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Digital Economy and Socio-Economic integration of migrant workers in the EU: an evidence review and research agenda.

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Gianluca Iazzolino

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Abstract

This review interrogates what evidence is currently available in the academic literature on the complex dynamics of the engagement of migrants and refugees with the digital economy. Despite the limited attention paid to the digital economy in the main migration studies journals, there is an emerging awareness of the implications of the interplay of migration and labour policies for the specific condition of migrant workers.

By assessing the evidence, and identifying overarching themes and research gaps, this review highlights the ambiguous role of digital technologies in the socio-economic integration of migrant workers, draws attention to the tension between self-reliance and adverse digital incorporation, and problematise the gap between the policy conversation on how to reconcile economic growth and migrant socio-economic inclusion, and empirical reality in which the digital economy is already absorbing migrant workforce in a fragmented and loosely regulated fashion. It thus identifies four main research streams: the first revolves around policy initiatives to provide digital upskilling to migrants and refugees; the second examines examples of migrant entrepreneurship in the digital economy; the third focuses on exploitation dynamics in the digital economy; and the fourth discusses digital labour and migrant solidarity and activism. In light of this review, this report sketches the trajectories for further research.

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1. Introduction

There is growing interest among EU policymakers and migration experts in the potential of digital technologies to facilitate the socioeconomic inclusion of migrant workers (Degryse, 2017; ILO, 2021). The digital economy – a broad definition encompassing all sorts of businesses selling goods and services through the internet or facilitating the matching of demand and offer through digital platforms – has been mainly framed as a strategic sector to foster growth among the countries of the Union (EU, 2022). In addition to this economic priority, the political agendas of the EU and individual member states are increasingly emphasising the role of digital firms in offering a path to self-sufficiency to migrant workers. This attention builds on the twin concerns to address labour shortages and skill gaps in the digital economy, and to improve migration management at the border and within the EU common space. This approach is mainly demand-driven, meaning that the primary focus is on EU market needs, and is enshrined into the European Commission's New Pact on Migration and Asylum[1], for instance, which proposed a number of initiatives, such the EU Talent Pool and of Talent Partnerships, to attract third-country nationals with skills needed in the EU, and the Action Plan on Integration and Inclusion 2021-2027[2], which recognises that skills and talents of migrants as well as EU citizens with a migrant background are often undervalued or underutilised and proposes actions to better harness their potential on the EU labour market.

However, this emerging conversation only partially accounts for how the digital economy is already absorbing migrant labour in a much more fragmented and problematic fashion. Much evidence of the interplay between the digital economy and migration in Europe comes from policy experts and journalists. On the one hand, most of the policy scholarship on the expected benefits of the digital economy for migrants and asylum seekers across EU/Europe has focused on digital literacy and coding training, and, more broadly, policy initiatives to place digitalisation at the centre of both the growth and the migration agenda. On the other, anecdotal evidence has shown the ambiguous nature of platform work for migrants. The digital economy, and its app-mediated segment in particular, is "Janus-faced" (Van Doorn and Vijay, 2021). Media reports and, to a lesser extent, academic and grey literature, have illustrated how digital platforms provide a much-needed source of income to workers often in precarious legal situations. At the same time, they often fail to meet basic decent work standards, particularly for social security, working rights, and freedom of association.

This report reviews a disparate body of academic and grey literature to interrogate what evidence is currently available on the complex dynamics of the engagement of migrant workers with the digital economy. It is situated within the growing literature on "digital migration

[1] https://ec.europa.eu/commission/presscorner/detail/en/qanda_20_1707

[2] https://integrazionemigranti.gov.it/en-gb/Dettaglio-approfondimento/id/1/EU-Action-Plan-on-Integration-and-Inclusion-2021-2027

studies", an interdisciplinary field exploring the theoretical and empirical articulation of digital technologies and migration. As reminded by Potocky (2021), this conversation has shifted over time from a techno-optimist lens on the benefits of technology for connecting dispersed families and reinforcing feelings of belonging in transnational diasporas to a "techno-realist critical paradigm, which considers the social networks, structures, positionalities, and intersectionalities that influence the development and use of technology" (ibidem: 2; Kaurin, 2020). The ambiguous role of digital technologies in the socio-economic conditions of migrant workers emerges as well from this systematic evidence review.

This report builds on the view that a rigid dualism between the included and the excluded in relation to technology access, albeit still popular in the literature on digital migration, falls short of grappling with the nuances of platform work. In fact, these relationships are often informed by 'adverse digital incorporation' (Heeks, 2022), where "inclusion in a digital system […] enables a more-advantaged group to extract disproportionate value from the work or resources of another, less-advantaged group" (ibidem: 15). The tension between perspectives of digital inclusion and exploitation frames the key research question of this report: *What is the policy and research evidence of the significance of the digital economy for the socio-economic integration of migrants and asylum seekers in Europe?*

Currently, as discussed in further detail below, migration sits on the margins of the empirical literature that relies on in-depth primary data collection to examine workers' conditions in different productive sectors falling within the broader category of the digital economy. References to migrant workers abound in the scholarship of the location-based gig economy, including ride-hailing and food and grocery delivery platforms, but are scant in analyses of less scrutinised activities such as remote platform work and platform-based logistics services. This imbalance is primarily due to the greater visibility of, and ease of access to, workers in the location-based gig economy, whereas migrants performing translations or data-annotation, or doing logistic work in e-commerce warehouses, such as Amazon's or Zalando's, are less conspicuous. In general, this literature tends to view migrants as another platform labour segment, thus overlooking the implications of the interplay of migration and labour policies for the specific condition of migrant workers. This is strikingly reflected, as data in the methodology section will show, by the small number of articles on the interaction of the digital economy and migration published in the top ten migration studies journals over the past ten years. Despite these and other limitations, there is emerging evidence of the significance of the digital economy for migrants' livelihoods. The particular interest of this report is to 1) assess the literature discussing this evidence, 2) identify overarching themes and 3) highlight the research gaps.

