



A bibliometric analysis and future research agenda for online labour platforms

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ABSTRACT

Online labour platforms (OLPs) are profit-oriented companies utilising technology to connect independent contractor workers with short-term service labour needs, offering a digital marketplace for posting tasks, receiving bids, and finalising agreements across various domains such as writing, design, programming, and digital marketing. This paper presents a bibliometric analysis of the concurrent body of knowledge on OLPs, explaining how the specificities of this emerging form of labour are researched from various academic standpoints. The study is based on a dataset of 358 papers on OLPs published from 2013 to August 2023. The main finding of the study is that scholarly interest in OLPs is steadily growing in the observed period. However, geographical dispersion of the scientific output is not in line with the actual level of utilisation of OLPs, and scholarly interest in OLPs spans across diverse disciplines, including industrial relations and labour, management, economics, sociology, law, and computer science. The results of this paper can help better understand the dynamics of scholarly publishing on OLPs and further leverage underexploited subtopics in this field.

KEYWORDS

online labour platforms (OLPs), gig economy, bibliometric analysis, systematic literature review, VOSviewer

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1 INTRODUCTION

Online labour platforms (OLPs) are “for-profit firms that use technology to fill immediate short-term service labour needs, either remotely or in-person, with workers who are officially considered independent contractors” (Kuhn and Maleki 2017). These platforms provide a virtual marketplace where work can be posted, bids or proposals can be submitted, and agreements can be reached through digital channels. They cover various tasks and services, including writing, graphic design, programming, data entry, translation, digital marketing, and more.

The global OLP market has experienced significant growth in recent years. Recent reports indicate that the market size was valued at \$4.39 billion in 2022, and the expected compound annual growth rate until 2030 is assessed at an impressive 16.5% (GVR 2023). The business model of OLPs is based on charging fees for the intermediary services, which practically means that gig workers and/or requesters pay the platform for each successful match-making (Meijerink, Keegan and Bondarouk 2023). Some prominent examples of OLPs include eBay, Taobao, Flipkart, Amazon Marketplaces, Airbnb, Uber, and Taskrabbit (Tadelis 2016).

Kässi and Lehdonvirta (2018) argue that the success of the online gig economy is a result of three major shifts that have occurred in recent decades: (1) the transition from local workplaces to remote ones, (2) the shift from full-time to flexible working hours, and (3) the move from permanent to casual employment. As a consequence of these changes, there has been a steady increase in the number of workers earning their income through OLPs.

Recent research by Kässi, Lehdonvirta and Stephany (2021) suggests that there are 163 million registered workers on OLPs, marking a sharp increase compared to 2015 estimates by Kuek et al. (2015), which stood at 50 million. The official statistics of the International Labor Organization (ILO) support this upward trend. According to the June 2021 report (International Labour Organization 2021), the number of labour platforms has increased fivefold globally, with the majority (79%) coming from G20 countries.

OLPs have been developing at a fast pace in recent decades. Some of the driving factors behind their growth include worker flexibility, geographic independence, diverse income streams, and skill development. OLPs have been trending upward for more than a decade, but the lockdowns during the COVID-19 pandemic have accelerated the “work from anywhere” culture (Yao, Baker and Lohrke 2022) and the adoption of hybrid working arrangements around the globe (Radonić, Vukmirović and Milosavljević 2021).

The development of OLPs has, however, been widely criticised. For instance, OLPs generally provide poor working conditions compared to traditional labour agreements (Cantarella and Strozzi 2021). Other studies find that they are unfair by design (Fieseler, Bucher and Hoffmann 2017) or provide only an illusion of autonomy (Sloth Laursen, Nielsen and Dyreborg 2021).

Whether considered good or bad, OLPs are here to stay (Ettlinger 2017). Accordingly, scholars have investigated them within different fields and from various perspectives. Empirical studies dominate the spectrum (i.e., Galperin and Greppi 2017; Wood et al. 2018; Nilsen, Kongsvik and Antonsen 2022;

Ren, Raghupathi and Raghupathi 2023), but literature reviews of different kinds have also been frequently used to investigate and synthesise the streams of research on labour platforms (i.e., Fu, Avenyo and Ghauri 2021). Oddly, none of the literature reviews on labour platforms have adopted a bibliometric approach. Broader topics such as gig economy (Batmunkh, Fekete-Farkas and Lakner 2022) or platform economy (Boateng et al. 2022) have all been analysed quantitatively, but labour platforms have remained relatively underexplored. Bibliometric analyses are now “firmly established as scientific specialties and integral to research evaluation methodology” (Ellegaard and Wallin 2015). They represent critical quantitative techniques for researchers and practitioners seeking to investigate the status and dynamics of research on a specific scholarly topic, providing valuable outputs such as total publications, citations, and collaboration among institutions and researchers (Donthu et al. 2021). This method has been extensively used in recent economic (Milosavljević, Spasenić and Damjanović 2022) and digital economy research (Xia et al. 2023).

This study employs the science mapping technique to review the literature on OLPs retrieved from the Web of Science Core Collection database. The study’s objectives are to quantitatively examine the global research output and offer some suggestions for the future of research in the field of labour platforms. The specific research questions addressed in this study are as follows:

RQ1. How extensive is the body of academic literature on OLPs?

RQ2. Is the geographical, cooperative, and research funding distribution

of OLPs in alignment with the development of actual labour platform employment?

RQ3. Which journals and writers in the OLP field are the most successful?

RQ4. Which subtopics dominate the concurrent body of knowledge on OLPs?

This study adds to the existing body of knowledge in several ways, recognising that prior studies have systematically examined OLPs as a subject of scholarly research. It provides both a vertical extension, involving the inclusion of novel articles in the analysis, and a horizontal extension, which expands the analysis by using comprehensive tools such as the spatial distribution of papers, collaborative teams, journal and author productivity, and noteworthy research subtopics (Milosavljević, Spasenić and Krivokapić 2023).

The remainder of the paper is structured as follows: Section 2 outlines the methodology of the bibliometric study, focusing on the selection of the final group of manuscripts dealing with labour platforms. Section 3 delineates the results of our study. Section 4 contextualises the results by explaining the study’s key findings, contributions, and implications. The final section is dedicated to the conclusions, limitations, and recommendations.

