

From local success to global influence: the Brazilian low-cost-low-fare connectivity model^{1, 2}

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ABSTRACT

This paper reviews the rise and the ongoing internationalization process of Brazil's low-cost-low-fare connectivity model. It explores the regulatory and entrepreneurial efforts that have enabled the provision of high-quality broadband access in underserved areas, thereby creating a positive value chain in the domestic market. This includes the development of the local tech industry, the creation of qualified jobs, and the reduction of the connectivity gap. The trend towards internationalization, particularly in countries with similar challenges and cultural ties, has revealed the potential of the model as a knowledge asset that could strengthen the Brazilian private sector's share in the international digital market. The paper

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highlights the importance of entrepreneurial skills for internationalization and the strategic role of regulatory diplomacy in globalizing the tech industries of emerging countries. It also recommends the improvement of credit frameworks to support the international expansion of this business model, which spans various value-added chains.

Keywords

ISPs. Connectivity. Low-cost-low-fare connectivity model. Brazil. Internationalization. Digital Transformation.

1. Introduction

Providing broadband services is fundamental to any society aiming to achieve universal connectivity. As the conventional business models in this sector operate on economies of scale it has become an oligopolistic business worldwide.

While this business model achieved the coverage of a substantial portion of the global population's demand for connectivity, some regions still lack adequate access. Several public policies and private-driven initiatives have been implemented to bridge the connectivity gap and ensure competition in underserved areas.

This paper examines a business initiative that emerged from the need for enhanced connectivity beyond Brazil's major urban centers and subsequently evolved into a key policy strategy aimed at bridging the country's digital divide. For clarity, this initiative, which spans the entire value chain of the connectivity industry—including manufacturers, consulting experts, and field technicians—will be referred to as the 'low-cost, low-fare' business model throughout this paper.

The main drivers of this innovative approach to broadband service provision are the small Internet Service Providers (ISPs), which emerged around the mid-2010s. By 2022, they consisted of approximately 12,000 companies spread across Brazil (NIC.br, 2023). Together, these companies represent 55% of all broadband service provision in the country, ranging from ISPs with a few hundred clients to around a dozen companies with several million active users (Anatel, 2023a).

These businesses have exhibited innovation in several respects. First, they have leveraged a progressive regulatory framework that emphasizes competitive principles and a mature cost-oriented wholesale market. Second, entrepreneurs have demonstrated opportunism by connecting consumers in areas that larger incumbents had previously neglected. Finally, the small ISPs were the first to respond to the changing preferences of Brazilian consumers, who increasingly favor higher-performance networks and internet-based content over traditional ADSL and cable TV technologies, especially in the context of family budget constraints. Together, these factors have transformed Brazil's connectivity landscape, positioning small ISPs as the leading providers in 79% of Brazilian municipalities (Anatel, 2023a)

The success of this business model has paved the way for its potential internationalization. Recent announcements of operations in neighboring South American countries, coupled with a willingness to target under-connected markets in Latin America and Portuguese-speaking Africa, suggest that this business model is well-suited for expansion into other markets with similar socio-economic conditions.

This paper has two objectives. Firstly, it aims to provide a review of the local regulatory environment and the steps taken by small ISPs to develop an innovative low-cost-low-fare connectivity

model. Secondly, it explores the ongoing internationalization process and how it can contribute to narrowing the connectivity gap in emerging nations.

In addition to this introduction, the paper is divided into three subsections. The following subsection reviews the regulatory landscape that facilitated the emergence of the new business model. It includes comprehensive review of key regulations and policy initiatives that contributed to establish a robust wholesale market in the Brazilian telecommunications sector, creating a level playing field in a market dominated by incumbent operators. Following that, we delve into the business environment where small ISPs initiated their experiments and eventually became market leaders. This section highlights the transformative scenario driven by the development of the low-cost-low-fare business model, the widespread adoption of optical fiber technologies, and the increasing demand for internet-based content and advanced transmission technologies. Finally, we explore potential markets for the internationalization of the low-cost-low-fare business model. This section is intertwined with a discussion on the theoretical background related to the internationalization of small businesses from emerging countries. The conclusion highlights the main insights and explores some potential policy guidelines.

2. The pro-competitive regulatory reforms

Regulatory roles were pivotal in clearing the path for the growth of small ISPs. This was set against the backdrop of institutional reform tied to the privatization in 1997 and the establishment of the Law of Telecommunications (Lei Geral de Telecomunicações, Lei 9.472/1997), which was founded on the principles of competition and private investment in the telecommunications sector. Drawing on competitive principles from best practices in advanced markets, as well as its own set of innovative regulations, instruments, and practices, the national regulatory agency swiftly implemented several key changes in the domestic market. The regulator facilitated the sector's adaptation to the trend of technological convergence, bolstered the statistical framework to address information imbalances, and established the right incentives to stimulate private investment, enhance efficiency, and ensure the transfer of benefits to society.

A fundamental step in the process was the establishment of a broader cost-based regulation following Decree 4.733/2003 (Brazil, 2003), which mandated the adoption of a long-run incremental cost model to replace a wholesale pricing framework based on a maximum price annually adjusted by the General Price Index. The cost model and the regulatory maturity that followed its implementation allowed for a progressive opening of the data transport market in Brazil.

