig economy*. Themes like *algorithmic management, innovation, dan control management* has become a key driver in scientific discourse, reflecting a focus on structural changes resulting from digitalization. Meanwhile, topics such as the gig economy and employment remain central

to the discussion, although they still require further exploration.

The thematic map produced in this analysis shows four main clusters of gig economy research that represent the current focus of study: worker regulation and protection, algorithmic management, innovation and digital economic growth, and the human dimension of platform-based employment relationships. These four clusters form an interrelated conceptual framework that provides a basis for understanding the direction of research development.

Further analysis of the thematic map also reveals potential research areas that are expected to become increasingly important in the future. First, adaptive labor policies that can provide social protection for gig workers, including health insurance, employment insurance, and platform-based dispute resolution mechanisms. This area is important given the numerous reports of job insecurity and income uncertainty experienced by gig workers. Second, algorithm ethics and governance, which highlights how artificial intelligence-based management systems can affect workers' rights, work distribution patterns, and psychological well-being. Research on this topic is important because algorithms play a direct role in determining the power relationship between platforms and workers.

Third, digital inclusion and access gaps are another important area, particularly in developing countries, where the adoption of the gig economy has the potential to widen economic disparities if access to technology is uneven. Fourth, the long-term impact of the gig economy on the formal labor market, including shifts in industrial relations, implications for labor unions, and the transformation of employment contracts in the digital age. Finally, there is a great opportunity to examine the psychosocial dimensions of platform-based work, such as job satisfaction, work-life balance, and worker resilience in the face of flexible but uncertain working models. Therefore, thematic maps not only describe the current state of research, but also indicate potential directions for future research relevant to the research questions, particularly those related to labor protection, social justice, and employment policies amid digital transformation.

4. Conclusion

The results of the study show that the gig economy has developed into a multidimensional phenomenon that has a significant impact on the structure of the global labor market. A bibliometric analysis of 328 Scopus articles from 2015 to 2025 revealed a surge in publications after the COVID-19 pandemic, with a shift in focus from conceptual discussions to critical issues such as labor protection, algorithmic management, and labor regulations. This research underscores the importance of adaptive policy frameworks, more transparent algorithm

governance, and increased digital inclusion so that platform-based work ecosystems can develop in a more equitable, inclusive, and sustainable manner.

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