

Reflection on Development of Digital Labour Research

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Abstract: The new millennium has ushered in an age of new technologies, which has transformed the traditional form of labour work and given rise to non-standard forms of employment. Prominent among them is the rise of digital labour. This article reflects on the development of peer-reviewed literature on digital labour, by doing a scientometric analysis of the documents indexed in the Web of Science and Scopus databases. Using the package *Bibliometrix* in R Studio, 623 documents from both databases were analysed for performance and thematic analysis. The results show the development of the research theme revolving around the internet and social media, which has primarily catalysed the growth of digital labour since 2010. This phase of research has suggested that the value created by unpaid user-generated data as a sort of digital labour amassed by "digital capitalists" should be explained by Karl Marx's theory. In the second phase, labour was geographically separated and worked remotely via the internet, which broke down barriers to migration. Work was also relocated to labour markets with lower labour costs, which negatively impacted employment conditions. Research on gig economy workers—those without long-term employment contracts—and the "Uberization" of labour markets come next. Thematic study raises concern about fair working conditions for the non-standard work that has emerged in the past ten years, as well as the potential return of trade unions.

Keywords: Digital labour, Gig economy, Platform economy, Scientometric analysis, Bibliometrix

1. Introduction

Labour, amongst all the factors of production, has certain unique characteristics which sets it apart from other means of production. These distinguishing characteristics include perishability, limited mobility, physical presence and inseparability of labour from labourer. The advent of Information and Communication Technology and the large spread use of internet has transformed this traditional characterization of labour. The rise of internet and social media has led to the emergence of new forms of work,

where the geographical proximity of employee, employer and client doesn't impact the delivery of work (Graham et al., 2017). The work which is done on the internet transcends national boundaries, time zones and doesn't need migration of labor. The phenomenon of this digital work emerged in 2000s and has been gaining momentum with greater penetration of social media and use of artificial intelligence.

Digital work has given rise to a new form of labour known as digital labour. Scholz (2012) defines digital labour as both

“waged and unwaged work taken on digital media”. Whereas, digital labour has been defined as “unpaid and paid workers in the digital economy” by Bukht & Heeks (2017). The inclusion of unpaid work in digital media in these definitions relate to the content and data created by the users of social media, which is eventually monetized by the social media houses. This new type of work which crosses the traditional employer-employee relationship has piqued the interest of many social scientists. It is opined by them that digital work is not only precarious but also leads to commodification of labour and creates surplus value for digital capitalists.

Study of the historical path of paid digital labour can be divided into two phases – one which started three decades ago in form of outsourcing of non-core business processes by advanced nations to low cost locations like India, by leveraging on digital technologies commonly known as BPOs. The second phase, is of platform related work, which is either geographically tethered or is cloud based. Geographically tethered is location based work requiring workers to be at a specific place, but the work is organized through internet generally an app e.g. Uber driver. On the other hand, cloud work is organized over the internet and requires workers to work remotely and in majority of the times these workers don’t know each other e.g. micro work offered Amazon Mechanical Turk.

This paper, using a scientometric methodology, analyses the peer-reviewed literature on digital labour. Hess (1997) defines scientometric analysis as the “quantitative study of science, communication in science, and science policy”. This technique is helpful to assess

the impact of research through citation mapping, prolific and influential authors, journals, and countries, along with helping to discover future research trends. Using the journals indexed in the world’s two largest peer reviewed literature databases – Web of Science and Scopus, 623 documents are retrieved to conduct a performance analysis as well as the thematic analysis on digital labour. The paper is divided into four sections starting with Background. Section 2 of this paper explains the methods, followed by results and discussion in Section 3 and conclusion in Section 4.

2. Methods

The aim of the study is to map the growth of literature on digital labour, to identify authors, documents, journals, and countries that are most representative of digital labour research. Corresponding to this, the objective is also to map the thematic evolution of the subject of digital labour and identify future trends, which will help identify the research gaps.

