DOI: http://dx.doi.org/10.1590/0103-6351/7958 **Original article**

Understanding Brazil's Platform Economy: Trends and Regulatory Challenges

Compreendendo a economia brasileira de plataforma: tendências e desafios regulatórios

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Abstract

The proliferation of digital platforms has transformed economic landscapes, orchestrating connections among diverse agents and fostering innovation. Yet, the regulatory oversight remains a concern, prompting the need for comprehensive data on the platform economy. This is the first study that provides aggregate data on Brazil's digital platform economy. Our research aimed to address two critical issues: Are Brazilian companies aligned with the global platformization trend, and what distinctive attributes characterize them? Identifying 556 platform companies in the country, the study confirms Brazil's active participation in the global platform economy. However, these companies, primarily young and SMEs, exhibit regional concentration and reliance on foreign investments. The study outlines the need for nuanced regulatory frameworks considering company size, market share, and user base. In conclusion, the research sheds light on Brazil's participation in the global platform economy, emphasizing its unique attributes and offering insights crucial for policymakers and future investigations.

Keywords

platformization, platform capitalism, digital innovation, digitalization, digital transformation, Crunchbase.

JEL Codes L86, O14, O30.

Resumo

A proliferação de plataformas digitais transformou cenários econômicos, orquestrando conexões entre diversos agentes e promovendo a inovação. No entanto, a regulação continua sendo uma preocupação, suscitando a necessidade de dados abrangentes sobre a economia das plataformas. Este é o primeiro estudo que fornece dados agregados sobre a economia brasileira de plataformas digitais, abordando duas questões: as empresas brasileiras estão alinhadas com a tendência global de plataformização e quais atributos distintivos as caracterizam? Identificando 556 empresas de plataformas no país, o estudo confirma a participação ativa do Brasil na economia global de plataformas. No entanto, estas empresas, principalmente jovens e PMEs, apresentam concentração regional e dependência de investimentos estrangeiros. O estudo descreve a necessidade de quadros regulamentares diferenciados, considerando o porte da empresa, a participação de mercado e a base de usuários. Concluindo, a pesquisa lança luz sobre a economia de plataformas no Brasil, enfatizando seus atributos únicos e oferecendo insights cruciais para formuladores de políticas e investigações futuras.

Palavras-chave

plataformização, capitalismo de plataforma, digitalização, Crunchbase.

Códigos JEL *L86, O14, O30.*

1 **Introduction**

A digital platform is a technological architecture controlled by an entity – such as private companies, governments and scientific communities – which allows the orchestration of connections among various economic agents (PARKER, GEOFFREY G.; ALSTYNE; CHOUDARY, 2016; VAN DIJCK; POELL; WAAL, 2018). This interpretation emphasizes two pivotal characteristics. Firstly, digital platforms aim to facilitate interactions and transactions (SRNICEK, 2017). Secondly, they hinge on network effects (PARKER, GEOFFREY G.; ALSTYNE; CHOUDARY, 2016), exploring the impacts that marginal increases in a network's participants have on the perceived value of the network by other participants (BELLEFLAMME; PEITZ, 2021).

Digital platforms are also a source of innovation (NAMBISAN; WRIGHT; FELDMAN, 2019; TEECE, 2018). By opening up their infrastructure to complementors, they offer an accessible marketplace and an integrated infrastructure for third parties in various industries. Therefore, they have elevated open innovation to a new paradigm, given their ability to decentralize it, while at the same time centralizing the governance and infrastructure that makes this new type of digital innovation possible (LEHDONVIRTA, 2022). According to Nambisan, Wright, and Feldman (2019), digital platforms have significantly altered the extent and character of open innovation and entrepreneurship, influencing who can get involved, what they can offer, how they can contribute, and the ultimate objectives they can achieve. By orchestrating and structuring innovation and markets, digital platforms hold a privileged position, enabling them to capture a portion of the value generated within these virtual markets (TEECE, 2018). Consequently, the presence of successful digital platform companies in a region often transforms it into a hub for capital accumulation.

The economic significance of digital platforms has prompted several international organizations to advocate for their integration into development policies (ECLAC, 2021; OECD, 2019). Koskinen, Bonina, and Eaton (2019) and Bonina *et al*. (2021) delve into the potential of these emerging actors to drive socio-economic progress in the Global South. Nevertheless, concerns persist regarding the limited regulatory oversight within the digital economy in which these new actors operate (CUSUMANO; GAWER; YOFFIE, 2021; LUNDQVIST, 2019; NOOREN *et al*., 2018).

Those interested in the potential value and innovation brought by platforms, as well as those expressing concerns about their negative impacts and advocating for regulation, could greatly benefit from comprehensive, aggregated data regarding the platform economy. That said, the literature dedicated to cataloging the population of digital platform companies in a specific geographical area is scarce. While some scholars have made efforts in this regard (EVANS; GAWER, 2016; FRIEDERICI; REISCHAUER; LEHDONVIRTA, 2022; GROEN *et al.*, 2021; KÄSSI; LEHDONVIRTA; STEPHANY, 2021), they often focus on particular types of platforms, such as digital labor platforms (KÄSSI; LEHDONVIRTA; STEPHANY, 2021), or they fall short of identifying indigenous platform companies in regions of the Global South (EVANS; GAWER, 2016).

In Brazil, despite the increasing scholarly attention devoted to the topic (CHIARINI *et al.*, 2023), there is no aggregate evidence of platform companies in the country. Existing studies tend to concentrate on specific categories of companies, such as labor platform companies, *i.e.*, iFood, primarily exploring their impacts on labor dynamics (ABILIO; GROHMANN; WEISS, 2021). Given this focus on case studies and narrower sub-topics, we lack information about the Brazilian digital platform economy as a whole. We don't know if Brazilian companies align with the global trend of digital platform development, and, if they do, how closely they do so.

This knowledge gap in the realm of digital innovation and the digital economy not only impedes the formulation of effective development and regulatory policies but also can lead to flawed public policies that are put into practice without an empirical basis[1]. Consequently, our research en-

1 To exemplify, the National Council of Industrial Development (*Conselho Nacional de Desenvolvimento Industrial* or CNDI), an entity subordinated to the Ministry of Development, Industry, and International Commerce (*Ministério do Desenvolvimento, Indústria e Comércio* or MDIC), has formulated a mission-oriented policy with the aim of fostering the digital transformation of the industrial sector and increasing the involvement of domestic companies in the digital platform economy. This initiative is outlined in *Resolução* CNDI/MDIC N° 1, dated July 6, 2023 and its action plan (called *Nova Indústria Brasil*) was launched on January 22, 2024, guiding the allocation of public investments, totaling R$300 billion by 2026, and encouraging private investments in national industry over the next 10 years. Furthermore, there is another pertinent example in the form of Bill 2,768/2022, currently under deliberation within the Brazilian Chamber of Deputies. This bill seeks to establish regulations governing the organization, operation and functioning of these digital markets. However, a critical question looms over both endeavors: How can such objectives be effectively pursued without a comprehensive understanding and mapping of the landscape of Brazilian digital platforms?

deavors to address two key questions: a) are Brazilian companies aligned with the platformization trend observed globally? And, b) what distinctive attributes characterize Brazilian platform companies?

