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Digital platforms and development: a survey of the literature

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ABSTRACT

The digital economy has led to significant socio-economic transformations in all aspects of our society and livelihoods. While there is a growing literature on the effect of digital platforms on development, none consolidates the available evidence from a development perspective. In this systematic literature review, we grouped the available literature into three main themes and critically synthesize and analyse the role of digital technology and digital platforms on the development of the modern economy. To enable the inclusion of a wide array of published papers, we allowed for relevant quantitative, qualitative, and mixed methods studies globally. This approach allows us to reflect on the role of digital platforms for development more broadly as well as discuss opportunities for future research.

KEYWORDS

Platform economy; digital technology; development; poverty reduction; inequality; capabilities building

1. Introduction

The rapid digital technological change has revolutionized the modern economy and all facets of life. In particular, the last couple of decades have experienced unprecedented growth and importance of the platform economy across the globe. Today, the platform economy has become global and dominant with some of the most successful and valuable firms, in terms of market value (Saberian et al. 2020; Kiesling 2020; Nooren et al. 2018). These include Airbnb in the hospitality industry; Uber, Bolt, BlaBlaCar, and Lift in the transport sector; Uber Eats and Deliveroo in the food delivery industry; Facebook and WhatsApp in the communication industry; Netflix, YouTube, and Tiktok in the entertainment industry.¹ The platform economy has therefore transformed the economic exchange of resources, both products and skills (Gössling and Michael Hall 2019).

Digital platforms (DPs) are the main drivers of the platform economy (Gössling and Michael Hall 2019) and are fundamental to the digital transformation (Idowu and Elbanna 2020; Kiesling 2020).² Given the proliferation of the internet and the widespread diffusion of mobile phones, DPs are ubiquitous and have transformed how we: engage and share experiences (Facebook, WhatsApp), move around (Uber, Bolt, Lift); buy

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products and food (Amazon, Alibaba, eBay; Uber Eat and Deliveroo); pay for goods and services (PayPal, Apple pay, Alipay); access health care (PatientsLikeMe); and share accommodation and resources (Airbnb).

As a result, there is a rapidly growing multidisciplinary research examining the effect of the platform economy on various aspects of development from different perspectives. The evidence emerging from this burgeoning literature suggests that DPs are heterogeneous and often function differently (Nooren et al. 2018), and cut across all key sectors of the global economy.³ Therefore, there are key differences in how DPs affect people and the various dimensions of development. For instance, digital platforms are positively changing and transforming peoples' lives as they provide a unique platform to connect and network (Bucci, Schwannauer, and Berry 2019), and to create new employment opportunities, innovation, and income (Koskinen, Bonina, and Eaton 2018). DPs have created and expanded market space with highly flexible production processes (Scully-Russ and Torraco 2020), and are also seen as essential in recalibrating and mediating social trust and interactions by enhancing information flow and access between individuals (Agyekumhene et al. 2018).

Despite the unprecedented growth in the macro and micro evidence on DPs, our understanding of what opportunities they hold for development remains unclear (Dufva et al. 2017; Koskinen, Bonina, and Eaton 2018). The available research focuses largely on the functioning of platforms and their governance, and on the providers (owners) of platforms with little stocktaking of the various dimensions of DPs, and consolidation of the diverse perspectives and critical knowledge gaps across different scientific domains. As a result, there is a lacuna in our understanding of the relationship between the digital economy and global development. Also, several questions remain inadequately understood. For instance, how are digital platforms transforming everyday lives through value creation, addition, and capture? How are digital platforms promoting empowerment and inclusiveness or otherwise in the larger society? In labour markets, how are platforms transforming the nature of work, and changing labour dynamics and power relations between employers and employees? Are digital platforms changing the development discourse of countries, particularly developing economies? What are the key broad research gaps in the literature?

This paper aims to contribute to these broad research questions. We aim to differ by scoping, synthesizing, and scrutinizing the literature on digital platforms from an international development context. Specifically, the paper analyses available studies that link digital platforms and development (broadly defined), and critically analyses the role of digital platforms in spurring development across different contexts. For this reason, we surveyed the literature without focusing specifically on developing countries, as this is not the specific objective of the paper. Moreover, we noticed that there is scant related literature in developing countries. As a result, we conducted a thematic analysis to identify and outline three main thematic areas – job creation, inclusion, and value creation – that are dominant and cross-cutting in the literature focused on the role of digital platforms on economic development. We further explored the effect of DPs on these three aspects of economic development and how policy can leverage the positive effects of DPs to improve the well-being of citizens. We then delineate directions and areas for future research.

This paper provides a broad reflection on the role of digital platforms for development as well as discuss opportunities for future research. The paper adds to the literature by consolidating the available evidence from a development perspective and providing a comprehensive understanding and experiences of digital platforms by bringing together disparate bodies of research on digital platforms and development in development settings. We discuss the identified gaps and possible directions and suggestions for future research.

The remainder of the paper is structured as follows. Section 2 discusses the methods and the step-by-step procedure employed in the systematic literature review. Section 3 identifies and thematically assesses the available literature on digital platforms from a development standpoint.