The data for the study was obtained by retrieving documents with main keywords “digital labour” or “digital labor” from Web of Science and Scopus databases. The merging of documents from both the databases ensured coverage of maximum number of documents. Most of the bibliometric and scientometric study are based on either of the two electronic databases. However, for an emerging research area of digital labour/labor, synthesizing the documents on both the databases will offer better insights into the emerging research area.

The data was retrieve from both the databases on 18th October, 2023 with the topic, keywords in search used were

“digital labour” or “digital labor”. The search resulted in 894 documents indexed in both the databases. These were further filtered to include documents in English language and Editorials, Review papers, Notes, Short survey and Conference reviews were excluded. These documents were exported in as .txt files and using *Bibliometrix* package were merged and

analysed in R environment. *Bibliometrix* is an open source tool developed to construct bibliometric and scientometric analysis in R by Massimo Aria and Corrado Cuccurullo in 2017 (Aria & Cuccurullo, 2017).

Table 1 gives a tabular description so the search methodology used to retrieve the documents from both the databases.

Table 1: Search methodology for data collection

Database	<i>Web of Science</i>	<i>Scopus</i>
Query date:	18/10/2023	
Topical query	“Digital Labour” or “Digital labor”	
Time period	1989-2023	1960-2023
Total results	343 documents	658 documents
Exclude	Editorials, Review papers, Notes, Short survey and Conference reviews	
Language	English	
Total results:	343 documents	658 documents
Documents after filter:	326	568
Total documents	894	
Merged the databases using R studio. Duplicated documents found and deleted in R studio	271	
Total documents analyzed in this study	623	

3. Findings and Discussion

Annual Scientific Production

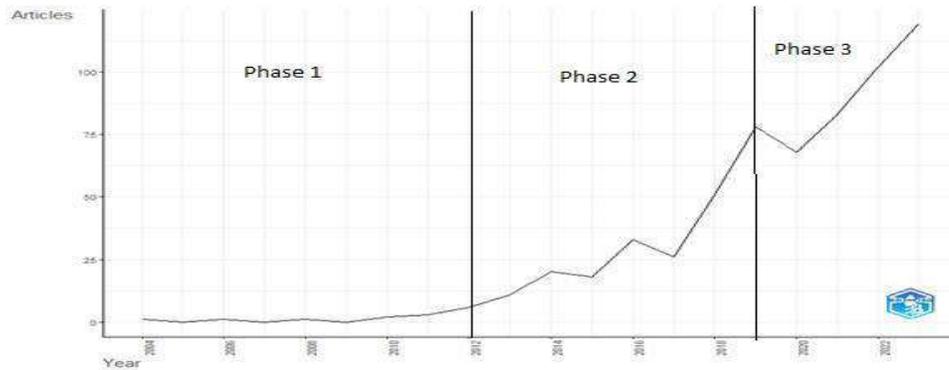
325 sources, including journals, books, and conference proceedings, have published 623 documents on the topic of digital labour. The first article on digital labour authored by Michelle Glaros, titled “The Academy in the Age of Digital Labour,”, was published in 2004, wherein she focused on the challenges of educators while imparting skills to students who will be a part of the digital labour market.

There is a 28.6% annual growth rate in publications since 2004 and the average age of the document is 3.27 years. Figure 1 exhibits the growth in the publications on digital labour from 2004-2023 which can be divided into three phases. Phase 1 (2004-2012) deals with theorising of the concept of digital labour. This phase was marked by increased adoption of internet not only by business but also by consumers and software development. This was also the era of social media like Facebook, YouTube

and Twitter gaining popularity. The content created by the users of these social media brought forth the concept of “unwaged work” as the authors of this period have focused on two keywords- internet and culture. Phase 2 (2013-2019) is characterised by the further development of knowledge in the field of digital labour with the introduction of cloud based crowd work, working conditions of labour engaged in

information technology industry and gender issues of digital work. The empirical literature on niche fields of digital labour like gig economy, new class labour known as influencers, artificial intelligence and big data has emerged in the last phase from 2020-2023. This was also the time which coincides with the COVID pandemic which has positively impacted the growth of digital labour around the world.