2 METHOD

To comprehensively examine the evolution of scholarly contributions pertaining to the topic of the usage and development of OLPs, this study followed the three-stage approach advocated by Spasenić, Milosavljević and Milanović (2022) and Milosavljević, Spasenić and Krivokapić (2023). The first stage entails

systematically identifying scholarly articles within the Web of Science database (WoS) by Clarivate Analytics. WoS is one of the most exhaustive repositories of data for bibliometric analyses. This is attested by the most recent bibliometric studies and literature reviews in various research areas that use WoS as the primary source of bibliometric material, including (1) business and finance (Tao et al. 2022; Nguyen et al. 2021), (2) hospitality management (Elkhwesky et al. 2022; Molina-Collado et al. 2022; Elkhwesky 2022), (3) digital technologies (Wang et al. 2022), and (4) renewable energy (Zhang, Ling and Lin 2022; Marzouk and Elshaboury 2022).

The initial search is based on the word string consisting of 15 keywords connected with the Boolean OR operator: "Platform work" OR "Online labor platform" OR "Digital labor platform" OR "Employment platform" OR "Job platform" OR "Job marketplace" OR "Job posting site" OR "Labor marketplace" OR "Gig platform" OR "Freelance platform" OR "Freelancer platform" OR "Task platform" OR "Gig economy platform" OR "Talent marketplace" OR "Remote work platform."

The rationale behind selecting the aforementioned keywords for the bibliometric analysis is to comprehensively capture the multidimensional research landscape of online labour platforms, encompassing platform economics, labour market dynamics, technology, employment patterns, and socio-economic implications. Using the Boolean operator OR in connecting these keywords allows for a broad retrieval of relevant literature.

The selection of keywords includes a broad spectrum of terms utilised to characterise OLPs, including "Platform work," "Online labor platform,"

and "Digital labor platform," acknowledging the diverse terminology employed by researchers. The inclusion of terms like "Employment platform," "Job platform," and "Gig platform" narrows the scope to platforms facilitating job opportunities and gig-based work, highlighting employment-related aspects. "Job marketplace," "Labor marketplace," and "Task platform" underscore the marketplace nature of these platforms, capturing the economic dynamics of task and service exchanges. Keywords like "Freelance platform," "Freelancer platform," and "Remote work platform" acknowledge the rise of freelance and remote work trends. "Gig economy platform" reflects the integration of gig work into these platforms, providing an insight into the gig economy's role within OLPs. The term "Talent marketplace" draws attention to platforms that highlight skills and talents, catering to research on how these platforms facilitate skill matching and utilisation.

The WoS search engine applies the string to the publication topic, encompassing paper titles, abstracts, author keywords, and keywords plus. In addition, the search query was restricted according to the publication type (Article OR Proceeding paper OR Early access OR Review article OR Book review) and publication language (English). The initial search resulted in 796 publications spanning from 2013 to 2023.

The second phase of the study was dedicated to conducting content analysis of the derived publications to refine the research sample to encompass solely publications focused on online work platforms. Each author of this study screened all 796 publications, searching for titles that were potentially relevant to the research questions. During this

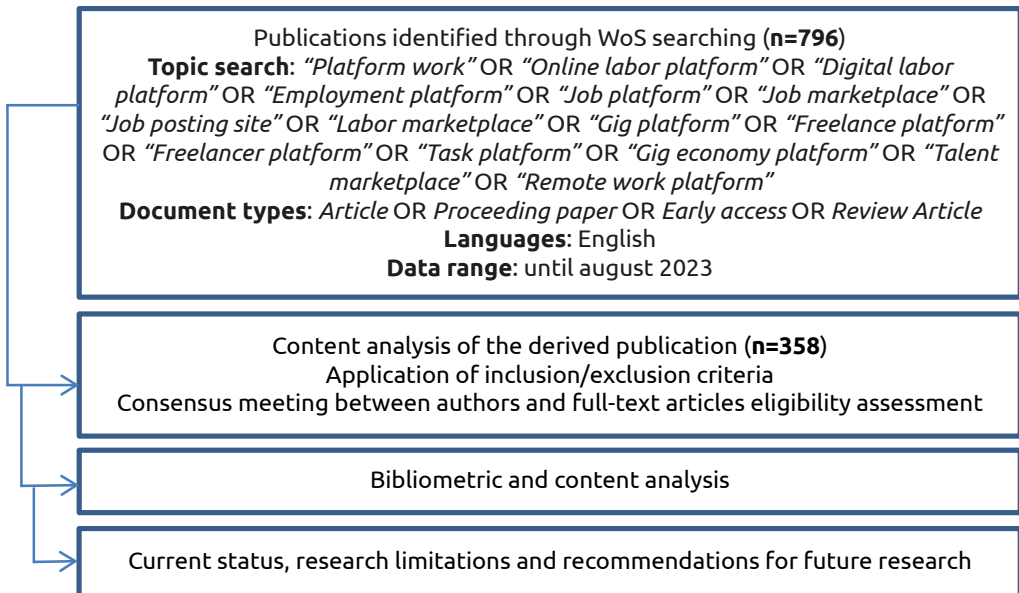
stage, each author independently decided to include or exclude the publication according to their personal judgement of the publication's relevance to our study. As per the agreed-upon criteria for this phase, articles were included only if (1) the study was strictly related to OLPs and (2) a full-text version in English was available. Articles were excluded if (1) the study was only marginally related to OLPs, (2) the study was unrelated to the topic of interest for this study, and (3) they were non-research publications (i.e., grey literature or Ph.D. dissertations). The final decision regarding the inclusion or exclusion of publications was made at a consensus meeting, where the authors reconciled their opinions and reviewed the full text of publications for which there were discrepancies in opinions (for instance, if one author included a paper while two others excluded it, or vice versa). After applying the described method, the final research sample consisted of 358 papers whose structure by publication type is presented in Table 1. For the final set of publications, all relevant information was extracted from WoS, including the title, abstract, document type, keywords, and other details, which were then compiled into Excel and tab-delaminated files used in the next step of the analysis.