2. Method

In this section, we present the methods and approaches used in identifying and obtaining our eligible studies on which the thematic analysis presented in this paper is based. Given that the literature on digital platforms is relatively new but interdisciplinary, we systematically searched the Web of Science (WoS) database for relevant published (peer-reviewed) articles across all disciplines covering the period 2000–2019. For this reason, while we restrict our studies to those published in English, and no additional restrictions were placed on the subject of the study and their geographical locations. Table 1 shows all keywords employed in the search.⁴ The selection of keywords was based on an initial keyword search of relevant papers in the field which were then discussed and accepted as relevant by the research team. We relaxed and allowed for broad eligibility criteria to include all relevant publications that employed either quantitative or qualitative or mixed methods. For instance, while searching with the term ‘development’ is identified to be problematic in the literature (Jurowetzki, Lema, and Lundvall 2018), we purposefully used this term to obtain a wide range of literature in order not to miss relevant papers. We then conducted several screenings of the identified literature to make sure the sampled papers are relevant to our objective.

In total, we identified 668 articles from the database search. Following Dann, Teubner, and Weinhardt (2019), we conducted an additional backward and forward search for studies we might have missed, generating an additional 10 studies. In total, we obtained 678 studies from our search. We then screened the identified studies by abstracts based on their relevance to obtain 232 articles for introduction and conclusion screening. At the second step, we obtained 112 articles on which we conducted the full-text screening. We obtained a total of 25 articles as the eligible

Table 1. Keywords, combinations, and the total number of studies identified.

Keywords		WoS categories	Timespan	No. of studies
Platform economy (‘Platform economy’ OR ‘digital platform*’ OR ‘gig econom*’)	AND Development (Development OR ‘inclusive* development’ OR ‘capabilit* development’ OR ‘economic development’ OR ‘social development’ OR ‘socio-economic development’)	Indexes: SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR- EXPANDED, IC.	2000–2020	678

number of articles and then critically examined all eligible articles by classifying them into 3 broad themes based on the use of digital platforms for development: value creation, job creation, and inclusion. The graphical depiction of our screening processes and steps are shown in Appendix B.

Given the fact that the eligible articles are highly heterogeneous and that digital platforms have multi-dimensional effects, the thematic grouping and analysis allowed us to better synthesize and analyse the evidence by specific areas of economic development. If a study examines multiple themes, we classify it in the main theme as identified after reading the entire paper. Based on these themes, we extract from the selected studies information on the objective, data, the method employed, and discussions and findings on how digital platforms are influencing economic development. The next section presents the thematic synthesis of our findings based on the review of the literature.

3. Thematic analysis

In this section, we categorize and present thematic synthesis and discussion of all eligible literature that have been identified in our search. As noted, we grouped each paper into three main themes as value creation; job creation/employment; and inclusion, based on cross-cutting and dominant issues identified in the literature. We present below the scooping and synthesis of the literature based on these themes.

3.1. Platform economy and income generation/value creation

The last decade has seen digital technologies and platforms transform business models, value creation, and personalized customer experiences. The literature recognizes the proliferation and the economic importance of multi-sided platform-based markets such as Alibaba, Amazon, and eBay among others, in facilitating the interaction and exchange of goods and services. These transformations and diverse innovations have enabled leading platforms to build and maintain a competitive advantage but also create personalized customer experiences. This business model enables firms to create value (Kiesling 2020).

Today, platform companies are the fastest-growing companies in the world (Dufva et al. 2017), capturing significant market shares and power (Hanninen, Mitronen, and Kwan 2019). They have aided the transformation of the sharing economy into for-profit transactions as societies get more connected (Gössling and Michael Hall 2019). Digital platforms have therefore revolutionized how economic value is created and distributed by facilitating and coordinating exchange between actors, be it in production and consumption (Kiesling 2020). These exchanges are becoming smart and efficient due to DPs (Royakkers et al. 2018).

As a result, DPs have become the 'globally dominant intermediaries' enhancing new transformative ways of production and consumption (Gössling and Michael Hall 2019, 75). Nooren et al. (2018) categorize the revenue model of digital platforms into 4 main categories: (1) platforms that generate their revenue through direct payments by users or transaction-based, e.g. Netflix, Amazon Marketplace, and Spotify, Apple and Microsoft for advanced services; (2) platforms that generate revenues through advertisement,

e.g. Alphabet, Facebook and YouTube; (3) platforms that generate revenue through access models to developers and sellers, for instance, Apple's App Store; (4) platforms that rely on their future value based on the acquisition or growth of users to generate revenue, e.g. WhatsApp and Facebook.

DPs are a 'value creation system' connecting actors around an activity or need and enables them to collaborate, allocate and use resources more efficiently, and co-create value for each other' (Dufva et al. 2017, 6). Digital platforms create value based on their ability to generate network effects – direct and indirect – enabling them to enjoy economies of scale. Direct network effects emerge when the number of users of the platform increase, while the indirect network effect is generated when the platform can amass users (e.g. consumers) to the benefit of sellers, for instance (Nooren et al. 2018). While these effects are not exclusive and some platforms exploit both network effects, digital platforms such as Skype, Zoom, LinkedIn, Facebook, and WhatsApp generate direct effects while Amazon Marketplace is typically associated with indirect network effects (Nooren et al. 2018). Economies of scale and scope can also emerge from firms operating more than one platform, allowing them to compete but also utilize data from all platforms to synergy and create value by improving the experiences of users. 'The operation of multiple interlinked platforms creates multiplier effects' (Nooren et al. 2018). These network effects also have the potential to generate market powers and monopolies that may restrict competition and efficiency of the digital platform space. These may have implications for innovation and growth more widely.