Figure 1: Annual Scientific Production



Source: Author interpretation from data extracted from *Bibliometrix*

Relevant and Influential Sources:

Bradford’s Law is used to identify the most relevant sources. Bradford’s Law formulated in 1948, makes a case that in any subject area there are very few productive journals and divides the journals in three zones. Zone 1 comprises of core journals which are referred and most frequently cited followed by Zone 2 and 3 journals in order of their importance to the subject.

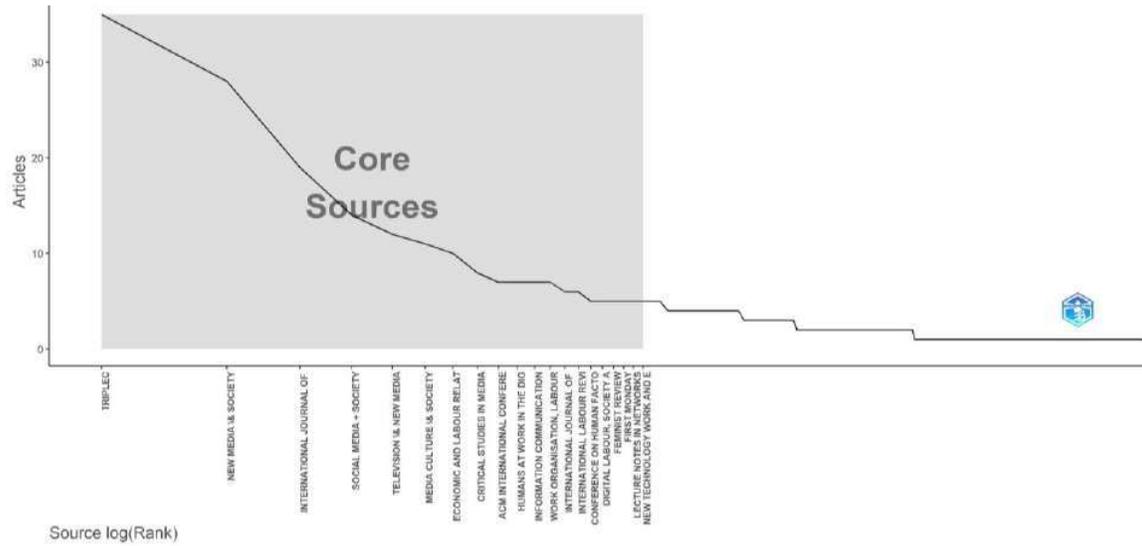
Figure 2 shows that as per Bradford’s Law, top twenty journals in Zone 1 are core sources, with 207 publications which is 33% of the total publications. Triple C has the highest number of articles and is the topmost relevant source, closely followed

by New Media and Society. The h-index of a journal is a metric used to measure the performance of a journal. Table 2 gives the top 10 journals having published articles on the topic of digital labour.

Most impactful sources based on local citation

Table 2 gives the details of ten most impactful journals on digital labour. The h index is a performance metric based on the number of citations received by the articles in published in the journal. New Media & Society and Triple C are the top two most influential sources with h index of 12 indicating that there at least 12 articles in these journals have been cited at least 12 times.

Figure 2: Core Sources as per Bradford's



Source: Author interpretation from data extracted from Bibliometrix

Table 2: Most impactful sources

S.no	Journal	h_index	TC
1	New Media & Society	12	696
2	Triple C	12	694
3	Social Media + Society	8	283
4	International Journal Of Communication	6	167
5	Television \& New Media	6	136
6	Critical Studies In Media Communication	5	137
7	Media Culture \& Society	5	100
8	Communication Culture \& Critique	4	128
9	Economic And Labour Relations Review	4	43
10	Feminist Review	4	62

Source: Author interpretation from data extracted from Bibliometrix

Combining both the relevant and impactful sources, New Media & Society, Triple C, Social Media+Society and International Journal of Communication are top four sources which should be referred for research on digital labour.