Besides contributing to the digital migration scholarship, the findings of this report have implications for policy too. EU policymakers (and, to a lesser extent, some member state governments, particularly Germany's) view supporting migrants' self-reliance as a key strategy

to assuage citizens' anxieties and stymie populist drifts. The recent New Pact on Migration and Asylum, for instance, is a policy framework designed to improve screening and relocation procedures and support the integration of migrants and asylum seekers into local communities through upskilling programs. Initiatives such as the EU Talent Pool and Talented Partnerships are being rolled out as part of the Pact, and against the backdrop of the EU digital agenda, which includes guidelines for all the member states and indicators to evaluate their digitalisation progress.

This report argues, though, that these top-down efforts to reconcile migration management and digital transformation must take stock of the reality that is shaping up on the ground, in which the patchy regulation of platform work often compounds the precarious legal condition of migrant workers. It is structured as follows.

It first defines the digital economy and platform work. After describing the research approach, it identifies four major streams of research emerging from the relevant literature: the policies revolving around digital upskilling for the socio-economic inclusion of migrant workers; migrant entrepreneurship in the digital economy; exploitation dynamics in the digital economy; digital labour and migrant solidarity and activism. It ends by taking stock of the insights and gaps from each stream of scholarship and suggesting trajectories for further research.

2. Defining the Digital Economy

Over the past three decades, economic, political and technological factors have driven the expansion of the digital economy across the Global North and, increasingly, the Global South (Anwar and Graham, 2020; Heeks et al., 2021; Iazzolino, 2021). The World Bank (2022) estimates that the overall output of businesses providing access to and delivering goods and services via digital technologies accounts for more than 15% of global GDP. This growth has been unevenly distributed, with the Global North holding the lion's share. However, the Global South is rapidly catching up, thanks to massive infrastructural investments to expand connectivity, and national policy frameworks designed, often under the influence of donors and corporate actors, to attract technology firms offering data-driven solutions to address development goals. The embeddedness of digital technologies within organisational structures and the increasing centrality of data extraction and algorithmic management play a critical role in optimising resource allocations, gleaning a granular view of user behaviours and preferences, and expanding workers' surveillance. These features are central in the policy and theoretical discussion of the platform economy, possibly the most scrutinised sub-category of the digital economy, and in empirical analyses of digital platforms.

Digital platforms for a broad range of services have mushroomed over the past 15 years, gaining momentum in the wake of the 2008 financial crisis as a result of the combination of technological innovation, a glut of corporate savings, and a significant surplus population of workers left jobless because of the crisis (Srnicek, 2017). Digital platforms are infrastructures that reconfigure specific markets by connecting customers and service providers through an app, breaking the employment relationship into tasks, or gigs – hence gig economy as the other name for the platform economy. Driven by large-scale deregulations of employment relations across the Global North, the gig economy embodies the technology-enabled acceleration of work flexibility and exacerbates the risk of 'super-exploitation' intrinsic to the service sector, where "the wages of service workers make up a relatively large share of the final price that consumers pay" (Benanav, 2020: 60).

By leveraging data and algorithms to connect end-users or improve the matching of supply and demand for goods and services, digital platforms rearticulate economic relations between capital and labour, producing "platform labour" (Huws, 2016). Most scholars and activists view the gig economy as deepening precarisation and exploitation in the service sector through specific legal-technical expedients (Gandini, 2019), namely algorithmic management (Wood et al., 2018), misclassification (De Stefano, 2016), and information asymmetry (Rosemblat and Stark, 2016). Algorithmic management is a mode of organizing the labour process in which self-learning algorithms displace human oversight (Duggan et al., 2020: 6). Misclassification is the practice of identifying workers as partners or independent contractors, thus relieving the firm behind the digital platform from employers' duties (Altenried

et al., 2020; Aloisi and Di Stefano, 2020). Information asymmetry is premised upon the hiatus between the surveillance to which workers are constantly exposed based on their digital footprints (Shapiro, 2020) and the opacity that shrouds the platform's decision-making processes.

While the techno-normative contours of the gig economy are at the centre of an interdisciplinary debate – focusing on the constant monitoring of the workers through their digital footprint (Delfanti, 2021; Kanngieser, 2013; Schaupp, 2022) or the legal loopholes allowing platform owners to offload all the risks onto the workers (Rosenblat and Stark, 2016) –, less scrutinised is the composition of platform labour. For instance, while highlighting the relevance of digital platforms for a diverse array of services for people's social and economic life, the COVID-19 pandemic has laid bare that the human infrastructure of food delivery platforms like Just Eat, Glovo and Uber Eats is increasingly made by migrant workers. This is confirmed by the findings of a recent survey conducted by the European Trade Union Institute (ETUI) (2022) across EU member countries, according to which foreign-born workers are overrepresented in the platform economy, with "migrant workers often segregated into lower-paid and more insecure work." (Piasna et al., 2022: 29).

However, despite a growing academic and policy appreciation of the significance of digital platforms in migration infrastructures (Altenried 2021; Lata et al., 2022, Pautuzzi & Benton, 2019; van Doorn et al., 2020), this awareness has so far translated into a very limited number of case studies. There is general consensus, though, about the reasons behind the relatively higher rates of migrants' engagement with platform work than non-migrant populations (Abkhezr and McMahon, 2022). On the one hand, migrants from different backgrounds, including both asylum seekers and those categorised as 'skilled migrants', face significant challenges when seeking to find a job that matches their skills in the country of arrival. This is due to multiple factors, including "lack of familiarity with the new country's recruitment and employment markets, disrecognition of their overseas qualifications, complexities, and long delays for assessment of their overseas qualifications, language barriers, systemic discrimination, and lack of access to relevant career resources and support" (ibid.,8; see also Abkhezr et al., 2015, 2018; McMahon et al., 2019;). For most migrants, the mismatch between the qualifications they obtained in their country of origin and the formal requirements of the host country significantly narrows the range of employment opportunities they can target. On the other hand, platform work has entry barriers low enough to attract migrants either with a working permit or able to work on behalf of someone else, seeking job opportunities with a smooth and quick recruitment process, in which no previous experience is required and allowing them to reconcile financial independence and flexibility (Pautuzzi & Benton, 2019). App-based gig work in particular often looks appealing to entrepreneurial-minded migrants because of the promise of autonomy it encapsulates within partner agreements. On the downside, the lack of employment contracts entails that the workers bear

all the risks and costs associated with their activity. Therefore, for instance, in the food delivery sector, a business with a significant presence of couriers with a migrant background, the vulnerability of migrant workers is exacerbated by the paradox that "the job is legally regulated but the employment relation is not recognized by the employer" (Elbert and Negri, 2021: 5). In this business niche, this relationship is triangular as the platform connects restaurants, couriers, and customers. And yet, couriers are the weakest link, exposed to a broad range of risks spanning from bearing the costs of health hazards, compounded by the lack of social protection, to wage depression because of labour oversupply.