Digital platforms have therefore enabled transformation in the industrial value creation process (Schmidt et al. 2019). The literature also recognizes the transformations experienced over the last decades from retail services 1.5–2.0, for instance. DPs, particularly service platforms, have transformed how economic value is created (Hein et al. 2019). For Hanninen, Mitronen, and Kwan (2019), these transformations explain the proliferation of the platform economy with increased customer orientations (both online and offline) and innovations in the retail sector. The retail sector has some of the most dominant multi-sided marketplaces across the world, creating value through the intermediation of buying and selling of goods and services that is focused on customers' convenience, efficiency, engagement, and designs (Hanninen, Mitronen, and Kwan 2019).

The literature also recognizes the role of broader institutions on how platforms create value and innovate. There is established literature in economics on the role of property rights on the innovation of firms (see for instance Teece 1986). In this line, Miric and Jeppesen (2020) analysed the effect of property rights on revenues of and innovations in digital platforms. The authors find that while weak property rights lead to imitation and piracy resulting in the reduction in incremental innovations, this does not affect major or radical innovations on platforms and the diffusion of product innovations. On the contrary, the authors find evidence that suggests that imitation in digital platforms result in the innovation of new products. Hein et al. (2019) in their study of Internet of Things (IoT) B2B platforms found similar conclusions indicating the importance of property rights in the co-creation of value in DPs.

Nooren et al. (2018) evaluated Facebook as a social network platform to a framework that examines the heterogeneous characteristics and the specific public interests and policies in the digital space. The authors recognize the significant value advertisement plays

in the revenue model of Facebook. Given a large number of users, about 1.9 billion users a month, Facebook has very strong network effects that directly impact its innovative and competitive activities. Facebook has recently acquired WhatsApp, thereby further linking its operations across multiple platforms and scope. The data mined and innovatively used by Facebook enables it to have a competitive advantage in terms of how they target consumers through adverts.

DPs also create value for consumers through the provision of convenience and flexibility (Semyachkov 2019). The available evidence shows that DPs have transformed value creation from company-based to a 'mutual value co-creation processes' mainly between customers and service businesses (Hein et al. 2019; Schmidt et al. 2019). It fosters interactions between customers and businesses resulting in higher collaborations and enables firms to reach a wider audience, leading to economies of scale and scope benefits (Schmidt et al. 2019). These multi-sided platforms and interactions have the potential to generate innovations, generate enhanced customer experiences, and hence additional profits. These further facilitate knowledge flows and foster collaborations and recombination of knowledge to create new collective value, new market places, and improved efficiency in older markets, but also new opportunities for businesses and consumers to extract value (Semyachkov 2019).

The literature abounds with works examining value co-creation in business-to-business (B2B) and business-to-consumer (B2C) platforms (for a summary of the literature, see Hein et al. 2019). For instance, Simonsson, Magnusson, and Johanson (2020) consider the 'servitisation' of manufacturing firms to create closer interactions with customers. This is seen to have the potential to generate new businesses that are customer-oriented and higher sales and profits (Simonsson, Magnusson, and Johanson 2020).

While several authors mention value created from platforms, there is little examination of value creation on digital platforms. DPs create value for both customers, agents, and Uber for instance, by arranging a seamless interaction between customers looking for a ride and those looking to provide a ride. DPs enable sustainable resource use as individuals can have access to and consume goods not owned. Platforms are driving competition between new entrants and incumbent firms (Montalban, Frigant, and Jullien 2019) with severe disruptions. The case of Uber disrupting the taxi industry, Airbnb the hotel industry. Given their digital and the network effect of platforms, lack of regulations, platform firms tend to have a competitive advantage over incumbents.

Despite the widespread of DPs, there is little evidence of their positive effect on labour productivity and long-term growth (Montalban, Frigant, and Jullien 2019). There are contrary views as well regarding the value creation effects of DPs. While the DPs create new services and satisfaction for consumers and users, DPs generate little value for capital or profit, with young and small DPs tending to 'destroy value' (Montalban, Frigant, and Jullien 2019). The value created by DPs is still uncertain given that DPs reengage in a 'redistribution of surplus value rather than value creation' (Montalban, Frigant, and Jullien 2019, 14). Given that most activities on digital platforms are informal, that is not covered by law, a lot of users escape from the payments of taxes. However, most cities charge taxes on Airbnb bookings, generating additional public funds for development (Dann, Teubner, and Weinhardt 2019).

3.2. Platform economy and job creation/employment

Digital platforms have led to a major wave of digital transformation in the world of work and labour markets across the world. DPs have become a critical medium through which labour is sourced and a flexible workplace for a growing number of independent contracts, gig, and on-demand workers (Altenried 2020; Rani and Furrer 2020; Scully-Russ and Torraco 2020). Today, online labour platforms are a global characteristic and an integral part of the labour market landscape and broader transformations in most countries (Galperin 2019; Graham, Hjorth, and Lehdonvirta 2017). As a result, online work is experiencing tremendous growth with an increasing number of people working on online freelance platforms in recent years (Idowu and Elbanna 2020; Scully-Russ and Torraco 2020).⁵

The available literature shows that DP-mediated works, known as the gig economy, have transformed and reshaped work and the nature of work (Corujo 2017; Anwar and Graham 2020; Scully-Russ and Torraco 2020). The gig economy has become a key source of livelihood, enabling labour to transcend local labour markets and its restrictions by lowering transaction costs mainly generated from information asymmetry (Anwar and Graham 2020; Rani and Furrer 2020; Lehdonvirta et al. 2019). Digital work, which includes micro and macro tasks that are digitally transported but performed locally, has been identified also to have tremendous potential in the provision of jobs and job opportunities to the marginalized and untapped labour force, particularly women and migrants who were hitherto excluded from the labour force (Altenried 2020; Anwar and Graham 2020; Rani and Furrer 2020; Dunn 2020; Lehdonvirta et al. 2019; Graham, Hjorth, and Lehdonvirta 2017). Some scholars even postulate the end of traditional forms of work and jobs as a result (Stanford 2017), with available evidence in the United States of America (USA) supporting this assertion (see Taylor and Joshi 2018). This is largely due to the low-entry barriers and the flexibilization of work (Rani and Furrer 2020), leading to a lower number of permanent jobs (Scully-Russ and Torraco 2020).