In the third phase, the study incorporated a bibliometric analysis consisting of four steps: (1) descriptive analysis of the final research sample to gain a comprehensive understanding of the temporal evolution of publications over time, (2) descriptive analysis of the research sample with special attention to geographical dispersion, collaboration among researchers, and the scientific output of both journals and authors, (3) descriptive analysis of the most influential publications within the field of research interest, and (4) thematic or content analysis to define the principal subjects and subtopics that emerge from the existing body of literature. Step 2 (descriptive analysis) and 4 (content analysis) were performed using VOSviewer (van Eck and Waltman 2013). The described research design of the analysis is presented in Figure 1.

As shown in Figure 1, the Boolean term-led search initially yielded 796 papers related to OLPs. However, the manual screening of the metadata (titles, abstracts, and keywords) reduced the total number of analysed publications to 358 (or 45% of the initial count). This reduction can be attributed to the very broad use of terms related to OLPs, which might indicate that the field is still amorphous and lacks standardisation in both academic research and practice.

Table 1 Structure of publications on OLPs

No.	Document type	Number of documents	Proportion
1	Article	292	81,6%
2	Proceeding paper	53	14,8%
3	Review article	10	2,8%
4	Book review	3	0,8%
Total		358	100%

Figure 1 Research design

3 RESULTS

This section answers the research questions outlined in this study by addressing the frequency of academic output, the productivity of journals and authors, spatial distribution and cross-country cooperation, and the main subtopics in the OLP field.

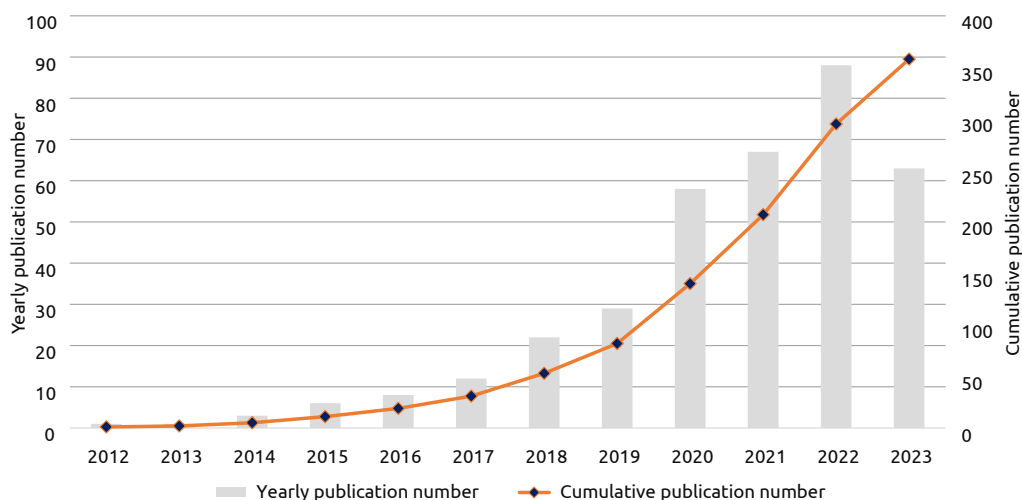
3.1 FREQUENCY OF ACADEMIC OUTPUT IN THE OLP FIELD

Consistent with the trends described in the introduction section, there is an academic need to evaluate various aspects of OLPs, with an expectation that scholarly output on OLPs will follow a similar upward trajectory. Figure 2 illustrates the distribution of publications on OLPs over time.

As shown in Figure 2, the dynamics of the academic output pertaining to OLPs exhibit an apparent upward trajectory from 2012 to 2023, reflecting a growing

scholarly interest in this research field. Notably, the initial years, 2012 and 2013, represent a nascent stage with minimal scholarly contributions, coinciding with the incipient emergence of online working platforms.

Subsequent years show a consistent and substantial expansion in academic output, with an accelerating proliferation of publications from 2014 through 2023. The year-on-year increase in publication numbers highlights the escalating significance of OLPs as a focal point of academic inquiry. This heightened scholarly attention could also be attributed to the increasing integration of such platforms into contemporary work ecosystems (Pesole et al. 2018), prompting heightened exploration and investigation by scholars across multiple disciplines. The observed peak in publication frequency in 2022, followed by a slight decline in 2023, should be interpreted cautiously, as we have only data for the first eight months of 2023, and

Figure 2 Frequency of academic output in the OLP field

the positive trend may continue. Overall, the data provided illustrates a discernible and sustained inclination among scholars to delve into the multifaceted dimensions of OLPs, capturing their impact on labour dynamics, technological innovation, socio-economic implications, and more.

3.2 PRODUCTIVITY OF JOURNALS AND AUTHORS

Prominent journals in the study of OLPs have emerged as significant sources of knowledge. For instance, “New Technology Work and Employment” has published 16 articles that delve into these platforms. The “European Labour Law Journal” and the “International Labour Review” have featured 14 and 10 insightful articles in this area, respectively. The journal “Work, Employment and Society” has also made substantial contributions with eight notable pieces, enriching scholarly discussions on digital labour platforms. These journals collectively play a vital role in advancing the under-

standing of OLPs within the academic community.

Within the realm of OLPs, an analysis of scholarly contributions unveils Vili Lehdonvirta as a notable authority, credited with creating an extensive compilation of 10 articles. Similarly, Mark Graham has demonstrated substantial academic involvement through the prolific production of eight articles within the same domain. Likewise, the significant contributions of Jamie Woodcock, represented by five articles, underscore the eminence of this author as a productive and influential contributor in the field of OLPs. The body of work of these three researchers collectively enriches and sheds light on discussions concerning the intricate facets of contemporary digital labour landscapes.

Regarding the most cited papers in the field, the results are shown in Table 2. Top 10 cited papers have received more than 100 citations, with the majority of top cited papers being from the last decade. This indicates that the field is still flourishing and receiving scholarly attention.