The articulation of digital economy and migration can be framed through two opposite discourses. The first is migrant entrepreneurship. The literature on this topic is well-established in migration studies. It emphasises the importance of both social capital for easing migrants' access to resources and information and the local regulatory environment for enabling migrants' entrepreneurial aspirations to thrive. Kloosterman (2010) and Kloosterman et al.'s (1999; 2001) 'mixed embeddedness' approach revolves indeed around the argument that, in order to grapple with migrant businesspeople's strategies and opportunities, we need to take into account "not only their embeddedness in social networks of immigrants but also their embeddedness in the socio-economic and politico- institutional environment of the country of settlement" (Kloosterman et al., 1999: 254; see also Barberis and Solano, 2018). Migrants' economic survival and success are thus affected by the legal and political framework of the "context of reception" (Portes and Rumbaut, 1990), a concept that places emphasis on the way national legislations affect the trajectories of different communities of migrants by providing opportunities to some while raising barriers for others. The local opportunity structure thus shapes the motivations of migrant entrepreneurship (Dabić et al., 2020), ranging from disadvantages in the local labour markets and dearth of adequate job offers (Volery, 2007) to the advantage of better understanding and catering to the needs of specific ethnic niches (Volery, 2007). More recently, Andrejuk (2022), builds on this literature to trace the implication of the 'super-digitalisation' brought about by the COVID-19 pandemic for migrant entrepreneurship. Against a backdrop of enhanced precarity, she explores the trajectory of digital migrant entrepreneurship, a category encompassing workers performing commercial activities through online platforms, including within the gig economy. While noting the acceleration and proliferation of online activities across different dimensions of migrants' lives, she suggests that super-digitalization, as a 'defence mechanism' against the crisis induced by the pandemic, "have led to new structures of social advantage and disadvantage within migrant entrepreneurship" (ibidem: 6).

This point takes us to the second theoretical lens to examine migrants' digital entrepreneurship, which is the concept of adverse digital incorporation. This notion takes stock of the limitation of digital divide as an analytical and normative category to make sense of unequal access to connectivity, and to plan interventions to redress this imbalance, which was

initially viewed by scholars and policymakers as a key driver of inequality (Kshetri, 2014). Adverse digital incorporation, instead, emerges from the awareness of the widespread penetration of digital technologies and falling costs of smart phones and data traffic, resulting in greater access to web- and app-based services for low-income users and, possibly, incorporation into the digital economy. The concept of adverse digital incorporation postulates the risk of negative externalities for those accepting being incorporated. This sometimes occurs because the downsides of this incorporation are being ignored or underestimated. However, as suggested by Heeks (2022), more often than not, the negative effects of this adverse incorporation are entangled with benefits or are embedded into organizational structures or practices from which the users cannot opt-out. Thus, as shown by the case of most migrants joining food delivery platforms, or performing online tasks, or working under strict surveillance in the warehouses of retail platforms,

> (l)ack of benefit is not the essence of adverse digital incorporation. The essence […] is differential disadvantage – that a more-advantaged group disproportionately extracts value from the digitally-mediated actions or resources of the less-advantaged group; denying that latter group the value that could accrue to it and thus increasing relative inequality. (Heeks, 2022: 4)

Akin to the digital divide, adverse digital incorporation is mainly deployed as an analytical lens to describe the reproduction of exploitation along the Global North-Global South axis. Nevertheless, the evidence emerging from the literature discussed below shows that the drivers of adverse incorporation into economic digital systems blur geographic boundaries. Lack of choice, for instance, or exclusion from better alternatives (Hickey & du Toit, 2013; Phillips, 2013) are primary reasons for which marginalized individuals and communities, including migrants and asylum seekers with no access to other resources, decide to "participate in digital systems that are disadvantageous" (Heeks, 2022: 8). Crucially for grappling with the uneven implications of the same digital platform for different worker segments, including within the specific migrant population, is the observation that "(a)ny understanding of adverse digital incorporation must therefore encompass temporality and contextuality – the historical and contextual processes by which those incorporated have come to be excluded from alternative systems" (ibid.). As media reports (Allaby, 2021; Milosa and Tundo, 2020) and a few academic works illustrate, for instance, the interaction of migration rules and situated political economies play a critical role in shaping the experience of migrant platform workers. The notion of liminality (Chun, 2009) provides an insightful conceptual framework to capture the tension between expectations of flexibility and additional income and over-reliance on platform rules or even informal intermediaries. Scott et al. (2022), for instance, associate the liminal legal status for workers "with the deregulation of labour markets and intensification of workplace regimes" (31) pointing out that, among gig workers, "risk is being increasingly transferred onto labour and away from capital, with workers positioned (as a cost

and liability measure) outside of the traditional rights and protections afforded to (a shrinking number of) core workers" (ibid.).

As the next sections will show, analyses of migrants' experiences of the digital economy are just starting to engage with the salience of the legal framework in layering digital platforms' workforce.

3. Defining Methodological Boundaries

A systematic review of the existing evidence was conducted in two steps. The first was to identify articles mentioning the digital economy within the specific migration studies literature. The table below (Table 1) provides a snapshot of the results yielded by a search on the database of the top ten migration studies journals as selected from a list of 25 migration studies journals compiled by the PRIO Institute of Migration Studies[3]. The following table includes only the migration studies publications hosting articles that explicitly refer to the digital economy from a theoretical, policy or empirical perspective: Journal of Ethnic and Migration Studies (JEAS), Anti-trafficking Review (ATR), Central and Eastern European Migration Review (CEEMR), Ethnic and Racial Studies (ERS), Global Networks (GN), Journal of Immigrant and Refugee Studies (JIRS), International Migration Review (IMR), Population, Space and Place (PSP), Comparative Migration Studies (CMS), Migration Studies, (MS) International Migration (IM), Journal on Migration and Human Security (JMHS), Journal of International Migration and Integration (JIMI), European Journal of Migration and Law (EJML), Diaspora Studies (DS).