In particular, crowdwork platforms, for instance, are increasingly the dominant new workplace for digital labour, aiding the flexibilization of work into the new digital age and forms, thereby transforming labour markets across different sectors, the world of work, and workforce (Altenried 2020; Idowu and Elbanna 2020; Rani and Furrer 2020; Jäger et al. 2019). While crowdwork platforms exist in diverse forms and are used for different purposes, they have led to further fragmentation, flexibility, and individualization of work (Alanezi and Alanzi 2020; Altenried 2020).

Consequently, the literature examining digital platforms and their labour market implications has grown rapidly, particularly on the so-called gig-economy. The literature suggests that the ‘uberisation of labour’ is not completely new, but simply a ‘radicalization’ of existing forms of work, and changes to geographies of digital labour are new (Montalban, Frigant, and Jullien 2019; Altenried 2020). Stanford (2017) identified precedence of the platform economy in earlier forms of capitalism and attributes the emergence and proliferation of labour digital platforms to not only technology but also high levels and persistence of unemployment.

Digital platforms are different as they are ‘transforming the wage–labour nexus, capital/labour relationships, labour contracts, and the business models of firms’ by

encouraging the individualization, flexibilization, and dualization of labour (Montalban, Frigant, and Jullien 2019; Jäger et al. 2019). Given the spatial and flexibility of work on digital platforms, this new culture of work is most prevalent in younger workers based in different locations and across different activities (Alanezi and Alanzi 2020; Altenried 2020), and employs a mix of highly skilled, semi-skilled, and low-skilled labour for ‘macrotasks’ and/or ‘microtasks’ on digital platforms ranging from Uber, Deliveroo, Uberpop, Amazon Mechanical Turk, or TaskRabbit among others (Montalban, Frigant, and Jullien 2019). New forms of digital divisions of labour, and the ability to out-source bits and pieces of work and digital labour are therefore upsetting traditional ways of organizing labour into different economic spaces in real time. As a result, there is multiplication and heterogeneity of labour across productive activities and geographical space resulting in the further blurring of work time and free time as well as global heterogenization of labour (Altenried 2020; Graham, Hjorth, and Lehdonvirta 2017).

Digital platforms are also redefining the relationship between employers and employees, and how labour is hired and organized as well as how and where work is done (Braesemann, Lehdonvirta, and Kässi 2020; Rani and Furrer 2020). Digital platforms are therefore redefining what is termed work and the conditions of work in terms of hours of work and earnings. As a result, there are increases in new forms of ‘non-standard work’ such as ‘platform work’, ‘on-demand work’, and the ‘gig economy’. These tremendous disruptions in labour markets are precipitating profound implications on working practices, most of which are prevalent and observed in sectors such as in transport and hospitality industries.

Anwar and Graham (2020), for instance, considered the labour market effects of the gig economy from the lens of freedom, precarity, flexibility, and vulnerability in South Africa, Kenya, Nigeria, Ghana, and Uganda using data on 65 workers on Upwork. The authors find that high-skilled workers generate better wages and there is greater autonomy in the gig economy than in traditional jobs. Wu et al. (2019) identified differences between ‘sole-source drivers’ and multiple-job drivers in the case of Uber in China. Dunn (2020) also identified varying motivations for gig work while Jäger et al. (2019) found significant differences in crowdworkers based on the specific tasks and contracts workers can get on platforms. A study by Lehdonvirta et al. (2019) found that differences in crowdworkers emerge mainly from differences in local wage rates, the size of the gig economy as well as the amount of online experience. In Nigeria, Idowu and Elbanna (2020) identified different pathways for crowdworkers with workers gaining critical and transferable skills for use in other settings.

Despite the positive implications of digital platforms on work and labour markets, DPs also pose key challenges to labour markets and work as we know it, as well as labour market regulations. There are growing inequalities in digital labour platforms (Graham, Hjorth, and Lehdonvirta 2017; Jäger et al. 2019). In particular, work in DPs is characterized by various vulnerabilities among which are low wages, income volatility, insecurities, and gendered exploitations (Anwar and Graham 2020; Rani and Furrer 2020; Zou 2017). Digital-based works have also brought about uncertainties with regards to work, its nature, and how work is done (Stanford 2017). Platform workers face the risk of lack of or inadequate protection given that platform works are mostly evaluated by algorithmic managements systems (Rani and Furrer 2020). These risks are exacerbated given that most jurisdictions consider platform workers as self-

employed, as a result, have limited social protection. The lack of social protection emerges from the gig economy's business model where workers are considered contractors to pay the barest minimum of labour-related cost.