Most prolific and influential authors

An aggregate of 951 authors contibuted to these 623 documents on digital labour.

Table 2 gives the top ten prolific and influential authors. The results reveal that Christian Fuchs, Professor at Uppsala University, Department of Informatics and Media is the most prolific author with 15 documents on digital labou. He is also second most influential author and his work is largely on relevance of Marxian theory on the commodification of digital labour in the age of communication and infomration

technology. He widely disusses on how internet is leading to digital capitalism and why Marx theory of surplus value is all the more relevant to understand “digital labour surplus value.” Mark Graham from Oxford University is second most prolofic and influential author who has pioneered the workon gig economy workers.

Table 3: Most prolific and influential authors

S.N.	Name of author	Number of Publications	Subject area	Affiliation
1	Fuchs, C.	15	Marx, Capitalism and exploitation of digital labour	Uppsala University
2	Graham, M.	10	Platform Econoy, Gig Economy, Democratisation Of Labour	Oxford University
3	Fieseler, C.	9	Meaningful Work Of Digital Labour, Corwd Working Platofrms, Digital Microwork	Norwegian Business School (BI)
4	Bucher, E.	6	Meaningful Work Of Digital Labour, Corwd Working Platofrms, Digital Microwork	BI Norwegian Business School
5	Casilli, A.	4	Sociological Aspects of Digital Platform Labour	
6	Elbanna, A.	5	Crowdworkers	Royal Holloway University of London
7	Heeks, R.	5	Platform Economy Workers In Africa And Pakistan, Covid And Platform Econmy Workers	University of Manchester
8	Idowu, A.	5	Crowdworkers	University of Sussex Business School
9	Soriano, C.	5	Platform Economy Workers In Global South	De La Salle University
10	Van, B. J.	5	Decent Work Standards Of Platform Economy Workers, Focus On Gig Workers In Africa	Oxford University

Source: Author work from data extracted from Bibliometrix

Table 4 gives the ten most cited documents on digital labour of these authors.

Table 4: Top 10 most cited articles

Author	Year	Name of the article	Name of the Source	Total Citation
Graham, M., Hjorth, I., Lehtonvirta, V.	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	327
Fuchs and Sevignani	2013	What Is Digital Labour What Is Digital Work Whats Their Difference And Why Do These Questions Matter For Understanding Social Media	Triple C	180
Fuchs, C.	2012	Dallas Smythe Today The Audience Commodity The Digital Labour Debate Marxist Political Economy And Critical Theory Prolegomena To A Digital Labour Theory Of Value	Triplec	147
Wood, A. J., Lehtonvirta, V. & Graham, M.	2018	Workers Of The Internet Unite Online Freelancer Organisation Among Remote Gig Economy Workers In Six Asian And African Countries	New Technology Work And Employment	133
Fuchs, C.	2014	Digital Prosumption Labour On Social Media In The Context Of The Capitalist Regime Of Time	Time \& Society	107
Wood, A. J., Graham, M., Lehtonvirta, V. & Hjorth, I.	2019	Networked But Commodified The Disembeddedness Of Digital Labour In The Gig Economy	Sociology-The Journal Of The British Sociological Association	106
Fieseler, C., Bucher, E., & Hoffmann, C. P.	2019	Unfairness By Design The Perceived Fairness Of Digital Labor On Crowdfunding Platforms	Journal Of Business Ethics	64
Kost, D., Fieseler, C., & Wong, S. I.	2020	Boundaryless Careers In The Gig Economy An Oxymoron	Human Resource Management Journal	63
Fuchs, C.	2012	With Or Without Marx With Or Without Capitalism A Rejoinder To Adam Arvidsson And Eleanor Colleoni	Triple C	56

Source: Author work from data extracted from Bibliometrix

Most Relevant Countries

56 nations have contributed to research on digital labour, top three nations amongst them are USA (280 documents), UK (196

documents) and China (80 documents). The most cited countries are UK, USA and Germany indicating high quality of research in these countries. Figure 3 and 4