The search was performed by entering the following strings onto the search tools in each journal's database: *"Digital economy", "Platform economy", "gig economy", "Gig work", "gig platform."*

Publicatio n	N° of articles	Authors
JEMS	8	Rushworth and Hackl, 2021
		Georgiou et al., 2022
		Wright et al., 2022
		Ma and Haugen, 2022
		Gao, 2021
		Mazzilli, 2022
		Chacko and Price, 2021
		O'Reilly and Scott, 2021
ATR	3	Quirk et al., 2020
		Athreya, 2020
		Hunt and Samman, 2020
CEEMR	1	Salaris et al., 2022
ERS	2	De Ferrari et al., 2023
		Donà, 2021
GN	2	Howson et al., 2021

[3] The full list can be found at https://migration.prio.org/Journals/#ABD

		Muller, 2021
JMHS	1	Kerwin, 2020
CMS	1	Anderson, 2020
IM	4	Castellani, 2020
		Xiang, 2022
		Sanul, 2022
		Kazlou and Urban, 2022
Total	**22**	

As mentioned in the previous section, and as the data above show, the migration studies literature has just started acknowledging the growing significance of the digital economy for migrants' livelihood and upward social mobility strategies. Still, most articles focus on policy initiatives to format a migrant workforce that meets the needs of the national digital private sector.

The second step reversed this strategy. Instead of specific journal's databases, Google Scholar and Scopus were used. These databases have the widest coverage of academic articles compared to other databases, and Google Scholar, in particular, includes grey literature as well. The search included both academic English-language literature reporting empirical results based on secondary or primary data sources, and policy papers by international organisations, EU agencies, and think tanks. The search yielded 38 studies, of which only one (Rushworth and Hackl, 2021) was among the 22 articles in the table above, showing that analyses of the nexus of digital economy and migration, as reflected either by policies, the migrant experience, or a combination of both, are mainly featured in journals outside migration studies. Table 2 summarises the search strings and strategy. The main geographic focus of the search was Europe. However, given the limited number of empirical studies conducted in this region, the insights from a dozen highly cited articles discussing the intersection of digital economy and migration outside of Europe were also considered. To retrieve relevant studies on Google Scholar, the intitle operator, which ensures that the title of the retrieved articles would include the words following the operator, was used. The inclusion criteria were studies and policy papers focusing on 1) policy discourses revolving around the key role of the digital economy in facilitating the socio-economic integration strategies for migrants and refugees and 2) the lived experience of migrants and refugees working for digital platforms. Exclusion criteria were studies on digital media and diaspora (cultural consumption, identity, politics), migrants' digital activism, social media and migration decision-making, debates on migration on social media, and papers on internal migrants in the digital economy (most of which focused on China and India).

Table 2 below summarises the search strategy

Migration Studies Literature	
Search String	Str1: intitle “Digital economy” Str2: intitle “Platform economy” Str3: intitle “gig economy” Str4: intitle “Gig work” Str5: intitle “gig platform”
Time period	2012-2022
Exclude	Studies on digital media and diaspora, migrants’ digital activism, Social media and migration decision-making, migration on social media
Digital economy Literature	
Search String	“Digital economy” AND “Migrants” “Digital platforms” AND “Migrants” “Gig economy” AND “Migrants” “Retail platforms” AND “Migrants” “Data labelling” AND “Migrants”
Time period	2012-2022

The search enabled to identify four key themes emerging from the relevant literature: 1) Digital upskilling for migrants and refugees; 2) Digital economy and migrant entrepreneurship; 3) Digital economy and labour control; and 4) Migrant solidarity and activism in the digital economy. The next sections will delve into these themes and advance a research agenda.

4. Exploring the Evidence

4.1 Upskilling for the digital economy

The first theme emerging from the literature review revolves around the significance of digital skills for the socio-economic inclusion of migrant workers. This strand of literature, including policy reports and academic articles, focuses on upskilling initiatives for migrants and asylum seekers inspired by a market-driven approach to migration management. It stems from the broader "Future of Work" debate, which places particular emphasis on the opportunities and challenges for labour associated with the pervasive impact of digital technologies such as big data, Artificial intelligence/machine learning (AI/ML), and the internet of things (IoT), and argues for the need to provide digital skills to a changing workforce beyond standard employment relations.

Potocky (2021) uses interchangeably digital skills and digital literacy, understood as "one's cognitive and technical abilities to use information and communication technology to locate, appraise, produce, and communicate information" (3), to discuss how this concept fits within studies on refugee integration, or "the mutual adaptation between refugees and their host societies in their countries of resettlement."(ibid.) She advances a conceptual framework for "unifying, organizing, and understanding the positive and negative ways digital skills affect multiple aspects of refugees' lives in resettlement" (ibidem: 4). In doing so, she draws attention to the broader engagement of refugees with digital technologies for purposes including work, housing, education, health and social care, and leisure. Relevant to this review is mainly her focus on studies on how refugees use digital technologies to acquire or improve existing digital skills, and how digital skills are transferred to refugees in resettlement countries. By emphasising the novelty of this perspective within the digital humanitarianism literature, she argues that a key takeaway from the studies assessing upskilling initiatives for refugees worldwide is the risk of fostering dependency on resettlement service providers instead of promoting autonomy. This unintended consequence thus suggests that, despite stressing the need to increase refugee agency in technology development, most initiatives might reinforce institutional gatekeeping, facilitating access to employment opportunities in the digital economy of resettlement countries only for refugees who qualify for, and have successfully completed, upskilling programmes.