Table 2 An overview of the most cited publications in the research field

No.	Authors	Title	Journal	Total citations
1	Wood et al. (2018)	Good Gig, Bad Gig: Autonomy and Algorithmic Control in the Global Gig Economy	Work, Employment and Society	455
2	Graham, Hjorth and Lehdonvirta (2017)	Digital labour and development: impacts of global digital labour platforms and the gig economy on worker livelihoods	Transfer: European Review of Labour and Research	315
3	Vallas and Schor (2020)	What Do Platforms Do? Understanding the Gig Economy	Annual Review of Sociology	242
4	Duggan et al. (2019)	Algorithmic management and app-work in the gig economy: A research agenda for employment relations and HRM	Human Resource Management Journal	193
5	Burtch et al. (2016)	Can You Gig It? An Empirical Examination of the Gig Economy and Entrepreneurial Activity	Ross School of Business Paper No. 1308	174
6	Lehdonvirta (2021)	Flexibility in the gig economy: managing time on three online piecework platforms	New Technology, Work and Employment	159
7	Bergvall-Kåreborn & Howcroft (2014)	Amazon Mechanical Turk and the commodification of labour	New Technology, Work and Employment	140
8	Kässi and Lehdonvirta (2018)	Online labour index: Measuring the online gig economy for policy and research	Technological Forecasting and Social Change	132
9	Wood, Lehdonvirta and Graham (2018)	Workers of the Internet unite? Online freelancer organization among remote gig economy workers in six Asian and African countries	New Technology, Work and Employment	127
10	Kuhn and Maleki (2017)	Micro-entrepreneurs, Dependent Contractors, and Instaserfs: Understanding Online Labor Platform Workforces	Academy of Management Perspectives	126

Wood et al. (2018) and Graham, Hjorth and Lehdonvirta (2017) have shown that OLPs provide workers in Southeast Asia and Sub-Saharan Africa with a high level of flexibility, autonomy, task variety, and complexity, but they also come with drawbacks such as low pay, social isolation, and irregular

working hours. Furthermore, the remote gig economy may have adverse health impacts, such as sleep deprivation and exhaustion. The research stream on platform work impact on workers in Asia and Africa is further enriched by Lehdonvirta (2021), who found that the previously mentioned benefits are subject to both

structural, such as the availability of work and worker dependency on the job, and cultural-cognitive constraints, including procrastination and presenteeism, which limit workers from fully exploiting these benefits. These results are similar to those of Kuhn and Maleki (2017), who found that some platforms have made structural and operational choices that reduce workers' autonomy and strengthen their dependency on the platform. Wood, Lehdonvirta and Graham (2018) explored the same geographic region with a more specific research focus, examining collective organisation among online freelancers and revealing that they create unique forms of organisation. In this setup, social media groups play a pivotal role in shaping communication, while labour unions remain absent.

Duggan et al. (2019) proposed a new classification of gig work that recognises three primary forms based on key technological features: (1) app-work, (2) crowdwork, and (3) capital platform work. The authors focused on app-work and stressed that app-workers view their working relationship as extending beyond job flexibility and pure remuneration. Vallas and Schor (2020) have extended this research stream by identifying four major theories in the available literature on the subject, explaining the nature of platform work and its main characteristics. They added a fifth explanation, which suggests that platforms should be understood as a new economic form distinct from markets, firms, and networks. Drawing on existing literature, the authors also tried to predict the future of platforms that, in the most daring scenario, evolve into cooperatives owned by their users, successfully competing with other capitalist firms.

Burtch, Carnahan and Greenwood (2016) sought to shed light on the impact of the gig economy on local entrepreneurial activity, addressing the ambiguity in prior research results. Their experiment suggested that gig economy platforms primarily reduce lower-quality entrepreneurial activity by offering attractive employment for the un- and under-employed (Burbano 2016).

Finally, Kässi and Lehdonvirta (2018) created an Online Labour Index (OLI), which measures the utilisation of online labour across countries by tracking the number of projects and tasks posted on major online gig platforms in near-real time. Their quantitative research results showed that the steady growth of online platform work is mainly driven by the increase in the number of software development, creative, and clerical work positions.

3.3 SPATIAL DISTRIBUTION AND CROSS-COUNTRY COOPERATION

Regarding the geographical distribution of the publications included in this study, 21.8% of the entire corpus originates from the United States, followed by England, with 14.2% of all publications within the sample (see Table 3). The geographical distribution pertains to the research environment within which the manuscripts are situated, as delineated within the Web of Science (WoS) repository.

The observed geographical distribution of the publications mirrors the structure of the world's top freelancing countries. According to the World Bank's study on online gig work, the USA and the UK rank as the top two countries in terms of the demand for online labour (Datta et al. 2023). This information finds support in the results of Upwork's

Table 3 Spatial distribution analysis

Countries/Regions	Record Count	% of 358
USA	78	21.788
England	51	14.246
Germany	28	7.821
Australia	23	6.425
People's Republic of China	21	5.866
Canada	20	5.587
Italy	18	5.028
Spain	18	5.028
France	16	4.469
India	16	4.469
Netherlands	16	4.469
Total	305	85.196

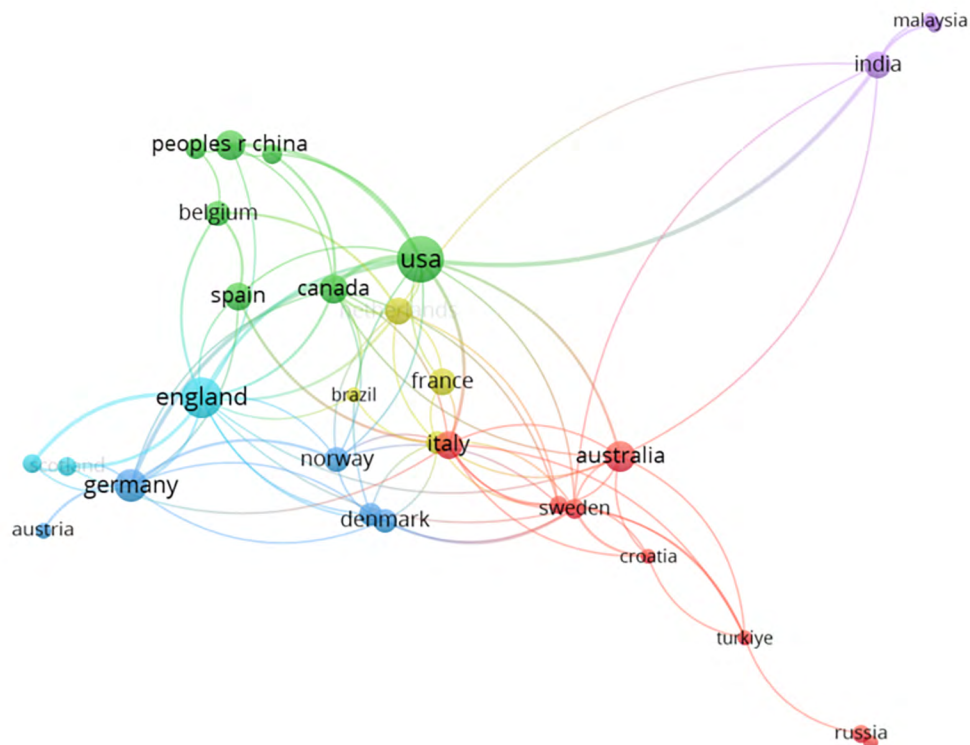
2022 Freelance Forward survey. The survey revealed that in 2021, 39% of the workforce in the USA, equivalent to 60 million individuals, engaged in freelance work (Upwork 2022). In the UK, there are 1.9 million freelancers, according to the Self-Employed Landscape Report 2022 published by IPSE (2022).