In the next section, we delve into the theoretical underpinnings of our study, presenting the investigations that have endeavored to map the platform economy. Additionally, we explore the body of literature related to the Brazilian platform economy. In section 3, we outline the research methodology employed, emphasizing the selection and characterization of entities referred to as "digital platform companies". Section 4 brings a comprehensive descriptive analysis about the Brazilian platform companies in terms of size, revenue, sector, location and funding. In Section 5, we engage in an in-depth discussion as to whether Brazil is in line with the global trend of digital platform development and what the primary characteristics of Brazilian digital platform companies are. Finally, we bring up some points that policymakers should consider when addressing the platform economy in Brazil.

2 **Theoretical background**

2.1 **Previous methodologies for identifying platform companies**

According to Riso (2019), the only document that sought to geographically and sectorally map the distribution of the digital platform economy is Evans and Gawer (2016). They recognized that although a handful of platforms have received substantial recognition in both mainstream media and academic circles, there was still considerable information lacking. Questions such as the number of prominent platforms operating worldwide, their geographical origins, the industries they are involved in, and the extent of their workforce are answered by their survey. Therefore, their objective was to enhance our comprehension of the worldwide expansion and scale of platform enterprises.

Evans and Gawer (2016) used Quid web database to locate digital platform companies globally, focusing on those with a market value exceeding USD 1 billion. They pinpointed 176 such companies: 82 in Asia, 64 in North America, 27 in Europe, 2 in South America (one each in Brazil and Argentina), and one in Africa (in South Africa). The bulk of the market

value belonged to North American platform companies (72%), while 22% belonged to Asian ones.

Evans and Gawer (2016) also categorized the discovered platforms into two main types: transaction platforms and innovation platforms. Transaction platforms, such as Uber, Amazon, and eBay, facilitate connections between various individuals and organizations. In contrast, innovation platforms, *e.g.*, Apple's App Store, provide foundational technology that enables numerous innovators to develop complementary services or products.

In Groen *et al*. (2021)'s study, an extensive census was conducted to document the presence of digital platforms within the European Union (EU). Concentrating exclusively on platforms that intermediate work, the researchers identified 593 digital labor platforms. Groen and colleagues' primary objective, as outlined in their paper, was to furnish empirical evidence regarding the labor platform landscape in the EU[2]. They achieved this by amalgamating secondary data from existing European[3] and global inventories[4] of active digital platforms. Furthermore, the researchers performed additional searches, with a specific focus on the bigger EU member economies, including France, Germany, Italy, Poland, and Spain, as well as Belgium and the Netherlands. However, their paper does not provide explicit details on the methodologies employed for these searches. Finally, the authors augmented their platform list by including those that were either affiliated with or acquired by larger industry companies such as Deliveroo, Delivery Hero, Just Eat Takeaway, and Uber. Nevertheless, the paper lacks a comprehensive explanation of the techniques used for this identification process.

Additionally, with a particular emphasis on the EU, Friederici, Reischauer, and Lehdonvirta (2022) map four specific sectors: e-commerce, food delivery, health care, and social networking. Their data collection approach primarily relied on desk research, entailing the compilation of an extensive array of secondary data sources. These sources encompassed market research reports, academic research publications, grey literature, databases, and platform websites. It's important to note that their search

2 EU27.

3 European Foundation for the Improvement of Living and Working Conditions (Eurofund) and Joint Research Centre (JRC).

4 International Labour Organization (ILO).

methodology was not systematic, and it does carry several limitations, as acknowledged by the authors. Perhaps the most noteworthy limitation is the restriction of their data to publicly available archival sources.

Finally, Kässi, Lehdonvirta, and Stephany (2021) map 351 online labor platforms from across the globe, aiming to quantify the size of the online workforce within the platform economy. Their approach involved gathering platform's data from three sources. Firstly, they compiled data from Crunchbase, the same database employed in this research, with a specific focus on platforms falling under the 'freelance' and 'crowdsourcing' categories. As a second source, they drew from a cross-regional survey featured in Wood *et al*. (2019). To ensure completeness, the researchers also augmented their list by conducting Google searches, particularly targeting online freelancing platforms based in Spain, Latin America, Russia, and China.

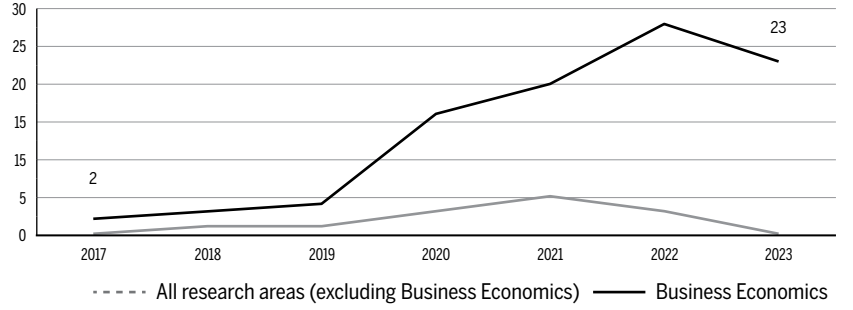
The small number of platforms and the high geographic concentration identified by Evans and Gawer (2016) and other previous research contradict the assertion made by Cusumano, Gawer, and Yoffie (2019) about a surge in digital platforms during the 2010–2020 period (*platformania*), suggesting a proliferation of these platforms as a standard organizational model (GAWER, 2021b). In an effort to reconcile this contradiction, Silva, Chiarini, and Ribeiro (2022) conducted a global mapping of platforms. Employing Natural Language Processing methods, they identified over three thousand digital platform companies worldwide, utilizing data from the Orbis database. Despite their contribution, their study acknowledged limitations in mapping smaller digital platform companies due to database constraints. Consequently, geographic disparities persisted, with North America and Asia, particularly the U.S. and China, maintaining a significantly larger representation of platform companies on a global scale.

2.2 **The Brazilian platform economy: case studies and sub-topics**

In the context of Brazil, we have found a gap in research efforts pertaining to the mapping of Brazilian digital platform companies. Despite this conspicuous dearth, there has been a nascent upsurge in scholarly literature concerning digital platforms, a recent trend substantiated by the increasing number of scholarly articles published on this subject, as evidenced by data retrieved from the Web of Science (WoS) (see Figure 1). Among these

published articles, approximately 12% pertain to the field of communication research, while another 12% are associated with the domain of business and economics. The remaining articles encompass a diverse spectrum of research areas, ranging from computer science to cultural studies.