This literature stream is situated within the broader field of ICTs for Refugees and Migrants (ICT4RM), revolving around the way "ICTs can help displaced people survive and thrive" (Bock et al., 2020), including through the recent proliferation of digital platforms designed to provide IT skills to migrants and asylum seekers. The aim of these platforms ranges from linking customers and investors, such as the Germany-based business incubator

CUCULA, to leveraging refugees' technical expertise and skills to find employment, such as Workeen and RefugeesWork are also used in Germany to help refugees with coding skills. Similarly, Kohler (2020) investigates how refugees in Germany seek job information online, describing their strategies and the language barriers they face. Drawing on data collected online from seven refugees solving different tasks, the article highlights their overreliance on search engines and translation websites.

Germany features prominently in this strand of literature on digital upskilling for migrants and refugees because of the boom of training programmes launched by civil society organisations in partnership with tech firms and supported by the state in response to the 2015 massive influx of asylum seekers from the Middle East (the so-called "2015 refugee crisis"). As over one million migrants entered Germany between 2015 and 2016, German business leaders, trade associations, and several media promptly framed this event against a shortage of specialists across the national IT market and a broader demographic shift featuring a rapidly growing population and a consequently shrinking workforce. The German government responded to this call by civil and economic actors by crafting a policy approach to reconcile migration and asylum management, and the local job market demand. Outlined in documents such as "Re-imagining Work: White paper, Work 4.0" (BMAS 2017), published by the German Federal Ministry of Labour and Social Affairs, this approach translated into actively promoting and supporting the establishment of coding schools for refugees in Germany. As a result of this institutional support, around 112 digital refugee projects were rolled out across Germany, half of which were in Berlin (Mason et al. 2017). Mason (2018) discusses three programmes – Devugees, ReDi School of digital integration, CodeDoor – providing digital vocational training to refugees and reappraises the significance of digital skills in facilitating the socio-economic integration of refugees, arguing instead that contacts and interpersonal (soft) skills, seldom tackled by coding schools, play a crucial role in helping refugees to fit in. Similar conclusions are reached by Rushworth and Hackl (2021) in their in-depth ethnography of a coding school for refugees in Berlin. By addressing the "flawed promise of digital careers as a universal fast lane to decent work," they argue that "the tech sector cannot simply transcend the inequalities and barriers that define migrants and refugees' pathways into national and urban labour markets." (2643) Most newcomers' access to the job market is hindered by a lack of language skills or challenges to accredit their pre-existing qualifications. Although they view learning to code as a "fast lane to restoring a certain status and class identity" (Rushworth and Hackl, 2021: 2647), they also realise that the market requires the above-mentioned soft skills, ranging from vaguely defined 'problem solving mindset' to interpersonal skills, that government-backed programmes are unable to provide. Rushworth and Hackl summarise this conundrum by suggesting that coding schools in Germany are premised upon the assumption that migrants and refugees

> “must change themselves before they can change their career: to succeed as coders they must first decode the working culture of the sector. The implicit message is that success requires them to hide certain aspects of who they are while making other traits more visible.” (2650)

While this challenge is a recurrent theme in the labour migration literature (Friberg and Midtboen, 2018), this stream of scholarship suggests that there is a lack of discussion on the specific types of soft skills that migrants are required to learn to fit the demand of local tech firms and thus avoid, or minimise, the “discriminatory and exclusionary practices within the tech sector.” (…). It is worth including in this review also two influential works assessing digital upskilling programmes for refugees in host countries in Africa and Asia as these initiatives can be viewed as part and parcel of EU’s externalization strategies for managing migration flows and creating economic alternatives to out-migration. This focus rests on the expectations, largely uncorroborated by the evidence, that creating digital job opportunities in refugee camps or first countries of arrival such as Kenya and Jordan, would stymy migration aspirations. The first is a report (2022) by the consultancy Samuel Hall and commissioned by Mastercard Foundation, that analyses the Kenyan labour market and sustainable digital employment opportunities for refugee youth, and women in particular. The second is an International Labour Organisation (ILO) report (Hackl et al., 2021). By referring the category of digital livelihood to both digital training and digital skills-based activities taking place on- and off-line, the report discusses case studies from Asia, Africa, the Middle East, and Europe to highlight the limitations raised by legal questions, cultural sensitivity, language and skill gaps, and connectivity for the creation of durable and gratifying work opportunities for refugees.

4.2 Digital economy and migrant entrepreneurship

The second major research area emerging from the literature review discusses the articulation of digital entrepreneurship and migrations. This stream of literature bridges the issues of digital skills development and labour control in the platform economy by drawing attention to the role of institutional actors in cultivating the entrepreneurial aspirations of migrants and refugees, and highlighting the ambiguous value of flexibility within migrants’ experience of the digital economy.

The studies falling in this research area contribute to debunking the hype, discussed above, that views the digital economy as a strategic sector to absorb refugee labour with mutual benefits for the host country and the refugee population, and interrogates the sustainability of civil society-led digital entrepreneurship initiatives. For instance, in her study on institutional support to refugee digital entrepreneurship in Berlin, Embiricos (2020) argues that, one the one hand, this trend of ‘tech solutions’ for integration is draining resources from a more comprehensive approach. On the other, she reports evidence of organisations making

use of 'token' refugees, often without financial compensation, to legitimise their work. Moreover, they remark that the policies to fast-track the access to the job market for refugees are being weaponised by far-right movements to stoke xenophobic tensions.

Similarly, Satalkina et al. (2022) explore the interrelationship between the local innovation system and migrant entrepreneurship in the digital economy focusing on the Austrian context. Their analytical framework rests on six components, or "reinforcing loops" (231), namely; "(1) the mindsets of entrepreneurs, (2) the role of international collaboration, (3) the role of entrepreneurial education, the financial sphere vis-à-vis the (4) government and (5) private funding, as well as (6) the impact of formal procedures." (ibid) Their study emphasises a holistic approach that ties together the specific legal environment and procedures for entrepreneurs with a broader package of integration policies, against the backdrop of a vaguely defined entrepreneurial culture. However, it glosses over the power asymmetries underpinning the institutional framework shaping migrant entrepreneurs' trajectories. This is instead the contribution of Cavalcanti Zanforlin and Grohmann's (2022) analysis of the strategy pursued by the Brazilian NGO Migraflix to provide entrepreneurial training and access to markets for migrants and refugees. By examining how Migraflix leverages its partnership with tech corporations like Facebook/Meta and Uber, they suggest that "the platformization of labor and the entrepreneurial discourse" foreground the production of "on-demand migrants" (ibid.: 5526).Their ethnography situates the notion of platform migration at the intersection of communication, neoliberalism, and platformization to understand, on the one hand, how "communication shapes the migrants' experience" (ibid.: 5533); on the other, how NGOs, "as part of the migration platform […], are discursive spaces that facilitate the penetration of the neoliberal ideology" (ibid.). In so doing, they highlight the risk of overreliance on NGOs for access to markets and the way working as independent contractors for digital platforms such as Uber and Deliveroo in Brazil reveals "contradictions and tensions between the insertion of migrants as workers and the co-opting of their lives by a neoliberal and entrepreneurial rationale." (5520)