In 2021, the Oxford Online Labour Index ranked Serbia as the 10th country in terms of online labour supply by worker country (Online Labour Index 2021). Payoneer's ranking of Serbia as the 10th capital of freelancing among the top 10 countries (Payoneer Blog 2023), backs up this data. Interestingly, only one paper in the observed sample is authored by scholars affiliated with Serbia. The paper examines the main skill patterns relevant to digital platform workers in the selected Southeastern European (SEE) countries. Despite the growing popularity of this new type of work, there is limited interest among scholars in Serbia in investigating platform work.

The reason for this could be that online freelancing is a relatively new concept in the Serbian labour market. Additionally, this mode of work lacks the legal framework that would regulate it.

In terms of collaboration of researchers from various regions, cooperation involving North American contributors is particularly noteworthy (see Figure 3). Authors from the US typically collaborate with researchers from the People's Republic of China and Northern European nations.

Academic research on OLPs is sustained by various funding agencies, as evidenced by the data on funding sources (see Table 4). The support comes from both national and international entities, highlighting the global interest in comprehending the intricacies of this digital phenomenon. Leading the funding landscape, the European Research Council (ERC) and the Spanish Government have allocated significant resources, supporting 5.028% and

Figure 3 Cooperation network among countries in OLP research (n>3)*

- * Cluster 1: Australia, Croatia, Italy, Russia, Slovenia, Sweden, Turkey
- Cluster 2: Belgium, Canada, China, Poland, Spain, Switzerland, USA
- Cluster 3: Austria, Denmark, Finland, Germany, Norway
- Cluster 4: Brazil, France, Ireland, Netherlands
- Cluster 5: India, Malaysia, Singapore
- Cluster 6: England, Scotland, South Africa

4.749% of the total papers, respectively. Meanwhile, the Economic Social Research Council (ESRC) and UK Research Innovation (UKRI) each account for 2.793% of the papers, highlighting the UK's commitment to advancing research in this domain. Various international bodies, including the European Union (EU), the National Natural Science Foundation of China (NSFC), and the Australian Research Council, contribute to the comprehensive exploration of OLPs. The participation of funding agencies such as the National

Science Foundation (NSF) in the US, the German Research Foundation (DFG), and Horizon 2020 underscores the collaborative nature of this research, transcending geographical boundaries. This array of funding sources highlights the global collaboration and concerted effort that underpins the in-depth analysis of OLPs.

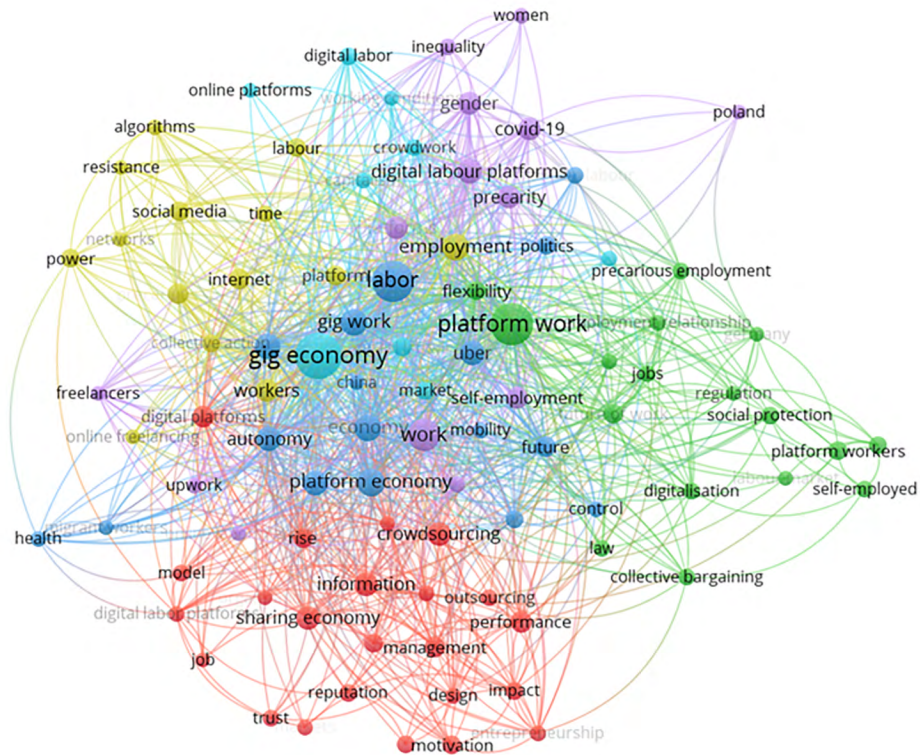
3.4 MAIN SUBTOPICS IN THE FIELD

Finally, we delved into the primary subtopics within the field of OLPs. Our

Table 4 Funding agencies analysis

Funding Agencies	Record Count	% of 358
European Research Council (ERC)	18	5.028
Spanish Government	17	4.749
Economic Social Research Council (ESRC)	10	2.793
UK Research Innovation (UKRI)	10	2.793
European Union (EU)	8	2.235
National Natural Science Foundation of China (NSFC)	7	1.955
Australian Research Council	6	1.676
National Science Foundation (NSF)	6	1.676
German Research Foundation (DFG)	5	1.397
Horizon 2020	4	1.117
International Development Research Centre (IDRC)	4	1.117
NSF Directorate for Computer Information Science Engineering (CISE)	4	1.117
NSF Directorate for Social Behavioral Economic Sciences (SBE)	4	1.117
Research Council Of Norway	4	1.117
Social Sciences and Humanities Research Council of Canada (SSHRC)	4	1.117

Figure 4 Keyword co-occurrence analysis of OLP analysis



approach encompassed two methods: (1) a neutral keyword-driven analysis and (2) a manual assessment aimed at identifying the main field of research in each study from our sample. Regarding the keyword-driven analysis, the approach measures the co-occurrence of keywords provided by the authors in their publications. The outcomes are visually presented in Figure 4.