Figure 1 **Annual evolution of the number of articles addressing digital platforms and Brazil, WoS Core Collection, 2017-2023**



Source: Authors' own. Data sourced from WoS.

Note: Search carried out on October 8th, 2023. Search string: TITLE-ABS-KEY ("digital platform" AND "Brazil*") AND (LIMIT-TO (DOCTYPE, "ar")).*

While these studies do not specifically focus on a comprehensive mapping of Brazilian digital platform companies, they nevertheless make significant contributions to our understanding of the platform economy's significance within the country. With respect to knowledge generated within the "business and economics" field as delineated by WoS, we have identified four distinct research streams in Brazil.

The first stream pertains to a specific facet of the ongoing process of platformization in the country – the transformation of labor conditions, with a specific focus on food delivery workers and their collective organization (ABILIO; GROHMANN; WEISS, 2021; STRECKER *et al*., 2021). Abilio, Grohmann, and Weiss (2021) contend that labor management, control mechanisms and strategies employed by platform companies, such as Loggi, Rappi, and iFood, result in extended working hours, meager compensation per hour worked, a lack of labor rights, minimal support from the companies for the workers, and, frequently, unexplained terminations. Strecker *et al*. (2021) corroborate these findings, shedding further light on the precarious working conditions faced by food delivery workers who rely on digital platforms in Rio de Janeiro.

A second research stream within the realm of "business and economics" focuses on the shifting behaviors of consumers in Brazil. Silveira, Levrini, and Ertz (2021) argue that platform companies can exert influence on consumer behavior. This assertion is substantiated through an exploratory case study conducted on a digital bike-sharing platform (Bike Poa) in Porto Alegre, which has played a transformative role in shaping consumer preferences toward healthier and more sustainable practices.

The third research stream centers on the transformation of firms' capabilities, specifically how digital platforms enable new business models. Okano, Santos, and Ursini (2022), through three case studies of Brazilian platform companies, elucidate this phenomenon. The value creation proposal of these firms revolves around operating a ride-hailing platform for peripheral neighborhoods, offering a platform for optimizing research, evaluation and management of a company's social investment, and replacing traditional payment methods with a mobile app. From in-depth interviews, Okano, Santos and Ursini (2022) demonstrate that all three companies share common features, serving as transaction platforms with a business model characterized by correspondence (match), connecting customers and suppliers. These business models represent innovations within their respective domains, as they offer services, and the companies have clearly delineated their value propositions and customer segments. Additionally, Hummel and Silva (2020) present a case study of the creation and implementation of a digital platform within an anonymized cooperative in Brazil, which deals with the commercialization of flowers and ornamental plants in B2B markets. Stingelin *et al.* (2022) introduce a marketplace platform that can be implemented in a small town, facilitating better acquaintance with local businesses and providing precise, easily accessible information. Furthermore, it creates business opportunities and enhances market positioning in the face of unfair competition, ensuring the continuity of product supply.

Finally, the fourth research stream centers on regulatory matters. Eben and Robertson (2022), through a comparative analysis of the decision-making practices of antitrust authorities in the European Union, the United States, and Brazil, reveal that, despite a consensus on the theory and tools for defining markets in the context of free services, no consensus has been reached regarding the regulation of digital platforms. Moreover, Blotta and Francischelli (2020) analyze disputes related to regulatory reforms

concerning Video On Demand (VoD) and video Over The Top (OTT) services offered by streaming digital platforms.

It is important to note that most of the aforementioned studies employ qualitative methodologies, complemented by research-intervention strategies involving dialogues and interviews with stakeholders and/or archival analysis. There is, therefore, a lack of quantitative aggregate studies concerning the platform economy, and specifically, the platform companies in Brazil. Furthermore, while these prior studies have provided valuable insights into the evolving dynamics of labor conditions, shifting consumption patterns, the development of firm capabilities, and the regulatory landscape, they tend to focus on specific sub-themes within the emergence of the platform economy. Consequently, they fall short of presenting a comprehensive and holistic view of Brazilian platform companies. In some instances, the platforms under scrutiny were even anonymized, as observed in the works of Hummel and Silva (2020) and Okano, Santos, and Ursini (2022).

As a result, there remains a notable absence of empirical validation regarding the platform economy in Brazil. This deficiency poses a considerable challenge for regulators striving to effectively govern digital markets and policy makers aiming to foster growth in the digital sector (as per footnote 1).

3 **Research method**

Considering digital platforms as entities creates an ontological ambiguity when distinguishing them as virtual structures of inter-organizational governance from the organizations themselves. Digital platforms represent a virtual structure that can be overseen by private corporations, governmental entities, or academic communities. In essence, it is crucial to differentiate this inter-organizational structure from the organizations that exercise control or participate within it (DOLATA; SCHRAPE, 2022). In our study, we identify companies that control digital platforms and named them "platform companies". Consequently, our unit of analysis revolves around these companies. The common thread among all these companies is their role as controllers of a digital platform, although they may engage in various other activities. A highly illustrative example is Meta, a corpora-

tion that exercises control over several distinct digital platforms, including Instagram, Facebook, Messenger, and WhatsApp.

The data used in this study was extracted from Crunchbase, a firmographic database, on October 10th, 2022. This dataset encompasses a comprehensive array of information regarding companies, including details such as their size, location, operational status (whether active or closed), legal structure (whether for-profit or non-profit), founding date, industry classification, estimated revenue range, and a concise description. Unlike Kässi, Lehdonvirta, and Stephany (2021), who specifically focused on digital platform companies within the "freelance" and "crowdsourcing" industry categories, we adopted a more inclusive approach, retrieving data across all industry categories. This broader perspective aligns with the blurring of sectoral boundaries in the face of technological advancements (JACOBIDES; LIANOS, 2021).

Within Crunchbase, there is a substantial dataset comprising more than 28 thousand companies with their headquarters based in Brazil. To pinpoint those classified as platform companies, we implemented the search strategy proposed by Silva, Chiarini, and Ribeiro (2023) and employed the keywords presented in Table 1 as our search criteria.

Table 1 **Lists of terms used to screen digital platform companies**

application software	internet search solution	online gaming	social media platform
delivery platform	internet shopping	online marketplace	social media content
digital marketplace	marketplace platform	online platform	social media management
digital payment	mobile game	online reservation	social media marketing
digital platform	mobile payment	online social media	social media strategy
e-commerce market	mobile platform	open-source platform	social network
e-payment	on demand economy	payment platform	social networking services
innovation platform	online advertising service	search engine	software platform
internet marketplace	online booking	serverless computing	transaction platform
internet platform	online game	services marketplace	transactional marketplace

Source: Silva, Chiarini, and Ribeiro (2023, p. 07).

To validate the inclusion of these companies, we applied the methodology outlined by Silva, Chiarini, and Ribeiro (2023). As a result of this meticulous process, we narrowed it down to 556 Brazilian digital platform companies.