Consequently, there is a risk of financing and sustainability of social security systems (Corujo 2017; Kaine and Josserand 2019) and paid leaves (Kaine and Josserand 2019). Considering digital platforms and social protection in Spain, Corujo (2017), for instance, identified the likelihood of self-exploitation among workers on DPs to generate a sufficient level of income, leading to vulnerability. As a result, in order to guarantee better work conditions, there is a need to protect decent forms of workers on digital platforms through social protection irrespective of the duration of engagement on DPs and reform of social protection laws (Corujo 2017). The lack of financing and the possible threat to the social security systems pose even bigger structural and security threats in developing countries. There is an increasing ineffectiveness of labour laws regulating the relationship between employers and employees as contracts tend to be more informal and transactions across different territories (Graham, Hjorth, and Lehdonvirta 2017). This is worsened by the fact that the majority of digital labour resides in developing where labour laws and regulations are weak.

DPs encourage the mobility of labour where labour bears all the risk in the production process (Montalban, Frigant, and Jullien 2019; Kaine and Josserand 2019). Evidence also shows that DPs and online work enhances gender-based occupational segregation (Galperin 2019) resulting in women being segregated into 'female ghettos'. Workers in digital platforms are vulnerable, with higher risks, and work under precarious working conditions, negating the time flexibility so-advertised by platforms (see for instance Rani and Furrer 2020). Bartel et al. (2019), for instance, identified ride-share workers in Ontario, Canada lack collective representation and security, social interactions, and places of convenience. Anwar and Graham (2020) arrived at similar findings in their study of gig work in South Africa, Kenya, Nigeria, Ghana, and Uganda.

In short, labour digital platforms have become critical intermediaries between the demand and supply of digital labour and a new source of employment opportunity to many (Dunn 2020; Graham, Hjorth, and Lehdonvirta 2017). These platforms offer businesses the opportunity to fragment tasks to be outsourced and completed across different geographies at lower cost. Given the spatial and flexibilization functions and characteristics of digital labour and work, there are several fundamental issues such as quality of work and wages on platforms, work arrangements, unionization as well as regulatory challenges that must be addressed. The fragmentation, flexibility, and individualization of work brings into discussion other issues such as tax evasion, the informality of work, and labour regulations and laws to protect workers. The appropriate regulations of digital platforms and protections for workers on digital platforms remains a global policy concern. Despite the rapid expansion of the gig economy over the past few years, more research on the gig economy and its benefits is needed to further examine these issues (Alanezi and Alanzi 2020).

3.3. Platform economy and inclusion

Globally, several people continue to experience different and extended forms of discrimination and exclusion. This often includes a group of marginalized segments of the

population including women, children, people with disabilities, and visible minorities. The emergence and growth of digital platforms have enabled interaction and exchange of goods and services virtually between different and many people, thus providing an opportunity for greater collaboration, empowerment, and inclusion (Ameri et al. 2020; Graham, Hjorth, and Lehdonvirta 2017). DPs have been identified to empower diverse groups of vulnerable people (Bucci, Schwannauer, and Berry 2019). In fact, the success of DPs, such as Airbnb for instance, is noted to be due to its strong network effect that extends to a diverse group of travellers, including customers and hosts located in both urban and rural areas.

Studies examining the effect of digital platforms on dimensions of inclusion such as social protection are limited (Corujo 2017). However, available studies show that DPs benefit excluded groups (Ameri et al. 2020; Graham, Hjorth, and Lehdonvirta 2017). DPs are considered fundamental to the transformative changes in the humanitarian sector, for instance. The humanitarian sector is experiencing changes in how displaced people are managed, with DPs such as GPS, WhatsApp, and Facebook, serving as sources of critical information during the journeys of displaced people and migrants (Bock, Haque, and McMahon 2020). Bock, Haque, and McMahon (2020) examined the successes and shortfalls of digital platforms designed for refugees and migrants using 57 semi-structured interviews with stakeholders (people, NGOs in Greece, and the United Nations). The authors identified and categorized platforms into eight and found DPs to play a critical role in the processing, connecting, reunification, access to basic but essential social needs and services, as well as integrating refugees and displaced people into host communities (Bock, Haque, and McMahon 2020).

DPs have empowered a diverse group of vulnerable people (Bucci, Schwannauer, and Berry 2019). Amazon, for instance, provides options based on price and quality for consumers (Gössling and Michael Hall 2019) while Facebook helps to establish new social relations and ties. The literature also recognizes the role DPs have played in transforming the financial order, as we know it, into a somewhat more innovative, democratized, 'inclusive', and diverse financial ecosystem. Specifically, DPs are providing financial infrastructure that is enabling large sections of the population such as women to have access to financial services (Rodima-Taylor and Grimes 2019). In a study of M-Pesa, Natile (2019) finds that M-Pesa has played a key role in bringing the informal financial sector into the formal system. A related study by Rodima-Taylor and Grimes (2019) find DPs to promote and facilitate financial inclusion and empowerment by driving innovations and competition in remittance infrastructure, leading to reductions in cost and risks in the sending of remittances particularly to developing countries, thereby providing new opportunities the emergence of new productive sectors and innovation activities.

However, DPs are not inherently inclusive. DPs could be considered new forms of exploitation of labour by the capitalist production system, leading to dis-empowerment of labour to organize and unionize and competition particularly low-skilled labour (Montalban, Frigant, and Jullien 2019). This in turn increases inequality, particularly for workers who are reliant on income from digital platforms. The evidence shows that different groups are affected differently depending on their level of involvement within the platform economy.