Using the co-occurrence analysis, we identified six distinct clusters. The clusters are outlined below (Table 5). Cluster 1 (red cluster) revolves around OLPs and digital entrepreneurship. Cluster 2 (green cluster) focuses on platform work regulation and the future of work. Cluster 3 (dark blue cluster) is centred on algorithmic management and gig economy trends. Cluster 4 (yellow cluster) concerns platform power dynamics and worker collective action. Cluster 5 (purple cluster) addresses gender inequality within digital freelancing. Cluster 6 (light blue) encompasses platform capitalism and gig economy conditions.

The co-occurrence analysis unveils the primary patterns in online labour platform research. In the US, the debate over whether gig workers should be classified as employees or independent contractors impacts the primary subjects of scholarly investigation regarding OLPs, as it focuses on the legal, tax, and labour market implications of this classification. Considering the large population of internal migrant workers in China, notable academic interest is focused on how OLPs integrate these workers into urban economies and how challenges such as exploitation and precarity can be addressed. In Germany and Nordic countries, strong labour unions and an emphasis on worker protection impact the academic discussion on how collective bargaining could be extended to platform workers to ensure fair wages and working conditions.

Regarding the manually driven assessment of the primary research focus of the studies featured in our sample, the distribution is depicted in Figure 5.

Table 5 Explanation of the main clusters in the co-occurrence analysis


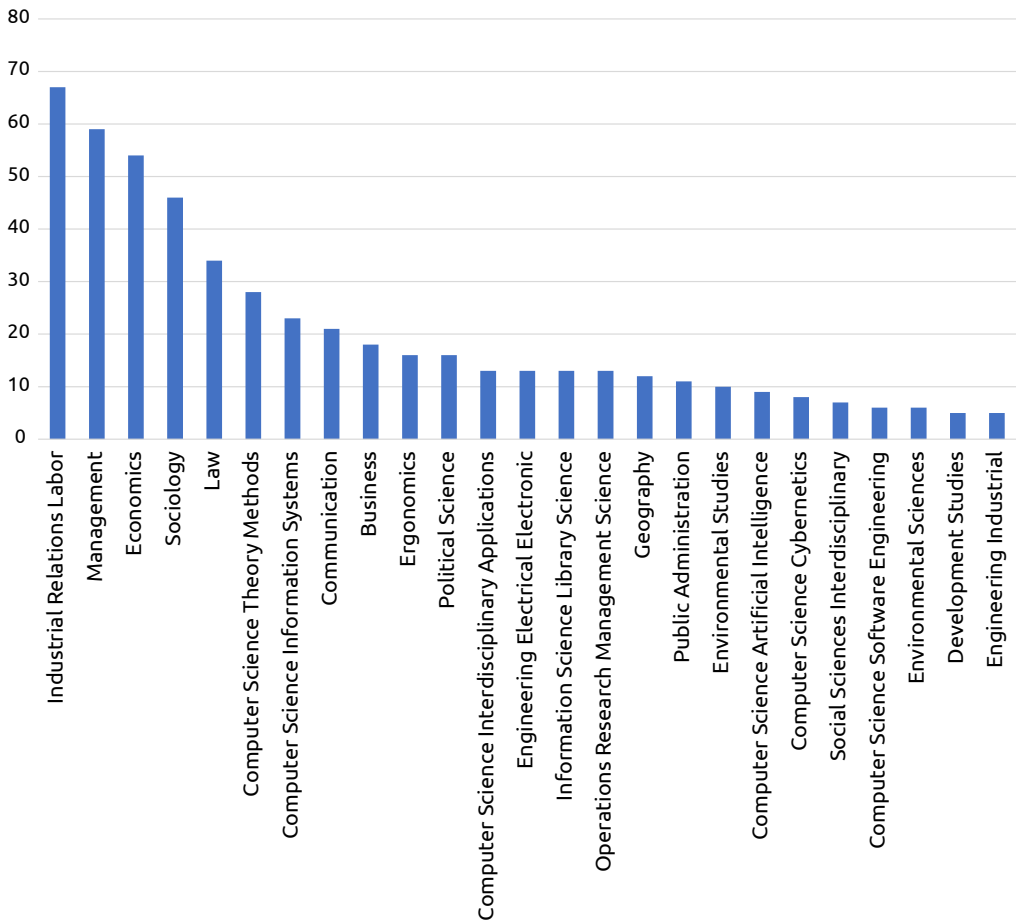
Cluster	Colour	No. of keywords	Top 5 keywords
1		23	Gig economy, self-employment, digital platforms, entrepreneurship, digital labor
2		17	Labour market, regulation, social protection, precarious employment, future of work
3		17	Gig work, algorithmic management, Uber, platform labour, technology
4		14	Collective action, digital labor platforms, labour, online freelancing, social media
5		14	Covid-19, digital labour platforms, inequality, gender, Up-work
6		9	Capitalism, crowdwork, digital labor, gig economy, working conditions

Figure 5 Distribution of publications by research field

Papers exploring OLPs delve into diverse fields, as revealed by the categorization of WoS domains. The categories are segmented based on the number of papers within each, offering an insight into the varying degrees of research focus. At the forefront, the study of Industrial Relations, Labour, Management, Economics, and Sociology takes centre stage, reflecting the substantial attention these areas have garnered. In a moderate focus capacity, Law, Computer Science Theory Methods, and Computer Science Information Systems

contribute their perspectives to the discourse. Intermediate attention is found in categories like Communication, Business, Political Science, and Engineering, which, while slightly less prevalent, add valuable dimensions to the dialogue. Categories with a lower focus include Public Administration, Environmental Studies, and various segments of Computer Science, each contributing nuanced insights to the multifaceted landscape of OLPs. It is important to note that this categorization is not exclusively based on thematic coherence but on the

distribution of research attention across these diverse domains.