4 **The Brazilian digital platform economy**

4.1 **New and tiny**

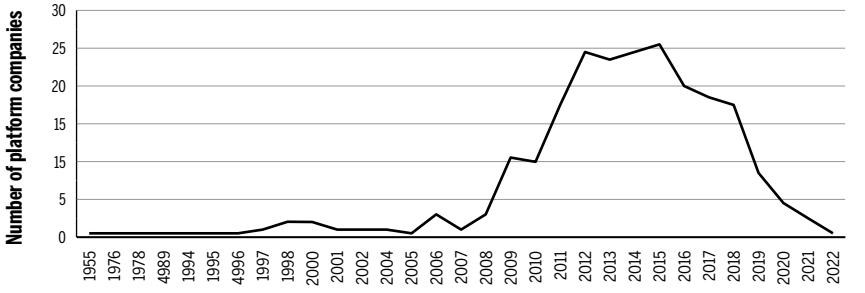
Figure 2 presents the dispersion of the founding date of the companies of our set by year. The vast majority – 82% of digital platform companies – was founded from 2011 on, aligning with the global platformization trend (CUSUMANO; GAWER; YOFFIE, 2019; GAWER, 2021b). Also remarkable is the number of firms whose foundation dates back to the pre-Internet era; although not initially adopting a platform organizational model (DOLATA; SCHRAPE, 2022; GAWER, 2021b; MCINTYRE; SRINIVASAN; CHINTAKANANDA, 2021), these companies transformed their business models to include platform services at some point.

Established companies were founded prior to the Internet era and ventured into offering digital services during the digital boom. These legacy companies can be found in various sectors, including real estate, cooperatives, and the audiovisual industry. The substantial growth of Brazilian platform companies founded from 2011 onward can be attributed to the gradual proliferation of Internet connectivity throughout the country[5], particularly the widespread adoption of mobile devices as the standard means of individual connection. This phenomenon solidified the consumer application markets, encompassing areas such as social networking, ride-hailing, and delivery services (STURGEON, 2021).

5 According to the Regional Center for Studies on the Development of the Information Society (*Centro Regional de Estudos para o Desenvolvimento da Sociedade da Informação* or Cetic.br), internet access in Brazilian households has witnessed remarkable growth over the years. In 2005, a mere 13% of Brazilian households had internet access. By 2010, this figure had nearly doubled to 27%, and it continued to rise to 51% in 2015. By 2020, an impressive 83% of households were connected to the internet. Examining individual cell phone usage, in 2005, while 55% of individuals used mobile phones, only about 5% used them to access the internet. In 2010, despite a rise in mobile phone usage to 79%, the proportion of those using them to access the internet remained at 5%. However, by 2015, as cell phone usage surged to 88%, there was a notable surge in internet usage, with 56% of people accessing the internet through their phones. The survey data also reveals that in 2015, 50% of mobile users searched for information on Google, 53% accessed social networks (such as Facebook, Instagram, or Snapchat) via their mobiles, and 60% sent messages through WhatsApp or Messenger. Impressively, in 2020, 93% of individuals used cell phones, and 87% accessed the internet via their phones. The numbers soared further: 75% used their mobiles for information searches, 68% accessed social networks, and 86% utilized them for sending instant messages. In the context of businesses, in 2019, a remarkable 98% of companies reported using the internet within the previous 12 months. These figures collectively underscore the widespread adoption of the internet and digital platforms in Brazil.

The notable statistic that 4 out of 5 platform companies in Brazil were established after 2011 demonstrates that, in economics of innovation jargon, they constitute entrants. According to previous studies in the field of economics of innovation, entrants often possess a strategic advantage over incumbents when it comes to targeting nascent value networks for consumers (CHRISTENSEN; ROSENBLOOM, 1995).

Figure 2 **Platform companies by founded year**



Source: Authors' own. Data sourced from Crunchbase.

Note: year of establishment was available for 82% of digital platform companies identified at Crunchbase.

In addition to their predominantly recent establishment, Brazilian platform companies are characterized by their small scale in terms of direct employees, as presented in Table 2. It is important to note, however, that existing literature indicates that entrants, in general, tend to be small, and their prospects for survival and growth vary by industry (AUDRETSCH, 1995).

Within our sample, nearly 65% of the platform companies employ between 1 to 10 workers, while almost 22% have a workforce ranging from 11 to 50 people, and nearly 13% exceed 51 employees. Hence, when discussing the platform economy in Brazil, we are essentially addressing small and medium-sized enterprises (SMEs).

This observation could be a reflection of their recent foundation, as these platforms may still transition from an initial launch phase to a more mature stage over time (GAWER, 2021b). Alternatively, it might stem from a lean business model, emphasizing streamlined infrastructure, minimal assets and a lean workforce (SRNICEK, 2017).

Table 2 **Platform companies by number of employees and revenue range**

Estimated workforce			Annual estimated revenue range, USD							
Range	Number of companies	% of the sample	Less than $1M	$1M - $10M	$10M - $50M	$50M - $100M	$100M - $500M	$500 - $1B	$1B - $10B	$10B +
01-10	291	64,5%	63%	37%	–	–	–	–	–	–
11-50	100	22,2%	32%	68%	–	–	–	–	–	–
51-100	13	2,9%	33%	33%	33%	–	–	–	–	–
101-250	25	5,5%	–	60%	30%	10%	–	–	–	–
251-500	7	1,6%	25%	50%	25%	–	–	–	–	–
501-1,000	8	1,8%	33%	–	33%	33%	–	–	–	–
1,001-5,000	3	0,7%	–	–	–	–	100%	–	–	–
5,001-10,000	1	0,2%	–	–	–	–	–	100%	–	–
10,000 +	3	0,7%	–	–	100%	–	–	–	–	–
Companies with information	451	100,0%	–	–	–	–	–	–	–	–
Companies without information	105	–	–	–	–	–	–	–	–	–
Total companies	556	–	–	–	–	–	–	–	–	–

Source: Authors' own. Data sourced from Crunchbase.

Note: number of employees was available for 81% of digital platform companies identified at Crunchbase.

In addition to their limited workforce, Brazilian digital platform companies are characterized by their relatively modest revenue range. Among companies with 1-10 employees, a significant 63% generate less than USD 1 million annually, and of companies employing 11-50 people, a noteworthy 68% fall within the revenue range of USD 1 million to USD 10 million (as presented in Table 2). What is particularly intriguing is the correlation observed between revenue and the number of employees. This correlation suggests that the lean model, typified by platform companies with minimal staffing and infrastructure (SRNICEK, 2017), may not necessarily represent a viable path for substantial growth.

4.2 **Sectoral distribution**

Brazilian platform companies span various industry sectors. Approxi-

mately 26% of platform companies (Table 3) are categorized under the "commerce and shopping" industry group, while nearly 9% fall within the "community and lifestyle" group (also shown in Table 3).