Similar tensions are observed by Holtum et al. (2022) in their mixed methods study that sheds light on the differences in motivations and experiences of migrant and non-migrant drivers in Queensland, Australia. By taking stock of the different motivations, levels of dependency on the platform, and sense of autonomy and agency, they point out that migrant drivers experience features increased levels of employment uncertainty, particularly regarding aspects such as job longevity, autonomy, and individual well-being. As they conceptualise flexibility and autonomy in the gig economy, they conclude that, "in contrast to non-migrants, migrant drivers are more likely to rely on the income from Uber to support themselves and their families" (305). For the migrant digital drivers at the centre of this study, flexibility is a luxury they cannot afford because a lack of alternative sources of income compels the drivers to work excessively. The contingency of flexibility upon workers' legal status is also at the

centre of Pollio's (2019) ethnography of digital drivers (including from a migrant background) in South Africa. In this exploration of the ideology of developmental entrepreneurialism, the author follows Zimbabwean migrants, among others, in Cape Town partaking in discourses of entrepreneurial empowerment and leveraging the digital economy of the ride-hailing platforms to expand their informal networks.

However, legal status is only one among other factors shaping migrants' experience of gig work, as suggested by Abkhezr and McMahon (2022), who discuss the convergence of gig work and career advancement of migrants from the Global South in Europe and North America, and Webster and Zhang (2020), who use a largely overlooked intersectional perspective to examine the gendered labour of immigrant women in Sweden working for a digital platform connecting home-based chefs to customers through an app. Their approach draws on feminist political economy to explore how the food digital platform at the centre of their analysis leverages the immigrant women chefs' "gendered positionality and immigrant roles" as a selling point and helps them develop marketing skills. In so doing, it turns the very empowerment narrative of women entrepreneurs into a product, with practical benefits in terms of additional income but, at the same time, blurring the boundaries of "home/work and personal/professional spheres" (122) and reproducing gender, race and class norms "through the marketing, networking and positioning of the company product", as highlighted by the overwhelming male connotation (80%) of the management team.

4.4 Digital economy and migrant exploitation

A significant theme in the literature on migration and the digital economy focuses on how legal frameworks inform processes of disempowerment that make migrants deportable (De Genova, 2013) and more vulnerable to exploitation by narrowing the range of income opportunities to which migrants have access. With the exception of Delfanti (2021), examining digitally-enhanced despotism in research on an Amazon warehouse in Italy that mentions the significant presence of migrant workers recruited through staffing agencies, this strand of scholarship overwhelmingly engages with the gig economy as a specific subsector of the digital economy. Such literature– explores the significance of platform labour as a double-edged sword (Bandeira, 2019) for migrants with limited job options, delving into the tension between agency and structure that characterizes the interactions of migrants with digital platforms and, more broadly, with what Meeus et al. (2019) call "arrival infrastructures, meaning "parts of the urban fabric within which newcomers become entangled on arrival, and where their future local or translocal social mobilities are produced as much as negotiated" (1). This concept highlights the limited analytical usefulness of isolating the digital economy from this heterogeneous techno-legal assemblage, as suggested by scholars who argue that

factors such as digital firms' low entry barriers, limited initial enforcement, peer support, and unofficial methods of overcoming legal obstacles make gig platforms an integral part of migrant workers' arrival infrastructure. (Van Doorn and Vijay (2021). Without a steady influx of migrant workers, platform companies would struggle to deploy cheap labour across their key markets, and, therefore, to ensure constant expansion and attract venture capital. To achieve this purpose, they integrate, and sometime centralise and replace, these arrival infrastructures, navigating within the state's "regulatory purview" and "respond(ing) to the racialized and gendered logics of subordination, stratification, and exclusion embedded in existing laws and policies". (3) Digital platforms are able to absorb and extract value from this contingent workforce only because migration laws, and the way they are (or are not) implemented disempower workers.

This argument is central to the interventions that draw attention to the overlapping of labour and migration regimes (Nahar Lata et al., 2022; Van Doorn et al., 2022). Van Doorn et al. (2022) leverage the findings of two action research projects in Amsterdam, Bangalore, Berlin, Cape Town, Johannesburg, and New York to argue, on the one hand, that while providing migrants with essential opportunities to enhance their livelihoods, platform labor concurrently diminishes the quality of working conditions.; on the other, that simply reclassifying gig workers as employees is not enough to mitigate the precarisation dynamics intrinsic in gig work. Despite growing evidence of the impact of platform work on migrant vulnerability, however, the entanglement of "citizenship, language, visa, work permits, and the gig economy has been under-researched" (Nahar Lata et al., 2022: 9). Pointing out that the evidence so far collected suggests that digital platforms' algorithmic control and misclassification add a further layer of complexity to migrants' navigation of the labour market in the host country, Nahar Lata et al. (ibid.) sketch a research agenda to explore "the inside/outside dichotomy of migrant labour within the gig economy and their experiences of labour exploitation through app-based digital platforms". (ibid.) Even in immigration systems, such as the Canadian one, widely considered "merit-based with emphasis on high human capital" (Lam and Triandafyllidou, 2022: 12), the experience of platform work is shaped by an interaction of "macro factors (e.g. immigration status, professional status), meso factors (e.g. education and skills, networks)" and "micro factors (e.g. stage in life cycle, aspirations)", resulting into the deepening of structural inequalities.