The field of industrial relations labour covers various studies exploring multifaceted aspects of platform work. Research topics include the influence of gig companies on workers' market risk exposure (Maffie 2023), investigation of microwork geography and the classification of worker types (Morgan, van Zoonen and ter Hoeven 2023), platform classification systems (Maffie 2020), multidimensional configuration of platform work (Haidar 2022), and the role of algorithmic management in platform work (Duggan et al. 2019; Kullmann 2018). These papers contribute to a comprehensive understanding of the challenges and opportunities in the evolving industrial relations landscape of OLPs.

The field of economics is deeply engaged in understanding the intricate dynamics of digital labour platforms. The analysed papers investigate the profitability challenges of digital labour platforms (Li and Qi 2023), the feminist political economics view on digital labour inequalities (Rodríguez-Modroño, Agenjo-Calderón and López-Igual 2023) and explore the influence of platforms on work precarity (Unni 2023; Muszyński et al. 2022; Sutherland et al. 2020), economic insecurity, and labour agency. They also analyse hiring practices, motivations of freelancers, and the reach of the online gig economy across borders. Reflecting the field's responsiveness to contemporary challenges, research extends to the impacts of global events, such as the COVID-19 pandemic, on labour markets and livelihoods, with 11 papers in the sample. Examining the transition from informal to formal service provision, the expansion of platform work managerialism, and the inter-

play between labour geographies and collective organising strategies, these studies provide valuable insights into the economic relationships, regulations, and digital work structures.

The field of sociology illuminates a rich tapestry of studies. It examines power dynamics, exploitation, resistance, agency, identity, and social inequalities. Researchers analyse how algorithms are influencing control and resistance in platform work and explore the invisibilisation of labour processes due to algorithms (Salter and Dutta 2023; Cini 2023). They investigate work precarity in platform economy (Wood and Lehdonvirta 2022; Vieira 2021; Schor et al. 2020), and scrutinise the intersection of identity factors such as gender and class within the gig economy (Dunn, Munoz and Sawyer 2021; Milkman et al. 2021). Moreover, the papers critically evaluate the efficacy of labour laws, governance structures, and collective action in the platform economy. This collection of papers contributes to an in-depth understanding of the complex and rapidly evolving environment of work in the digital age, shedding light on the relationships, dependencies, and challenges shaping the lives of platform workers.

The field of law closely examines the intricate legal dimensions surrounding the dynamic realm of OLPs. The observed papers focus on the complex interplay between labour rights, employment status, and technological advancements, often exploring legal innovations to protect workers' rights (Zengyi 2022). The research delves into issues such as algorithmic management (Veale, Silberman and Binns 2023; Kloostra 2021; Todolí-Signes 2021), insurance coverage for third-party damages (Andersen 2022), multiparty work

relationships (Rodríguez Cardo and Álvarez Alonso 2022; Munkholm 2022), and worker representation (Bertolini and Dukes 2022). Researchers critically assess existing laws and propose regulatory solutions to balance the flexibility platforms seek and the rights and security that platform workers deserve.

4 DISCUSSION

The rapid global proliferation of OLPs has transformed how work is organised and conducted. Scholars have shown a keen interest in investigating OLPs due to their transformative impact on traditional work arrangements and the complex interplay of technological, economic, and social factors.

The largest share of papers and evidence on OLPs comes from the US. This likely reflects the country's prominent role in technological innovation and its robust research ecosystem focused on the intersections of labour, technology, and digital entrepreneurship. It can be argued that a substantial share of papers in the sample come from the US and is closely linked to its extensive population of freelancers, fostering an environment conducive to an in-depth exploration and analysis of OLPs.

Scholars from the UK also play a substantial role in expanding the breadth of academic inquiry into OLPs. This can be attributed to the presence of advanced academic institutions, a strong research culture, and a thriving digital economy. This is evident in a European Commission publication highlighting the UK's highest incidence of platform work within the EU (Pesole et al. 2018). Collectively, these factors create a fertile ground for the comprehensive exploration and analysis of this developing field.

However, the swift expansion of OLPs has also brought about many challenges. Issues such as labour rights, worker protections, income, gender inequality, and the erosion of traditional employment structures have emerged as critical concerns. Additionally, questions regarding platform accountability, data privacy, and the potential for algorithmic biases in task allocation have garnered attention. As OLPs continue to reshape the global labour landscape, addressing these issues becomes imperative to ensure a fair and sustainable future of work in the digital age.

Drawing from a thorough examination of scholarly publications and the concerns arising from the rapid expansion of OLPs, this investigation posits potential avenues for future research agenda:

- Further research should explore the issue of earnings distribution, job insecurity, and precarious employment among workers on online platforms (Muntaner 2018) in more detail to shed light on whether and how the gig economy exacerbates uncertainties in the job market. By dissecting the implications of this research, scholars can provide insights into strategies to ensure more stable and secure working conditions.
- Further studies should comprehensively investigate regulatory approaches to safeguard workers' rights within the gig economy (Rosin 2022; Georgiou 2022). By assessing the feasibility and effectiveness of implementing measures such as fair treatment and minimum wages for gig workers and evaluating existing regulations, scholars can help identify gaps and shortcomings

and formulate new models for governing OLPs. The research should also consider the responsibility of platforms in ensuring fair worker treatment in the digital economy.

- Future research agenda should focus on the relationship between digital platforms, algorithms, and workers (Bellesia, Mattarelli and Bertolotti 2022). This exploration could provide insight into how algorithmic control influences labour conditions and worker autonomy and demystify its role in shaping the future of work. With this in mind, special attention should be paid to the ethical considerations of algorithmic decision-making.
- Future studies should provide more evidence on the inclusivity dynamics within OLPs. By examining gender-based aspects of participation (Gerber 2022; Rodríguez-Modroño, Pesole and López-Igual 2022), earnings, and overall experiences within online gig work, researchers can uncover potential disparities and distinguish their drivers. Additionally, the investigation into the unique challenges faced by marginalised groups should be the focus of future scholarly attention (Webster and Zhang 2020; Riordan, Robinson and Hoffstaedter 2022). This research could highlight strategies to enhance inclusivity, equity, and representation within the digital labour landscape and help create regulatory frameworks and policies to foster a more inclusive future of work.
- The forthcoming research agenda should include the examination of online platform workers' potential to leverage collective power in shaping labour conditions (Mendonça and Kougiannou 2022). This

research agenda should focus on illuminating innovative models of collective action that can empower online platform workers to voice their concerns, advocate for fair treatment, and contribute to the ongoing discourse surrounding labour rights and platform governance.