Table 3 **Platform companies by industry group, %**

Industry group	%
Commerce and shopping[1]	26,1
Community and lifestyle[2]	8,8
Internet services[3]	7,9
Apps[4]	7,6
Administrative services	6,5
Information technology	5,8
Advertising	5,8
Education	3,8
Healthcare	3,4
Financial services	3,4
Content and publishing[5]	2,9

Source: Authors' own. Data sourced from Crunchbase.

Note: Companies can belong to multiple industry groups, therefore, there is double counting.

[1] Auctions, classifieds, collectibles, consumer reviews, coupons, e-commerce, e-commerce platforms, flash sale, gift, gift card, gift exchange, gift registry, group buying, local shopping, made to order, marketplace, online auctions, personalization, point of sale, price comparison, rental, retail, retail technology, shopping, shopping mall, social shopping, sporting goods, vending and concessions, virtual goods, wholesale.

[2] Adult, baby, cannabis, children, communities, dating, elderly, family, funerals, humanitarian, leisure, LGBT, lifestyle, men's, online forums, parenting, pet, private social networking, professional networking, Q&A, religion, retirement, sex industry, sex tech, social, social entrepreneurship, teenagers, virtual world, wedding, women's, young adults.

[3] Cloud Computing, Cloud Data Services, Cloud Infrastructure, Cloud Management, Cloud Storage, Darknet, Domain Registrar, E-Commerce Platforms, Ediscovery, Email, Internet, Internet of Things, ISP, Location Based Services, Messaging, Music Streaming, Online Forums, Online Portals, Private Cloud, Product Search, Search Engine, SEM, Semantic Search, Semantic Web, SEO, SMS, Social Media, Social Media Management, Social Network, Unified Communications, Vertical Search, Video Chat, Video Conferencing, Visual Search, VoIP, Web Browsers, Web Hosting.

[4] App Discovery, Apps, Consumer Applications, Enterprise Applications, Mobile Apps, Reading Apps, Web Apps.

[5] Blogging Platforms, Content Delivery Network, Content Discovery, Content Syndication, Creative Agency, DRM, EBooks, Journalism, News, Photo Editing, Photo Sharing, Photography, Printing, Publishing, Social Bookmarking, Video Editing, Video Streaming.

The most prominently represented sectors are those catering to consumer applications, products, and services targeted at end-user, as highlighted by Sturgeon (2021). These encompass areas such as commerce, apps, and

lifestyle. However, it is worth noting that platform companies also extend their presence into traditionally regulated or public sectors, as observed by van Dijck, Poell, and Waal (2018). Notably, nearly 8% of platform companies are dedicated to education or the healthcare sector. This trend underscores the ongoing process of platformization in highly regulated sectors (KERSSENS; DIJCK, 2021; OZALP *et al.*, 2022) within Brazil.

It is worthy of note that Brazilian platform companies have established a presence in sectors traditionally characterized by a high degree of digital technology integration, such as internet services, while simultaneously venturing into more conventional domains like administrative services. This dual presence suggests that platform companies serve as catalysts for digital transformation and innovation in well-established sectors. Furthermore, the extensive sectoral diversity seen here underscores the transversality of the platform model and reinforces the hypothesis that digital platforms are emerging as a prevailing organizational paradigm in the digital era, as proposed by Gawer (2021).

4.3 **Concentration in the South and Southeast regions**

The South and Southeast regions of the country concentrate 86% of Brazilian digital platform companies. Yet, they are spread in every region and almost all states except Acre, Amapá, Roraima and Tocantins (Figure 3). There is a high concentration in the capitals of Southern and Southeasterner states. São Paulo city alone (not considering the metropolitan area) hosts 42.2% of the total number of firms (Table 4).

Besides the state capitals in the South and Southeast regions, there are platform companies in many other large cities. Campinas, Caxias do Sul, Joinville, Londrina, Maringá, São Carlos, São José do Rio Preto, São José dos Campos, and Uberlândia together host 31 firms.

To a lesser extent, the Central-West, North, and Northeast regions exhibit a lower concentration of platform companies. However, it's important to note that the capitals of these regions show some participation in the number of platform companies, as depicted in Figure 3.

We can observe that in spite of the relatively intense participation of São Paulo and Rio de Janeiro, relatively less industrialized regions in the country are still joining the process. In fact, the distribution of digital plat-

form companies per city follows the same distribution pattern of "generic" companies by city; in other words, cities hosting more non-digital platform companies are those hosting more digital platform companies (Figure 4). This might be evidence that the platform economy follows the same concentration trends of previous economic and innovative activities[6] (ALBUQUERQUE *et al*., 2002; AZZONI; HADDAD, 2018), despite changes in regional concentration patterns of the Brazilian manufacturing industry in recent times (FERREIRA; DINIZ, 2020).

Table 4 **Platform companies by location (city and state levels)**

Cities	Absolute value	%	States	Absolute value	%
São Paulo	225	42.2	São Paulo	281	52.4
Rio de Janeiro	60	11.3	Rio de Janeiro	62	11.6
Belo Horizonte	29	5.4	Minas Gerais	50	9.3
Curitiba	20	3.8	Paraná	32	6.0
Florianópolis	17	3.2	Santa Catarina	26	4.9
Porto Alegre	14	2.6	Rio Grande do Sul	24	4.5
Barueri	9	1.7	Distrito Federal	9	1.7
Brasília	9	1.7	Pernambuco	8	1.5
Recife	7	1.3	Bahia	7	1.3
Other cities	143	26.8	Other states	37	6.9
City location available	533	100.0	State location available	536	100.0
City location not available	23	–	State location not available	20	–
Total	556	–	Total	556	–

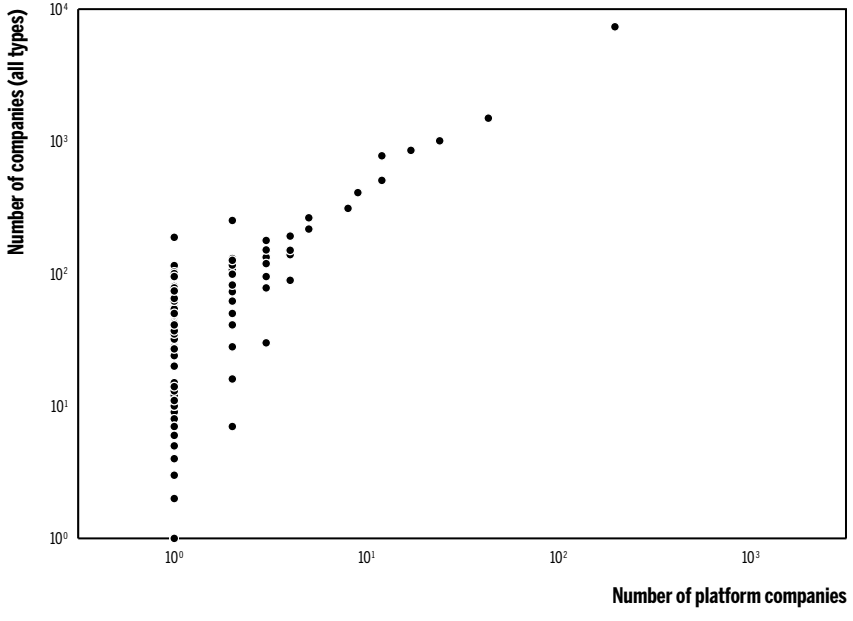
Source: Authors' own. Data sourced from Crunchbase.