Figure 3: Countries' Scientific Production

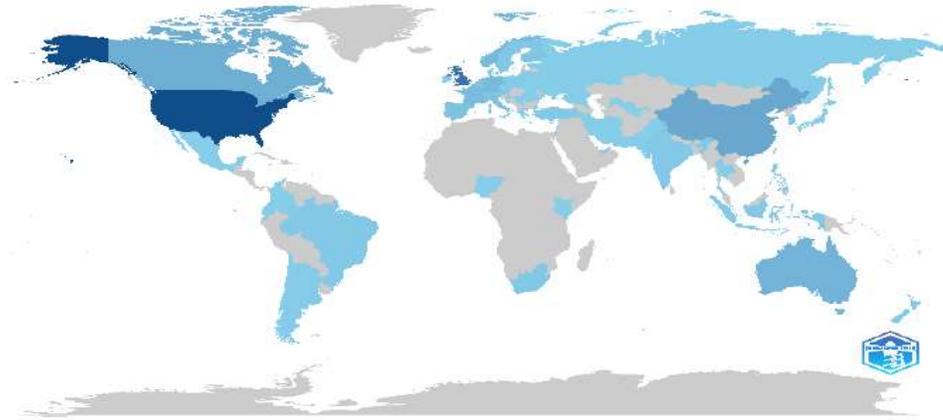
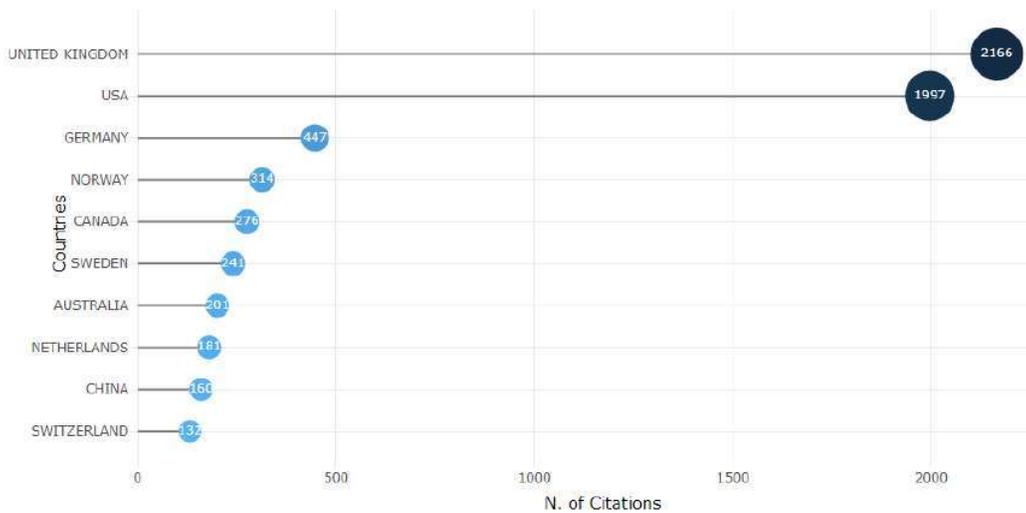