Discrimination and stereotypes exist in labour markets, at both the hiring and work levels, and these have persisted with the advent of digital platforms (Graham, Hjorth, and Lehdonvirta 2017). In fact, DPs have played little role in reducing discrimination in the labour market (Galperin 2019). There is a plethora of literature on the various forms of discrimination against women in the labour market. These discriminations mainly stem from beliefs and stereotypes that re-formed based on differences between men and women in the labour market, generating segregation of women in low-skilled, low paying, and predominantly female-dominated occupations ('female-typed' occupations) of the labour market and men in 'male-type' occupations. Based on these conventional stereotypes, women experience hidden and subtle forms of discrimination on DPs (Galperin 2019). In other words, the evidence shows that gender discrimination and stereotypes exist in the gig economy, albeit saliently. The gig-economy perpetuates gender segregation where women are more likely to be hired for 'female-type jobs' compared to 'male-type jobs' (Galperin 2019). While these gender stereotypes and biases are noted to persist in online job markets, the evidence shows it tends to reduce as women gain experience with online work (Galperin 2019).

Also, there is advanced evidence suggesting that users on DPs engage in other 'intentional and unintentional discrimination' (Ameri et al. 2020) and exclusions (Kloppenburg and Boekelo 2019). These acts can lead to overt and non-overt forms of discrimination. These emerge mainly from the network effects that platforms enjoy, with higher monopolistic and discriminatory tendencies (Kloppenburg and Boekelo 2019). For instance, DPs create opportunities for higher and different forms of 'intentional and unintentional' discrimination against disable people in several forms: lack of resources such as access to the internet, and discrimination by service providers (Ameri et al. 2020). Conducting a randomized field experiment of 3847 Airbnb booking requests, Ameri et al. (2020) examined discrimination against people with four main disabilities (blindness, cerebral palsy, dwarfism, and spinal cord injury) among Airbnb hosts in the USA. Based on the explorative analysis, the authors found that hosts are less likely to preapprove booking requests from people with disabilities than otherwise. This however varies across the type of disability, with hosts more likely to accept requests from people with dwarfism and blindness than cerebral palsy and cord injury.

These findings were supported by the estimation results obtained from the empirical analysis, and are not different after the introduction of Airbnb's non-discrimination policy. While Airbnb requires hosts to agree to a non-discrimination policy and to indicate if their properties are friendly to disabled people, empirical findings are contradictory. Similarly, Natile (2019) also finds that inequalities persist in financial access as M-Pesa and its regulations do not target or have countermeasures aimed at reducing the disadvantages women generally face in the financial system. These are suggestive of the fact that the policies often implemented to reduce discrimination in DPs are often ineffective.

Despite, digital labour platforms have the potential to mitigate gender discrimination and stereotypes in the hiring process and labour markets. For instance, advertising jobs on DPs enable some level of transparency and allows all potential and qualified job seekers to access information on positions and to apply for positions, enabling opportunities for female applicants (Galperin 2019). The flexibility and inclusiveness of jobs offered on digital platforms may also be essential in reducing discrimination in labour

markets. These, however, require stricter and effective policies against discrimination of all types, forms, and shapes.

4. Towards a new research agenda on digital platforms

DPs have had tremendous disruptions on our traditional ways of doing things. This has led to big questions in employment regulations (e.g. gig economy), transport (Uber, etc.), housing (Airbnb), communication (Facebook, WhatsApp, etc.), health, data security, and interoperability among many other issues. As noted, the main objective of this systematic literature review has been to globally scope, synthesize, and analyse the role of digital platforms on socio-economic development. In this section, we suggest and discuss possible areas for future research where we observe research gaps in the literature on DPs.

The emergence and the widespread economic and social impacts of digital platforms have raised critical policy concerns around the globe (Nooren et al. 2018). Public interest and safeguarding the public good have become key conversations across the world. Nooren et al. (2018), for instance, identified and discussed 4 main public interest issues as innovation, consumer interest, freedom from improper influence, and integrity and continuity. While the discussion of these issues is critical to how digital platforms function and are governed, there are gaps in terms of research on these specific issues in development economics. For instance, to improve working conditions on digital platforms, policies must be enforced to enable platforms to adhere to and to aim to meet labour standards. Bartel et al. (2019), for instance, identified mandatory caps on hours of work and health training and programmes such as complimentary gym membership as a policy that could help to improve the health conditions of workers.

Issues around ownership of big data, also known as the new gold (Royakkers et al. 2018), in the efficient allocation and use of resources (labour and factor inputs, for instance) in co-creating value have become political and a public debate. Workers in the gig economy, for instance, leave behind data trails through reviews of work done and decisions based on these reviews can predict employer behaviour. Given that big data is generally mined from users (Nooren et al. 2018), there are critical policy and research concerns on who owns, uses, and benefits from big data.