6 Beneli, Carvalho, and Furtado (2022)'s analysis of State Composite Innovation Indicators, which encompass distinct pillars including structural conditions, science, technology, and innovation expenditures, innovative activities, and their impacts, reveals a significant structural heterogeneity among Brazilian states. Notably, São Paulo, Rio Grande do Sul, Paraná, and Santa Catarina are considered leaders in this regard, consistently surpassing the national average.

Figure 3 **Platform companies by location**

Source: Authors' own. Data sourced from Crunchbase.

Figure 4 **City distribution correlation – All companies versus digital platform companies**



Source: Authors' own. Data sourced from Crunchbase. Each dot represents a city.

4.4 **Low funding amount, but internationalized**

Only 17% of our sample have available data on funding operations. This low percentage could be explained by the young venture capital system in Brazil, primarily reliant on government contributions (GODKE VEIGA; MCCAHERY, 2019; MINARDI *et al*., 2015) but Crunchbase limitations could also explain it.

Considering the latest recorded funding rounds, 55,5% fall within the pre-seed and seed stages, while a mere 0.8% belong to secondary market[7] (Table 5). While the number of initial funding rounds usually surpass advanced ones, the significant disparity between these stages might point toward both the immaturity of national platform companies and the funding system itself.

Table 5 **Last funding type distribution, by companies and by amount (in USD million), %**

Funding type	By company	By amount
Angel	5.50	–
Convertible note	0.80	–
Debt financing	0.80	1.30
Equity crowdfunding	1.60	–
Grant	2.30	–
Non-equity assistance	1.60	–
Pre-see	13.30	0.10
Private equity	2.30	0.50
Secondary market	0.80	51.50
Seed	42.20	0.70
Series A	9.40	2.10
Series B	6.20	2.50
Series C	3.10	6.50
Series D	0.80	18.00
Series E	1.60	8.60
Series F	0.80	7.30
Undisclosed	1.60	0.10
Unknown	5.50	0.90

Source: Authors' own. Data sourced from Crunchbase.

Note: Data on funding was available for 17% of digital platform companies identified at Crunchbase.

7 According to Crunchbase glossary, *"A secondary market transaction is a fundraising event in*

Additionally, when analyzing funding value, 51.5% originates from secondary market rounds (refer to Table 5). The focus of funding in later investment rounds may suggest a notably lower average value for initial seed and pre-seed stages, potentially limiting the growth prospects for these companies. To provide context, in the U.S. in 2020, the average value of a seed funding round was USD 4.6 million[8].

The available funding data reveals the active involvement of limited partners in the investment process, with the majority of companies remaining at early-stage development (pre-seed and seed). This characteristic appears to be a common feature within the structure of the Brazilian Private Equity and Venture Capital market, as observed in the study by Carvalho, Gallucci Netto, and Sampaio (2014).

Despite the relatively limited number of domestic investors, as platform companies begin to grow, there are two notable trends: an increase in foreign investments from secondary markets and acquisitions by foreign platform companies. Table 6 provides a detailed list of the top 20 platform companies, including their total funding and the leading investors associated with each one. Specifically, this table highlights the prominent involvement of major international tech giants such as Google and Microsoft, as well as the active participation of leading investment funds from various countries, including China (CN), Germany (DE), Japan (JP), the Netherlands (NL), Singapore (SG), Sweden (SE), Switzerland (CH), the United Kingdom (UK), and the United States (US).

This particularity deserves more investigation, specially to understand the international flows of investment in the platform economy worldwide and if special measures should be taken to safeguard market and national interests given the new dynamic of digital mergers and acquisitions (GAUTIER; LAMESCH, 2021; PARKER, GEOFFREY; PETROPOULOS; VAN ALSTYNE, 2021).

which one investor purchases shares of stock in a company from other, existing shareholders rather than from the company directly. These transactions often occur when a private company becomes highly valuable and early stage investors or employees want to earn a profit on their investment, and these transactions are rarely announced or publicized."

8 https://news.crunchbase.com/venture/seed-funding-startups-top-vc-firms-a16z-nea-khosla/

Table 6 **List of the twenty biggest active digital platform companies in Brazil according to total funding amount (USD)**

Companies' names	Total funding amount (USD)	Lead investors (and two-letter code country of location)	Sector/ Market	Type	Scope
iFood	$2,097,259,869	Prosus & Naspers (NL); Movile (BR); Just Eat (UK)	Delivery service	Transactional	B2B; B2C
Loft	$788,000,000	Baillie Gifford (UK); D1 Capital Partners (US); Google for Startups (US); Andreessen Horowitz (US); Vulcan Capital (US); Fifth Wall (US); Monashees (BR)	Real estate marketplace	Transactional	B2C; C2C
Loggi	$507,001,000	CapSur Capital (BR); SoftBank (JP); SoftBank Vision Fund (UK); IFC Venture Capital Group (US), Microsoft (US); Dragoneer Investment Group (US); Monashees (BR); Qualcomm Ventures (US); Iporanga Ventures (BR)	Delivery service	Transactional	B2C; C2C
Madeira-Madeira	$338,820,267	Dynamo (US); SoftBank Latin America Ventures (US); SoftBank (JP)	Marketplace	Transactional	B2C
99	$244,329,771	SoftBank Vision Fund (UK); Didi (CN); Tiger Global Management (US); Monashees (BR)	Ride-hailing	Transactional	B2C
Hotel Urbano	$135,000,000	Booking Holdings (US); Tiger Global Management (US); Insight Partners (US);	Travel	Transactional	B2C
Shopper	$107,142,137	GIC (SG); Minerva Foods (BR); Quartz (BR); Canary (BR)	Marketplace	Transactional	B2C
VivaReal	$74,780,000	Spark Capital (US)	Real estate marketplace	Transactional	B2C; C2C
Trocafone	$62,430,022	Sallfort Privatbank AG (CH); Barn Investments (BR); Sallfort Privatbank AG (CH)	Marketplace	Transactional	C2C
InstaCarro	$55,622,617	FJ Labs (US); J Ventures (US); Rise Capital (US); Lumia Capital (US)	Marketplace	Transactional	B2C
Conexa Saúde	$45,464,351	Goldman Sachs Asset Management (US), Igah Ventures (BR)	Healthtech	Transactional	B2C; B2B
ContaAzul	$36,983,721	Tiger Global Management (US), Ribbit Capital (US)	Fintech	Transactional	B2B
EmCasa	$32,100,000	Google for Startups (US), Pear VC (US), Monashees (BR), Igah Ventures (BR), Globo Ventures (BR)	Real estate marketplace	Transactional	C2C