Figure 4: Most Cited Countries



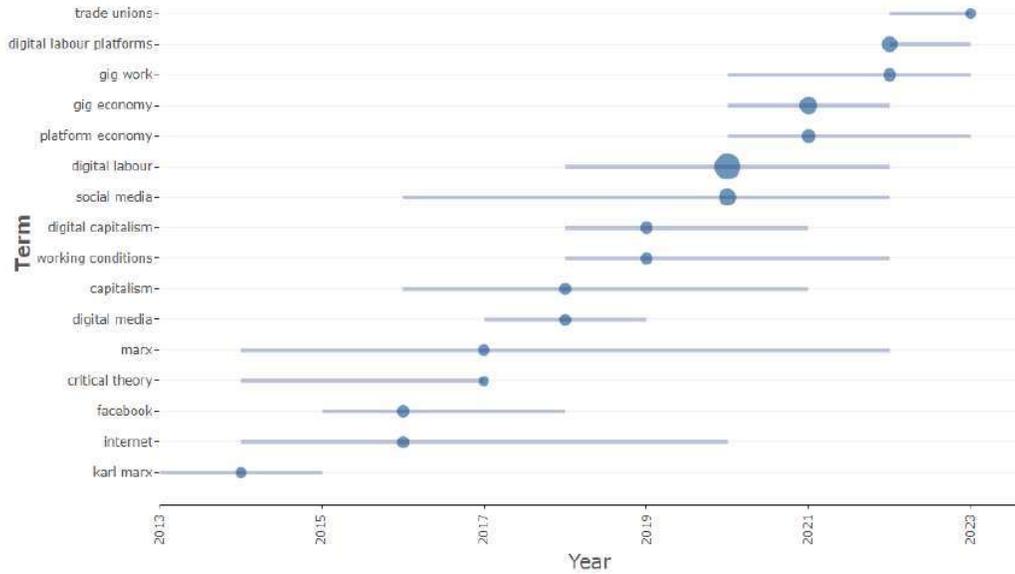
Keywords trend analysis:

Author keywords are a significant tool to draw inference on the research trends of a particular subject. It gives an idea about the future direction in which the research is progressing and can also be used to identify the research gaps for the purpose of future research. Using a minimum frequency of 5 author keywords and amongst them top two keywords, trending terms are exhibited in

Figure 5. Starting from 2013 till 2015, relevance of Karl Marx in digital labour research can be seen. The research topics have evolved over the years. Digital labour as keyword has been in prominence since 2018 and had maximum frequency (used 277 times as keyword) in 2020. In the last two years, keywords are trending towards digital labour platforms and trade unions,

indicating renewed interest in collective bargaining of worker's through trade unions.

Figure 5: Trend Topics

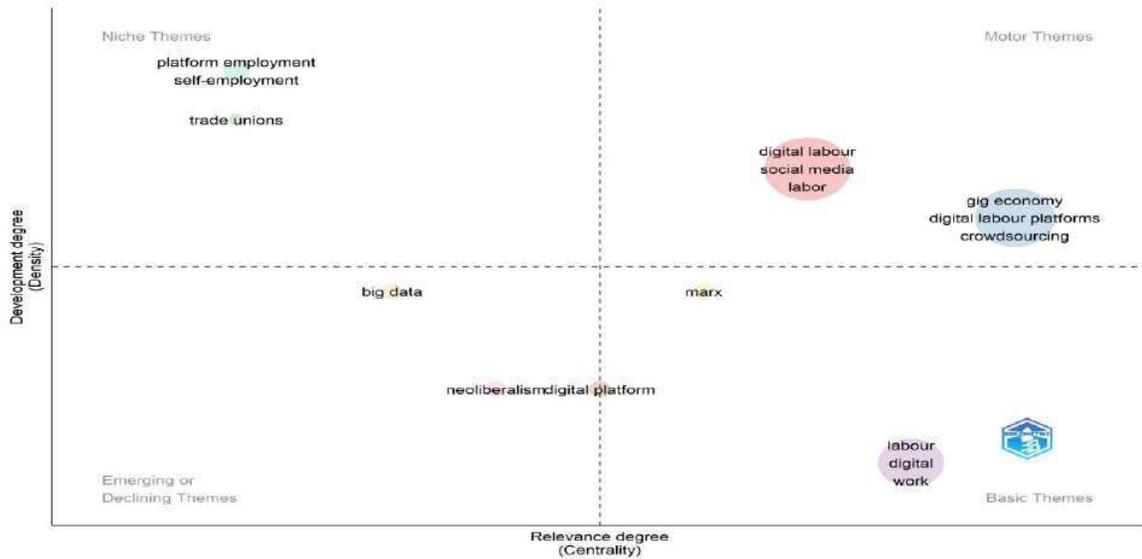


Thematic mapping

Thematic map is a four quadrant diagram divided on the basis of centrality and

density of the concept in focus. Centrality indicates correlation between the topics, whereas density refers to development of the themes.