Several other questions remain to be answered in the literature. Research to examine other dimensions of economic development and digital platforms are needed. For instance, DPs are ubiquitous in health care provision and delivery. The available evidence suggests that DPs provide new avenues and opportunities for health care provision and delivery, and the development of capabilities for health workers in developing countries (Naslund, Shidhaye, and Patel 2019). The proliferation of digital platforms has also been identified to influence how students and young people learn, socialize, collaborate, and access knowledge and information, and what their career aspirations are. In other words, 'the dynamics of learning, socialization, and access to information have dramatically changed' due to the development of digital platforms. As a result, there are profound changes in how educational institutions produce and deliver knowledge as well as educate (Miño Puigcercós, Domingo Coscollola, and Sancho Gil 2019, 141). This inevitable but fast-paced democratization of learning processes is bringing to fore critical questions and challenges for stakeholders in the education sector, including policy-makers, students, households, and educators (Miño Puigcercós, Domingo Coscollola,

and Sancho Gil 2019). Despite the positive transformational and revolutionary effects of digital platforms on health and education, there is little evidence on how the changing nature of work is posing physical health and mental risks to workers. There is also the threat of platforms growing and fast outpacing the skills of health professionals. Also, issues regarding data security and ownership, and interoperability remain critical to the use of digital platforms. Future research on digital platforms and development requires a much-focused research on some of these issues.

There is little known about the effects of digital platforms on the economic development in developing countries. While there is a tectonic move in the area of research to understand the development implications of DPs, the literature is still in infancy, and much is desired and expected. With the increasing number of people using DPs, the infrastructure to enable multiplier effects to benefit from the scalability and cost-effectiveness of digital platforms in developing countries cannot be overemphasized. In line with these is the need to examine how digital platforms could complement critical skill gaps to propel development, particularly in developing countries. While DPs are helping to complement skills and competencies in developing countries, the level of infrastructure such as internet and electricity as well as the seamless integration of these digital platforms to complement rather than substitute existing health care systems is critical for improved mental health care in less developed health care ecosystems. Studies on the effect of digital platform-based task-sharing and health and economic outcomes remain lacking.

Also, digital transformation in firms, particularly small and micro enterprises (SMEs), dominant in developing economies, requires the building of digital skills and capabilities. The role of capabilities in adapting the activities of firms in the face of rapid technological change is critical for the survival of SMEs. There is however scant number of studies about how SMEs transform into the digital ecosystem and the characteristics of entrepreneurs that foster this transformation in developing countries.

To conclude, while several jurisdictions are formulating and implementing regulations and instruments to govern digital platforms, there are several discussions on whether digital spaces should be left to self-regulate themselves to encourage innovation. This remains a debatable area, and the reality is that most policy discussions play catch-up with new technologies and policy issues on the digital economy, including the regulation of digital platforms, their governance, and activities. There is a need for a consented policy framework and guidance on how to regulate digital platforms for the public good, particularly in developing countries.

5. Concluding remarks

Digital platforms and technologies constitute key elements of the fourth industrial revolution. They are fundamental to the broad socio-economic transformations upending longstanding socio-economic relationships and imperative in labour and product markets, transport, housing, health, and education sectors. As a result, there is a rapidly growing multidisciplinary research examining the effect of the platform economy on different dimensions of development. However, the available literature on digital platforms and development is scattered with different perspectives. In this paper, we conduct a critical systematic review of the literature and synthesize the evidence relating to digital platforms

and how they are disrupting and transforming different dimensions of international development, particularly the everyday lives of people. While the aim of this paper is to scope and present the available evidence and stimulate discussion more broadly, our analysis of the available literature based on three thematic areas adds to and stimulates further work on digital platforms and development.

Based on 25 eligible articles systematically obtained from the Web of Science and the dominant cross-cutting issues, we conduct a thematic analysis to examine how digital platforms are influencing three dimensions of economic development: value creation, job creation, and inclusion. Generally, the evidence suggests that the growth of digital platforms poses both advantages and disadvantages to the development of the society. On the one hand, the platform economy offers numerous and diverse advantages and benefits across all spheres of life, ranging from convenience, speed, added value creation, expanded choice and range of options to consumers. Digital platforms also have the potential to drive the achievement of sustainable development and the efficient use of resources. In particular, digital platforms offer opportunities for socio-economic development and catch-up in developing countries. On the other hand, the observed positive effects of digital platforms bring to fore cases of negative consequences of digital platforms on development, including, discrimination in the labour market, there is hardly any study that investigates the impact on the labour and their working conditions. Although some new jobs have been created by DP based companies such as Amazon, Alibaba, Uber and Deliveroo, deteriorating working conditions for these new jobs have been openly discussed in media. We need to analytically investigate the working conditions and job security of these workers to comprehend whether DPs have any positive impact on labour market or not. In the same manner, increasing levels of tax evasion have been reported. This needs to be systematically investigated so that governments can design measure to check this tax evasion that seems to be facilitated by DPs. Based on these findings, we recommend further research to enact and implement innovative policy measures that have the potential to harness the positive development outcomes while mitigating the negative consequences of digital platforms, particularly in developing countries.

Our findings from the survey of the literature have important policy implications. Firstly, building digital infrastructure in the developing countries and especially at the Base of Pyramid (BOP). The digital economy has witnessed the increasing importance of information as a factor of production in the development of economic and social solutions. Even in the low-income countries, digital technologies offer a window of opportunity to empower the under-the-radar innovations and leapfrog (Fu 2020). The case of Kuaishou in China showed that the accessibility of 4G networks and Wi-Fi availability, leading to value creation facilitated the Kuaishou business model at the BoP (Fu et al. 2020). However, information poverty and inequality are manifesting in the digital economy and the developing countries are in particular constrained by the lack of digital infrastructure to benefit from opportunities offered by platform economy. If this challenge is not effectively address, the developing countries will lagged further behind the developed countries in the digital revolution (Fu 2020). Therefore, special policy efforts and international collaboration are urgently needed to strengthen the provision of information infrastructure in the developing countries. This will have a direct impact on the growth perspectives and sustainable development in the developing

countries, in a wide range of areas including income generation, job creation, poverty reduction, and inclusive development in multiple dimension.