(continues on the next page)

Table 6 **(continuation)**

Companies' names	Total funding amount (USD)	Lead investors (and two-letter code country of location)	Sector/ Market	Type	Scope
FinanZero	$26,788,817	Google for Startups (US), VEF (SE), Webrock Ventures (SE), Atlant Fonder AB (SE)	Fintech	Transactional	B2C
Pagaleve	$25,851,098	Salesforce Ventures (US)	Fintech	Transactional	B2C
Volanty (Creditas Auto)	$23,400,000	Softbank (JP), Monashees (BR), Kaszek (BR), Canary (BR)	Marketplace	Transactional	C2C
Cayena	$21,000,000	Picus Capital (DE), Canary (BR), Vine (US)	Marketplace	Transactional	B2B
Elo7	$18,000,000	Accel (US), Monashees (BR)	Marketplace	Transactional	B2C; C2C
GetNinjas	$16,786,267	Tiger Global Management (US), Google Launchpad Accelerator (US)	Online Freelancing	Transactional	B2C; C2C
Apontador	$15,000,000	Movile (BR)	Search engine	Transactional	B2C; B2B

Source: Authors' own. Data sourced from Crunchbase.

Note: B2B (business to business), B2C (business to consumer), and, C2C (consumer to consumer).

5 **Discussion**

Our initial motivation for this study was to examine whether Brazil aligns with the global trend of digital platform development. In our research, we identified 556 platform companies, though we acknowledge that this number is likely an underestimate. Our findings affirm that indeed, Brazil is following the global trajectory in terms of the proliferation of platform companies.

Turning to the second motivation underlying this study, which is the identification of the primary characteristics of Brazilian digital platform companies, our data reveals certain distinctive features. Brazilian platform companies are primarily composed of young, SMEs with a limited workforce. This emerging platform economy is significantly influenced by foreign investments and exhibits regional concentration.

If we go back to the literature that has tried to map platform companies, we find both similarities and differences. The youth and modest size of Brazilian platform companies are not unique to Brazil. In Evans and Gawer's (2016) study, albeit their search method differs from ours, they

found that most platform companies were relatively young. However, a key distinction lies in terms of revenue (or market value). A direct comparison with Evans and Gawer (2016) isn't feasible since we lack data on market value for most Brazilian companies, as many of them are not publicly listed on US stock markets. In the case of Evans and Gawer (2016), 40% of the companies they identified were publicly traded, collectively holding a market value of USD 3.9 trillion.

The phenomenon of digital platform concentration in specific regions and cities, as exemplified in the Brazilian context with São Paulo and Rio de Janeiro emerging as vibrant hubs of the platform economy, is not unique to Brazil either. Evans and Gawer's (2016) research reveal that in China, which has the highest number of platform companies, these firms are not evenly distributed across the nation. The most thriving hubs in China are Beijing, Hangzhou, Shenzhen, and Shanghai, collectively hosting a significant 85% of Chinese platform companies. Similarly, in the United States, nearly 70% of these companies are concentrated in the San Francisco Bay area.

In contrast to previous studies, our approach to mapping platform companies is characterized by a systemic methodology, as described in the methodology section, regardless of the industry or services they engage in. This unique approach has yielded a diverse set of companies, differing significantly from the research conducted by Groen *et al*. (2021) and Friederici, Reischauer, and Lehdonvirta (2022). Our dataset also exhibits remarkable diversity in terms of company size, encompassing both startups and well-established giants, which differs from the result presented by Evans and Gawer (2016). Notably, our research has identified over 556 platform companies solely in the context of Brazil. This substantial figure underscores the vast room for enhancement in the endeavor to comprehensively map platform companies on a global scale.

Delving into the existing "business and economics" literature on the platform economy in Brazil, we have made significant strides in comprehensively mapping the entire spectrum of platform companies. Through this endeavor, we have revealed that the sub-topics currently addressed in the literature – transformation of labor conditions, shifting consumers' behaviors, transformation of firms' capabilities, and regulatory matters – are integral components of a broader and intricately interconnected ecosystem.

While we have identified labor platform companies, it is important to note that they represent only a fraction of the extensive landscape of ma-

jor Brazilian platform companies, as illustrated in Table 6. Furthermore, our research underscores the transactional nature of these prominent Brazilian platform companies while underscoring the absence of innovation-focused platform enterprises. This is related to the previous literature on the capabilities of firms, and may be an indication that platform companies in Brazil have difficulties in leveraging more innovative business models.

In our exploration of shifting consumer patterns, we have identified a wide array of scopes, encompassing B2B, B2C, and C2C interactions among the prominent Brazilian platform companies. Although the majority predominantly operate in the consumer sector – as observed by Sturgeon (2021) –, it is worth highlighting the intriguing B2B initiatives within this landscape. Ultimately, our comprehensive mapping not only contributes to a better understanding of the Brazilian platform economy but also provides valuable insights that can inform more judicious the regulatory frameworks for this burgeoning ecosystem.

This characterization of the Brazilian platform economy has implications for the formulation of public policies currently in development. Given that Brazilian platform companies are relatively small entrants, a cautious approach to regulation seems indicated. Regulatory initiatives come with financial and organizational costs that smaller companies may find challenging to bear, as highlighted by Frenken *et al*. (2020). Taking a cue from the Digital Services Act (DSA), Brazilian regulation appears to target platform companies above a certain size. If the rule used is revenue thresholds, *e.g.*, above 50 million USD/year, almost all Brazilian platform companies will be off the regulatory radar (Table 2). Therefore, regulation based on the revenue threshold may predominantly affect foreign platform companies, which could act, intentionally or not, as industrial protection policy safeguarding the domestic market.

Taking into account other variables as regulatory criteria in the platform economy is worthy of consideration, such as the number of users, which we did not address in our study. Such variable may capture certain Brazilian platform companies within the regulatory purview. The same can be said of market share, which we know from anecdotal evidences might be problematic in certain sectors (for example, iFood has a sizable share of the relevant market). In any case, our study reveals the diverse spectrum of Brazilian platform companies across sectors, underscoring the need for a nuanced analysis of their participation in the relevant market,

particularly in conjunction with foreign platform companies operating in the domestic sphere. Nevertheless, our study paves the way for a more comprehensive examination of the Brazilian platform economy by sector, including the necessity for regulations to stimulate competitiveness and innovation and sector-specific regulations, especially in public sectors undergoing platformization.