To some extent, this value-extraction model is not fully new: from the time of the 'putting out' system, where Eighteenth-century commercial capitalists captured surplus-value from multiple textile producers by controlling their access to the market (Banaji, 2020; Stanford, 2017), the greater flexibility afforded by digital technologies has increased firms' capacity to coordinate contingent and fragmented labour. Altenried (2021) uses the case study of the exit of the food delivery platform Deliveroo from Berlin because of failure to turn a profit after four years to examine the interaction of algorithmic management and hyper-flexible employment

against the backdrop of a labour market "constituted and stratified by differential migration regimes including multiple vectors such as citizenship, language, visas, or work permits." (3) A result of this stratification is a race to the bottom towards the most vulnerable workers, possibly leading to a process of informalization (Mendonça et al., 2022) that involves the services of sub-contractors. An instance of subcontracting in the digital economy is examined by Inversi (2021) in their legal analysis of a criminal investigation launched by Milan's Public Prosecutor's Office against Uber Italy Srl for using intermediary firms to recruit asylum seekers in desperate need of income and offering starvation wages.

While this example of digital gangmastering is an extreme case of exploitation of pre-existing vulnerabilities, there is broad consensus in the literature that labour market stratification is the precondition that makes the expansion of digital platforms possible. Labour stratification also has implications for the way workers experience and perceive platform labour. Lee (2023) discusses the impact of the exit from Canada of Foodora, another global food delivery platform, on migrant workers' subjectivities, highlighting the economic, social and emotional impacts upon financially-dependent gig workers. Similarly, in her qualitative study among migrant food delivery couriers in Norway and Sweden, Newlands (2019) examines how the mismatch between migrants' perceived employability and the local labour market context influence workers' short temporal orientation. The low perceived employability of new migrants, due to their scant information about the local job market, challenges in having their qualifications recognised in the host country, and a lack of language skills helps explain the centrality of gig work as "a common labour market entry point for new migrants" (2). However, they argue that, far from being a stepstone towards upward social mobility, migrant workers largely view gig work as a dead end to be carried out for the shorter time possible.

An Insightful theoretical background to grapple with this thematic area is provided by McMillan Cottom (2020), who instigates a reflection on the intersection of platform and racial capitalism. Their departure point is that Internet technologies "have facilitated, legitimized, and transformed states and capital within a global racial hierarchy" (442). The platform economy mirrors and maximises the extractive and exploitative practices that define racial capitalism through mechanisms that McMillan Cottom (ibid.) calls "logics of obfuscation" and "predatory inclusion." These two key dimensions deepen differentiation patterns rooted in the "sedimented histories of racialised dispossession that shape economic life in our time" (Bhattacharyya 2018:x). The salience of race in digital capitalism is explicit in works unpacking how digital platforms' management and legal expedients reproduce power relations along racial lines. Gebrial (2022) explores the mutual shaping of 'work on-demand via apps' and "historically contingent racial politics" (2), specifically focusing on how the legal and technological arrangements of the ride-hailing platform Uber dovetail the racial formatting of London's Uber drivers, most of whom are 'brown' migrant outsiders, as "disposable and dangerous" (3). The article's engagement with racial capitalism highlights the continuity

between the legal, political, and economic processes that, against the backdrop of the 2008 financial crisis, have created a racialized surplus population, and the subsumption into an exploitative labour model which "extracts value from their workers as employees, yet denies responsibility for subsidising the corporeal needs of those workers through sick and holiday pay, and health and safety protection." (12) In their investigation of low-income service work in the 'on-demand' economy, Van Doorn (2017) focuses on service digital platforms mainly relying on immigrant women of color in the US, arguing that racial politics and rhetoric shape the platform model. Echoing Gebrial's argument, Van Doorn thus points out that labour management and surveillance in platform capitalism are made possible by the historical trajectories that have entrenched inequality along racial lines. Labour platforms are the latest instantiation of a temporary staffing industry that has grown dramatically over the past twenty years, capturing value from the fungible and racialized workforce emerging from decades of austerity. Racial politics, particularly in the US, is prominent in the operations of the app-mediated ride-hail, care, and cleaning industries examined by Ticona et al. (2018). By focusing on both "on-demand" platforms, which leverage algorithmic management to manage workforces and link them up to consumers, and marketplace platforms, which render visible workers and are increasingly common in the care sector, they highlight how race and gender affect workers' agency and vulnerability by putting greater pressure on safety, scrutiny, and conformity to specific self-presentation requirements.

Finally, this literature engages with the uneven implications of the COVID-19 pandemic for different workforce segments. The research of Aguilera et al. (2022), for instance, relies on a large sample (700 couriers), of which almost 90% were foreign nationals, in Paris, to examine the pandemic's impact on platform reliance, road safety, and broader working conditions on workers with different employment and migration statuses. In a short intervention, Altenried et al. (2021) discuss the "special relationship" of platform labour and "(im)mobility, from migrant food couriers to crowdworkers working remotely for customers on the other side of the globe", pointing out that the COVID-19 pandemic has underlined the significance of mobility for labour.

In conclusion, this strand of scholarship shows how the digital economy, and digital labour in particular, shapes migrants' trajectories while being, at the same time, the breeding ground of new subjectivities, leading to entrepreneurship, as previously discussed, or contestation, as will be examined in the next section.