Figure 6: Thematic Map



Quadrant 1 which is the topmost right zone indicates the motor themes whereas Quadrant 2 (topmost left zone) indicated

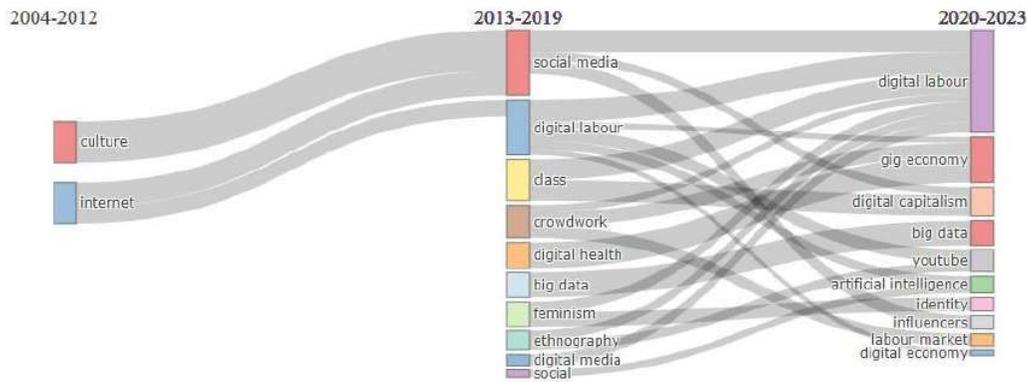
the niche themes where the research has been dense but are a specific subset of the basic theme. Quadrant 4 the bottom right

zone shows the underlying themes of the topic in question. Quadrant 3 indicates the emerging or disappearing themes. Figure 6 shows that, digital labour in both gig economy and crowdsourcing, labour in social media are the driving themes of research on digital labour, Platform employment which is viewed as self-employment and trade unions in digital labor are the niche themes and neoliberalism and big data are the emerging themes for research.

Thematic Evolution:

Thematic evolution represents an interesting development of the theme of research. Figure 7 displays the evolution of the theme of digital labour based on author keywords. The time period is divided into three sub periods starting from 2004 till 2023. A flow chart of keywords in Figure 7 showing the evolution of the research related to digital labour shows that during the first phase (2004-2012) the research focused on internet as the enabler of digital labour and culture which changed the landscape of concept of traditional labour.

Figure 7: Thematic evolution



The second phase from 2013-2019 shows the growth in research and emergence of the keyword social media and digital labour along with other related keywords –crowd sourcing, free work, big data. Research related to digital labour further grew in the third time slice from 2020-2023 which is the post COVID time period and the emergence of wave of artificial intelligence. This time period also recorded the further growth in research on digital labour. New themes of research which have emerged include gig economy, digital capitalism and artificial intelligence.

4. Conclusion:

The discussion in this paper on digital labour has brought out interesting insights on the research being carried out around the globe. The theme has gained prominence in 2012 with initial research focusing of unpaid user generated content on social media who were considered as digital labour and the role of the theory of Karl Marx in understanding the digital labour surplus value (Fuchs, 2012a; Fuchs 2012b; Fuchs, 2013; Fuchs & Sandoval, 2014). The analysis shows an upward trajectory in the growth of publications related to digital

labour, New themes of research on digital labour have emerged in the recent past as the technological advancements led to new forms of businesses. The location based work like Uber, Zomato have given rise to so called platform based self-employed on the other hand crowd sources work has led to labour going beyond the scope of local labor markets. The research till now highlights emerging themes of digital capitalism as well as renewed role of Marx and trade unions.

The limitation of the study is that only those research which are indexed in Web of Science and Scopus have been included in this scientometric analysis. Moreover, the search keywords used to select the sample could be improved to get more insights. In sum, it is hoped that the future researchers working on digital labour gain insights from this analysis regarding research niche areas and hotspots.