The observation that the twenty biggest Brazilian platform companies rely on foreign investments (Table 6) and are regionally concentrated urges us to contemplate regional digital development policies and the promotion of a national venture capital system. Future research should explore the potential linkage between the geographic concentration of platform companies and their external financial dependence. It is well-recognized that major global cities serve as hubs for financial services, a phenomenon also evident in the Brazilian venture capital industry. Considering that the twenty biggest Brazilian digital platform companies depend on foreign financing and their headquarters are generally located in large cities, the hypothesis of a causal relationship between the availability of foreign capital and the locational decision of platform companies must be considered. This dynamic perpetuates two facets of national underdevelopment: the spatial concentration of economic activities and the umbilical connection between the most profitable economic activities and foreign capital. Furthermore, the control of platform companies by foreign companies raises concerns regarding the circulation and potential expropriation of Brazilian citizens' data, posing a threat to national sovereignty.

Recognizing that the largest Brazilian platform companies (in terms of funding) operate in sectoral and transactional domains (Table 6) prompts us to contemplate the quality of this innovation and its position within the global platform economy. There are sectoral platforms that act as intermediaries within specific sectors (*e.g.*, real estate or delivery) and there are infrastructural platforms occupying central roles in the platform economy, such as digital identity, cloud services, or digital public spaces (*i.e.*, social networks), as identified by van Dijck, Poell, and Waal (2018) and van Dijck (2020). Infrastructural platforms offer critical services to individuals, companies and other platform companies, making them the most powerful companies in the platform economy and the broad digital landscape.

Typically, the largest Brazilian platform companies (Table 6) do not control infrastructural platforms. Our platform economy, therefore, is

structurally dependent on foreign infrastructural services. Although our study has hinted at this dependence due to the absence of domestic infrastructure platform companies, it is imperative to quantify it and propose solutions, including the development of alternative models of platformization, such as public-private consortia (BEVERUNGEN *et al*., 2022). This should be a top priority research agenda. Additionally, the prevalence of transactional platform companies, rather than innovation platforms, is a concerning trend (Table 6). Innovation platform companies, characterized by substantial market valuation and significant R&D investment, as noted by Cusumano, Gawer, and Yoffie (2019), hold a pivotal role in the platform economy. The absence of such innovation platform companies reveals that our insertion in the platform economy takes place in the non-capital intensive and non-technology intensive niches. Transactional platform companies reorganize previously existing markets, while innovation platform companies create digital markets offering third parties boundary resources to access a technological substrate. One must take into account that platform companies can transition from transactional to innovation models, adding new facets and becoming hybrids (GAWER, 2021a). The absence of innovation platform companies indicates that it may be necessary to encourage this business model among domestic platform companies.

In summary, the regulation of platform companies, if intended to also encompass domestic companies, should consider criteria beyond revenue, and sector-specific regulations should be a focal point. Funding policies can serve as an instrument for both the spatial de-concentration of platform companies and the safeguarding of national digital sovereignty. Finally, developing an initial framework for an industrial policy aimed at increasing the number of domestic platform companies should carefully assess the essential infrastructural platforms within the Brazilian platform economy and encourage the establishment of innovation platform models.

6 **Final considerations**

This study represents a pioneering effort to systematically identify and aggregate data on the platform economy in Brazil. Our primary objective was to investigate whether Brazilian companies were aligning with the

global trend of platformization, and if so, to discern key characteristics related to their size, sector, regional distribution, and sources of funding.

Our discovery of 556 Brazilian platform companies, with a striking 82% of them founded since 2011, serves as compelling evidence that Brazil has enthusiastically embraced the international platformania trend. This finding stands in stark contrast to previous studies that often portrayed the region as a blank canvas in terms of indigenous digital platform companies. Our research highlights the emergence of a substantial domestic contingent that is gaining prominence. For instance, iFood now commands over 70% of the market share[9], and other domestic digital platform companies have achieved such success that they've been acquired by international giants, like Akwan, which developed a search engine platform and was swiftly acquired by Didi Chuxing, or 99Taxi, which was acquired by Google. While unicorns like iFood exist, most Brazilian digital platforms remain small in terms of revenue and workforce, exhibit regional concentration, and display relative immaturity in their funding structures.

The evidence presented here suggests a distinct pattern of Brazil's integration into the global platform economy. These digital platforms take on various forms and specialize in specific niches, yet they all essentially function as marketplaces that facilitate transactions or interactions among individuals or groups. It's worth noting that transaction platforms typically exhibit lower market valuations than innovation platforms, come with lower barriers to entry, reduced development costs, and fewer technological demands as outlined by Cusumano, Gawer, and Yoffie (2019).

Additionally, further scrutiny is warranted regarding the significant participation of São Paulo and Rio de Janeiro in the platform economy. This holds crucial implications for regional development within the country. Given the central role that digital platforms play in the new techno-economic paradigm, and the potential for successful digital platform companies to serve as focal points for capital accumulation, the value accrued by platform operators appears to be disproportionately channeled into the already dynamic South and Southeast regions, both in terms of economic activity and higher income. This regional concentration warrants deeper exploration and policy consideration.

9 https://valorinternational.globo.com/business/news/2022/01/06/drop-in-industry-uber-eats-ends-restaurants-delivery-eletrobrass-privatization-schedule.ghtml, accessed in Oct./2022.

Finally, while our study makes significant strides in identifying platform companies, it is not without limitations. The industry group classification provided by Crunchbase is inherently imprecise, necessitating further investigation into the classification of Brazilian digital platforms. Moreover, a more detailed exploration of Brazilian platform companies by scope (*e.g.*, B2B, B2C, B2G), type (transactional, innovative), and market (*e.g.*, ride-hailing, delivery, real estate, etc.) beyond the major players could offer valuable insights into the Brazilian digital platform economy.

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Acknowledgements

The authors sincerely appreciate the meticulous review and valuable suggestions provided by the three anonymous referees. Nonetheless, any errors or omissions in this work are solely attributable to the authors. Additionally, the authors extend their thanks to the Editorial team for their thorough grammatical revisions especially Helena Mader. The opinions presented in this paper solely represent those of the authors and do not necessarily reflect the views of, or imply any responsibility from, their affiliated institutions. A preliminary version of the results presented in this paper was discussed at the VII *Encontro Nacional de Economia Industrial e Inovação*, held in Porto Alegre (RS) in 2023, titled "The Brazilian digital platform economy: an initial exploration." The proceedings can be accessed at https://even3.blob.core.windows.net/anais/642988.pdf.

Contribution of the authors

All authors contributed to the study conceptualization and methodology. Data curation and computational techniques were performed by Dr. Leonardo Costa Ribeiro. The original draft of the manuscript was written by Dr. Tulio Chiarini and Dr. Victo José da Silva Neto and all authors reviewed and commented on previous versions of the manuscript. All authors read and approved the final manuscript.

About the article

Submission received on January 18, 2023. Approved for publication on November 17, 2023.