4.5 Migrant solidarity and activism in the digital economy

The last key theme emerging from this review on migration and the digital economy revolves around migrant solidarity and activism. This literature as well mainly engages with platform labour, examining the emergence of "communities of struggle' geared towards

mobilization [that] facilitates their empowerment, effectiveness, and social integration" (Però, 901). However, it largely neglects other subsectors of the digital economy and only marginally discusses migrant networks as a site of mutual support and organization. This section reviews only the works that explicitly focus on how migrants and refugees leverage their ties to make sense and cope with the volatility of digital work, and how their status hinders participation in formal industrial actions. In their study of migrant couriers in the platform-based food delivery business in Italy, Iazzolino and Varesio (2023) describe how workers from West Africa and South Asia counter and disarticulate platforms' control and use of gamification to format competitive subjects. In so doing, they signal the emergence of a space in which informal entrepreneurship and labour activism are entwined. Popan (2022) draws on ethnographic research conducted in London and Manchester among migrant couriers for the food delivery platform Deliveroo to examine how "they embody, negotiate, and contest the smartness of the platform". (6) Their article teases out workers' reaction to the platform's algorithmic management and production of metrics, identifying two trajectories of workers' resistance, towards entrepreneurialism and solidarity. In examining worker agency among Uber drivers in the Washington, D.C. region, Wells et al. (2020) explore how the 'just-in-place' workers, who have migrant backgrounds, bypass spatial atomisation by forging precarious moments of solidarity. In so doing, they highlight the "uneven struggle over worker power in the platform economy and the degree to which it is a struggle about being in place". (3) Cañada et al. (2023) tackle workers' agency from a different, and hitherto little discussed, angle as they investigate how the solidarity cultivated in migrant networks, if embedded in enabling governance arrangements and supported by workers' experience, leads to the establishment of platform cooperatives revolving around principles of labour control and fairness. By focusing on three food delivery cooperatives, two of which have a predominance of foreign-born workers, they thus suggest that, as "alternative ways of organising work for discriminated-against collectives such as immigrants, these cooperatives challenge the hegemony of the established norms of the platform economy". (14)

While this stream of literature is overwhelmingly concerned with migrant worker participation in the gig economy, a notable exception is Alimahomed-Wilson and Reese's (2021) analysis of organization and mobilisation of Black and Latinx blue-collars in US Amazon's warehouses. One of their case studies with particular relevance for this review examines the active role taken over by Awood, a Somali grassroots organisation in Shakopee, Minnesota, in mobilising hundreds of Amazon workers, most of whom are from the local Somali community. Their contribution foregrounds the significance of trust and solidarity steeped in a shared background and cultivated on the shop floor, thus extending to workers outside the specific ethnic community. It also points to the growing importance of diasporas as transnational labour actors, a topic worth further attention in future research agendas.

5. Conclusions and further research

This report has reviewed the academic literature situated at the intersection of migration studies and the social science scholarship on the digital economy. It provides two contributions to the discussion: first, it argues that migration studies peer-reviewed journals have hitherto paid limited attention to the relationship between migration and the digital economy; second, that the interdisciplinary literature on migration and the digital economy can be roughly divided into four streams: digital upskilling initiatives for migrant workers; migrants and digital entrepreneurship; the digital economy as a double-edged sword for migrant workers; and migrant solidarity and organisation from below in the digital economy. The review shows that most studies focus on digital platforms facilitating access to precarious jobs for migrants with limited knowledge of the language of the country of arrival or unable to have their qualifications recognised. Based on the current literature, we may anticipate that, in the future, digital skills, either acquired through training or practice, would lead to less precarious and more rewarding employment for migrants. However, this positive outcome is contingent upon the different national migration laws and how they interact with an ever-changing regulatory framework of the digital economy, and the gig economy in particular. Researchers and practitioners are thus called to monitor this evolving landscape, in light of the fact that the intersection of labour and migration regimes is a dynamic process that warrants regular attention. Further research must build upon this concern, asking for instance to what extent EU directives that attempt to regulate the gig economy account for, or conflict with, differences in migration policies across EU member states.

At the same time, as emerging from the literature on digital upskilling explored in this report, it is unclear at this stage what soft skills are expected to complement the technical skills transferred in state-sponsored training programs and meet employers' requirements. Additional research may focus in particular on the demand side, investigating firms' views not only on the attitude and traits that migrant workers are required to possess, but also on the cultural features (such as language skills and knowledge of the context of origin) that workers with a migrant background may leverage to add value to local digital firms, as they are better positioned to understand the needs of a specific community.

This line of inquiry may highlight the emergence of particular ethnic niches in the digital economy catering to the needs of transnational migrants requiring remittance or e-commerce services. Indeed, the development of digital expertise among migrants is likely to give rise to innovative business models, including platform cooperativism. How would cooperative and not-for-profit firms cope with the risk of being outpriced by large international platforms, able to mobilise capital to their services at a lower cost? Would customers be willing to pay an 'ethic premium', meaning a higher price for services complying with labour fairness criteria? And to what extent digital firms would be willing to balance profit and corporate responsibility without

falling in the sort of 'tokenism' highlighted by study of Webster and Zhang (2020) discussed above?

Special attention must be paid to how both agency and structure may serve as lens to understand the significance of digital work in migrants' lives. At a micro level, there is a need to delve into the pratices through which migrant workers navigate the vagaries of the digital economy and the mutual shaping of market trajectories and migrants' aspirations. Longitudinal studies would be particularly helpful to capture how migrants adapt their strategies not only to the challenges presented by an evolving market, and changing laws, but also to meet emerging opportunities. How are these strategies entwined to shifting views and expectations over time?

At a structural level, current research suggests that diaspora organisations may play a greater role in the future, by funneling capitals and facilitating the sharing of knowledge for new migrant-led digital platforms to appear. Diaspora networks are positioned as well to become transnational sites of worker subjectification and organization, and migration and digital economy scholars may draw insights from examining how diaspora politics would interact either with the circulation of workers' struggles or with forms of gatekeeping, as diaspora groups would effectively facilitate the entrance of community members into the digital economy while preventing others from doing so. In particularly conservative migrant communities, the latter might apply for instance to women. As this review has shown, there is indeed a dearth of academic publications embracing an intersectional approach to migrant work in the digital economy. Further research is required on how the digital economy, and particularly location-based platform work such as ride-hailing and food delivery, can exacerbate gender inequalities, keeping into account not only the cultural differences that might impinge on the participation of women from specific backgrounds, but also the intrinsic dynamics of platform work. In the food delivery sector, for instance, couriers are compelled to accept all assignments that are sent their way in order to keep their scores high and keep receiving tasks (Iazzolino and Varesio, 2023). They are also expected to perform unpaid accountancy work to keep track of the money they owe to the platform when they are paid in cash by the customers (ibid.). How does this "coercive flexibility" (Richardson, 2020) reconcile with strongly gendered social reproduction duties? How do gender differences interact with the possibility to either entering or calling for better conditions within the digital economy?

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