References:

1. Aria, M., & Cuccurullo, C. (2017). Bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics*, 11(4), 959–975. <https://doi.org/10.1016/j.joi.2017.08.007>
2. Bradford, S. C. (1953). *Documentation*. C. Lockwood.
3. Bukht, R., & Heeks, R. (2017, August 3). *Defining, Conceptualising and Measuring the Digital Economy*. Papers.ssrn.com. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3431732
4. Fieseler, C., Bucher, E., & Hoffmann, C. P. (2017). Unfairness by Design? The Perceived Fairness of Digital Labor on Crowdfunding Platforms. *Journal of*

- Business Ethics*, 156(4), 987–1005. <https://doi.org/10.1007/s10551-017-3607-2>
5. Fuchs, C. (2012a). Dallas Smythe Today - The Audience Commodity, the Digital Labour Debate, Marxist Political Economy and Critical Theory. *TripleC: Communication, Capitalism & Critique. Open Access Journal for a Global Sustainable Information Society*, 10(2), 692–740.
6. Fuchs, C. (2012b). With or Without Marx? With or Without Capitalism? A Rejoinder to Adam Arvidsson and Eleanor Colleoni. *TripleC (Cognition, Communication, Co-Operation): Open Access Journal for a Global Sustainable Information Society*, 10(2), 633–645. <https://doi.org/10.31269/triplec.v10i2.434>
7. Fuchs, C. (2013). Digital presumption labour on social media in the context of the capitalist regime of time. *Time & Society*, 23(1), 97–123. <https://doi.org/10.1177/0961463x13502117>
8. Fuchs, C., & Sandoval, M. (2014). Digital Workers of the World Unite! A Framework for Critically Theorising and Analysing Digital Labour. *TripleC: Communication, Capitalism & Critique. Open Access Journal for a Global Sustainable Information Society*, 12(2). <https://doi.org/10.31269/triplec.v12i2.549>
9. Fuchs, C., & Seignani, S. (2013). What Is Digital Labour? What Is Digital Work? What’s their Difference? And Why Do These Questions Matter for Understanding Social Media? *TripleC: Communication, Capitalism & Critique. Open Access Journal for a Global Sustainable Information Society*, 11(2), 237–293. <https://doi.org/10.31269/triplec.v11i2.461>

10. Fuchs, C., & Trottier, D. (2012). The Internet as Surveilled Workplace and Factory. *Springer EBooks*, 33–57. https://doi.org/10.1007/978-94-007-5170-5_2
11. Glaros, M. (2004). The Academy in the Age of Digital Labor. *Academe*, 90(1), 42. <https://doi.org/10.2307/40252589>
12. Graham, M., Hjorth, I., & Lehdonvirta, V. (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*, 23(2), 135–162. <https://doi.org/10.1177/1024258916687250>
13. Graham, M., Straumann, R. K., & Hogan, B. (2015). Digital Divisions of Labor and Informational Magnetism: Mapping Participation in Wikipedia. *Annals of the Association of American Geographers*, 105(6), 1158–1178. <https://doi.org/10.1080/00045608.2015.1072791>
14. Hess, D. J. (1997). *Science Studies*. NYU Press.
15. Kost, D., Fieseler, C., & Wong, S. I. (2019). Boundaryless careers in the gig economy: An oxymoron? *Human Resource Management Journal*, 30(1), 100–113. <https://doi.org/10.1111/1748-8583.12265>
16. Trebor Scholz. (2012). *Digital labor: The Internet as playground and factory*. Routledge.
17. Wood, A. J., Graham, M., Lehdonvirta, V., & Hjorth, I. (2019). Networked but Commodified: The (Dis)Embeddedness of Digital Labour in the Gig Economy. *Sociology*, 53(5), 931–950. <https://doi.org/10.1177/0038038519828906>
18. Wood, A. J., Lehdonvirta, V., & Graham, M. (2018). Workers of the Internet unite? Online freelancer organisation among remote gig economy workers in six Asian and African countries. *New Technology, Work and Employment*, 33(2), 95–112. <https://doi.org/10.1111/ntwe.12112>