Secondly, strengthen digital skills education and training. To harness the benefits from digital technologies requires a threshold of digital skills (Fu et al. 2020). Enhance digital skills through various forms of training will be a policy measure to address the discrimination in the labour market in the platform economy. This will also provide the poor with the ability to express themselves and participate in new forms of income creation activities in the digital economy (Fu et al. 2020). Finally, policies and regulations shall encourage new types of entrepreneurship at the BOP and facilitate new types of jobs on the platform in the digital future, while at the same time prevent tax evasion and monopoly power of the large platforms.

Despite the crucial contribution of the paper, it has several limitations. The literature search is conducted largely using Web of Science. While Web of Science has a large number of studies in its database, it may be important to expand the search beyond Web of Science for additional literature, such as reports from international organizations, books and other conceptual studies. Given the rapid growth in the research on digital platforms, extensions to this literature review are required very often, particularly with a focus on developing countries. There is a growing number of grey literature on digital platforms. While our systematic literature excludes most of this grey literature, there is a clear indication of policy concerns and relevance in these issues. Extensions to other dimensions of development are important areas for future studies. For instance, the housing and hospitality sector is arguably one of the most disrupted sectors by digital platforms, particularly the innovation of peer-to-peer (P2P) rentals. While there is a rapid growth of the literature exploring various questions on Airbnb as a sharing platform (Google Scholar search for Airbnb generates 73,300 as of 15 December 2020), only 3 studies meet our eligibility criteria for this paper. Moreover, for the inclusivity, the inherent problems of SMEs such as access to capital, even to start a small-scale business, and access to a network have not been looked into by extant literature. In the same manner, the role DP can play for new entrepreneurs and how it can help them to develop basic skills, such as confidence, basic computer skills and access to wider networks need more attention from researchers. These issues are even more important for female entrepreneurs in developing countries. As a result, a lot more work is required in this area of research.

Notes

1. The platform economy encompasses various phenomena and as result, a single canonical definition may not suffice (Nooren et al. 2018). Several names are identified to be synonymous with platform economy: sharing economy (Montalban, Frigant, and Jullien 2019; Zou 2017); collaborative economy (Montalban, Frigant, and Jullien 2019); 'gig economy' (Scully-Russ and Torraco 2020; Zou 2017); 'mesh economy'.
2. Digital platforms use the internet for communication between users on all the sides of the platform, different from the newspaper platform, for instance (Nooren et al. 2018). See Montalban, Frigant, and Jullien (2019, 3) for definitions. Kiesling (2020) employs 3 'complementary' definitions of platform as technology, economic, and organisation platforms.

3. Different broad definitions and typologies of digital platforms exist in the literature (see, for instance, Nooren et al. 2018; Koskinen, Bonina, and Eaton 2018). Nooren et al. (2018), for instance, identified four typologies of digital platforms as resellers or distributors; market-places (Amazon); social networks (Facebook, WhatsApp, and Twitter); platforms of platforms (Apple's iOS, Google Maps). [3] These typologies are non-exclusive as businesses fit in more than one typology. In line, Koskinen, Bonina, and Eaton (2018) identified and discussed three typologies of digital platforms based on their purpose: transaction (Facebook, Uber, Netflix, Airbnb, Upwork); innovation (iOS, Linux); and integration (Android, Windows, Apple iOS) platforms.
4. Appendix 1 presents the distribution of studies in terms of academic disciplines.
5. See Scully-Russ and Torraco (2020) for a recent review of the literature and summary of further research agenda; Stanford (2017) for historical and theoretical views on digital labour platforms.

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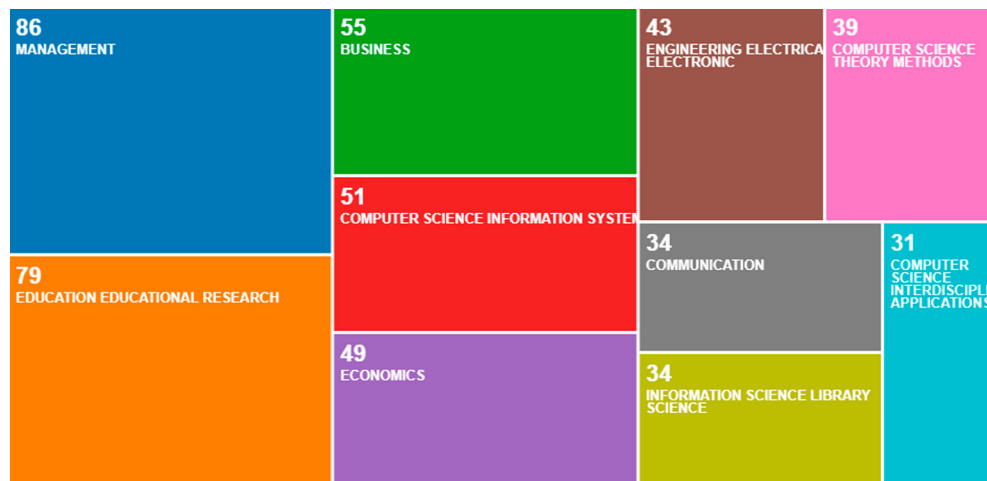
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Appendices

Appendix 1. Number of studies across academic disciplines



Appendix 2. Description of the selection process