- Another avenue for further research includes additional development of subtopics within the OLP studies, including labour economics, technology and computer science, sociology and ethics of work, law and policy, psychology, geography and labour force migrations, and business management.

Our study's findings contribute to advancing scholarly knowledge in the domain of OLPs. Within this thriving field of research, research interest is steadily increasing due to the growing flexibility and mobility of labour practices. While this study holds potential value for several stakeholders, its most significant implications are for researchers specialising in public industrial relations and labour, management, economics, sociology, and law.

The findings of this study clear up the path for further investigations into OLPs. However, the bibliometric methodology used in this study has several potential limitations. Firstly, the use of comprehensive research phrases to produce articles on OLPs narrows the scope of this study. Further studies can horizontally extend research phrases to encompass specific topics related to the future of OLPs, such as automation, niche platforms, digital identities, labour rights, economic policies of labour platforms, education, upskilling, and many others. Secondly, the use of the Web of Science data-

base restricts access to other quality publications (i.e., from the field of computer science) that are not included in this database. Further studies should consider integrating publications from Scopus, Crossref, various preprint databases, and Google Scholar. Finally, this bibliometric study has only considered publications in English, thus limiting the findings to a global context.

5 CONCLUSION

OLPs have attracted significant scholarly attention in the last few years, with a gradual increase in the number of papers published on this topic. Nonetheless, the overall volume of such publications is still in its early stages.

The future scope of research into OLPs holds substantial promise for further exploration and understanding. As these platforms continue to reshape the global labour landscape, several key avenues warrant investigation. The evolving nature of work relationships and the legal classification of platform workers as

independent contractors or employees is an essential area for deeper analysis. Additionally, the impact of algorithms and artificial intelligence on task allocation, worker earnings, and platform dynamics remains a critical research focus. Examining worker well-being, job satisfaction, and the potential for social isolation within the gig economy ecosystem offers another dimension for exploration.

Furthermore, the study of regulatory frameworks, their effectiveness in safeguarding labour rights, and the potential for cross-border collaboration in regulating platform work will continue to gain importance. Ethical considerations, such as data privacy, algorithmic fairness, and the potential to exacerbate income inequality, are fertile grounds for inquiry. In summary, future research in OLPs will explore multifaceted dimensions that shape the future of work, necessitating interdisciplinary collaboration and innovative methodologies to address the evolving challenges and opportunities within this dynamic field.

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Data Availability Statement

Data are available from the authors upon request.

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Bibliometrijska analiza i pravci budućih istraživanja u oblasti onlajn platformi za rad

SAŽETAK

Pojava onlajn platformi za rad je preoblikovala postojeće radne prakse, obezbeđujući digitalno tržište koje povezuje nezavisne izvođače sa kratkoročnim potrebama za radnom snagom. Ovo istraživanje predstavlja opsežnu bibliometrijsku analizu novonastalog korpusa znanja u oblasti onlajn platformi za rad, ukazujući na višestruke pristupe u istraživanju ovog novog oblika rada u različitim akademskim disciplinama. Sa skupom podataka koji se sastoji od 358 radova objavljenih između 2013. godine i avgusta 2023. godine, ova studija ukazuje na ključne trendove, geografsku distribuciju i naučna interesovanja koja karakterišu istraživanje u oblasti onlajn platformi za rad. Analiza otkriva konzistentan rast pažnje naučnika prema onlajn platformama za rad u toku posmatranog perioda, odražavajući brzu globalnu ekspanziju ovih platformi. Rezultati analize prostorne distribucije naučnih istraživanja nisu u skladu sa obimom korišćenja onlajn platformi za rad u različitim zemljama, što ukazuje na uticaj različitih kontekstualnih faktora na istraživački interes. Studija otkriva širok spektar akademskih disciplina koje se bave istraživanjem onlajn platformi za rad, uključujući industrijske odnose i rad, menadžment, ekonomiju, sociologiju, pravo i računarske nauke. Ovaj interdisciplinarni pristup naglašava uticaj onlajn platformi za rad na tradicionalne radne angažmane, podstičući istraživanja o kompleksnoj interakciji tehnologije, ekonomije i društvenih aspekata. Analizirajući uvide iz naučnih publikacija i evoluirajuće izazove koje postavljaju onlajn platforme za rad, studija predlaže kritične pravce za buduća istraživanja. Raspodela zarade, nesigurnost posla i regulatorni pristupi za zaštitu prava radnika u okviru gig ekonomije identifikovani su kao ključne oblasti za buduća istraživanja. Pored toga, odnos između digitalnih platformi, algoritama i iskustva radnika, kao i dinamika inkluzivnosti unutar onlajn platformi za rad, zahtevaju dodatnu pažnju istraživača. Potencijal radnika na onlajn platformama da iskoriste kolektivnu moć u oblikovanju uslova rada takođe se izdvaja kao jedan od budućih pravaca istraživanja. Dok nalazi ove studije doprinose postojećem korpusu saznanja o onlajn platformama za rad, metodologija sadrži izvesna ograničenja. Oslanjanje na specifične ključne reči prilikom sprovođenja bibliometrijske analize može ograničiti obuhvat radova, što ukazuje na potencijal za uključivanje većeg broja ključnih reči. Uključivanje publikacija iz različitih baza podataka i na različitim jezicima može obezbediti sveobuhvatniju analizu. Bez obzira na navedena ograničenja, ova studija pruža ključnu osnovu za buduće istraživačke poduhvate u oblasti onlajn platformi za rad. Ovim radom se naglašava potreba za suočavanjem sa brojnim izazovima koje postavljaju onlajn platforme za rad, a istovremeno najavljuje transformativni potencijal ovih platformi u oblikovanju budućnosti rada u digitalnoj eri. Kako onlajn platforme za rad nastavljaju da se razvijaju, interdisciplinarna istraživanja su imperativ u informisanju o pravičnim i održivim radnim praksama.

KLJUČNE REČI

onlajn platforme za rad, gig ekonomija, bibliometrijska analiza, sistematski pregled literature, VOSViewer