The introduction of the Plano Geral de Metas de Competição (General Competition Goals Plan) (PGMC) (ANATEL, 2012) was another essential step in regulatory reform. The PGMC aimed to promote competition by intervening in the wholesale cost of relevant markets dominated by companies with significant market power. It introduced formal criteria and guidelines for identifying and analyzing relevant markets, assigning groups with Significant Market Power in each relevant market, designing and setting asymmetric regulatory measures, and defining procedures for the resolution of conflicts between economic agents on competition matters.

As a practical result of the regulatory reform, the costs of critical wholesale infrastructure dropped allowing new players to develop their business models. A platform for the mandatory offering of wholesale assets based on cost pricing and smaller geographical granularity enhanced the offer and

assured transparency to a flourishing market between PMSs and newcomers (Henriksen, 2012; Baigorri, 2014).

By 2018, the regulator formally defined the concept of small ISPs (or *Prestadoras de Pequeno Porte* – PPPs, as referred to in the nomenclature within the Brazilian regulation) as the group holding a national market share of less than 5% in each retail market in which it operates (Anatel, 2018). It also introduced a package of regulatory asymmetries to benefit small ISPs. This agent-oriented policy was aimed to reduce regulatory obligations for smaller providers, allowing them to focus on expanding their investments and services. The regulatory waivers were implemented after a systematic ex-ante regulatory impact assessment and targeted areas such as quality, consumer rights, interconnection, and licensing, among other topics. The initiative was implemented alongside the launch of the National Broadband Program (PNBL), which was approved by Decree 7175/2010 (Brasil, 2010) and recognized the role of small ISPs within the government's commitment to narrowing the connectivity gap (CGEE, 2022). It was the ultimate step in the evolution of the then-booming new business model.

Over the years, as the low-cost-low-fare business model solidified and demonstrated remarkable resilience, it has been recognized as a potent market solution for bridging the connectivity gap. This success has garnered the attention of the international community, particularly emerging nations in South America and Africa, facing similar challenges in connectivity and local market conditions. Consequently, associations of small Brazilian providers collaborated with Brazilian regulators to share their methods and approaches with foreign markets and international stakeholders such as the Association of Communications and Telecommunications Regulators of the CPLP (ARCTEL) (e.g., Telesintese, 2023, 2024) and the International Telecommunication Union (ITU) (Anatel, 2019). This collaboration signaled the commencement of a digital regulatory diplomacy initiative aimed at facilitating the adoption of the low-cost-low-fare business model in partner countries.

A crucial step in the evolution of digital diplomacy involves the federal government's commitment to enhancing ties in digital public infrastructure with neighboring countries. For instance, Decree 12034/2024 (Brasil, 2024) has established an inter-ministerial commission to promote digital infrastructure and a plan for the digital integration of South America. The commission's responsibilities encompass integrating physical and digital infrastructure, coordinating the adoption of necessary measures for project implementation and management, identifying priorities, and supporting the engagement of representatives in these initiatives.

3. The rise of the low-cost-low-fare connectivity business model in Brazil

Small ISPs have played a crucial role in shaping the current landscape of broadband provision in Brazil. In 2011, many ISPs began their operations on an experimental basis, focusing on meeting the connectivity needs of small neighborhoods in underserved areas, primarily utilizing radio transmission systems. At that time, only 27% of Brazilian households had Internet access, with six major ISPs dominating 78% of the broadband market (CETIC, 2011). However, by 2023, broadband access had expanded to reach 84% of households (CETIC, 2023), with small ISPs collectively capturing a 54% market share in the fixed broadband sector (Anatel, 2023).

The deficiencies of the established providers also spurred the growth of small ISPs. In 2016, consumers expressed widespread discontent with the quality of services, limited connectivity options,

high prices, and large areas lacking coverage (Anatel, 2016a, 2016b). The financial challenges faced by Oi, one of the leading telecommunications incumbents in the country, and its decision to extend the use of ADSL technology created an opening for small ISPs to flourish in Brazil. The regions where Oi held its concessions subsequently emerged as fertile ground for the most promising small ISPs in Brazil.

As these operations expanded into deprived areas on the outskirts of major urban centers and rural villages, the ISP entrepreneurs adopted a strategy focused on affordable prices with modern fiber-optic technologies disrupting the traditional trade-off between price and quality carried out by leading internet service providers. The result was a sustainable growth trajectory, with average EBITDA margins consistently around 50% over the past ten years. For example, Desktop, a small ISP established in 1997, led the domestic broadband market growth in the country by achieving a year-over-year net revenue increase of 99% by the end of 2022. Other notable performers include Vero with 82% growth, Unifique with 47% growth, and Brisagnet with 34% growth. Table 1 summarizes the operational performance of a sample of mid-size ISPs which publicly disclose their financial information.

Table 1 - Selected financial performance indicators.

ISP	Indicador	2018	2019	2020	2021	2022
Desktop	Margem EBITDA (%)	36%	42%	52%	42%	48%
	Net Revenue	66.566	113.61	167.086	348.93	711
Unifique	Margem EBITDA (%)	51.94%	51.54%	48.65%	49.25%	50.83%
	Net Revenue	109.34	148.66	286.05	457.98	678.45
Brisagnet	Margem EBITDA (%)		55.40%	49.70%	37%	44%
	Net Revenue		293	471.8	728.8	985.2

Sources: Corporate accounts

Simultaneously, the surge in demand for streaming Value-Added Services (VAS) has driven the need for higher-tier connectivity capacity. Customers' desire to enhance their user experience has led to a virtual discontinuation of ADSL technology in the country. As VAS continues to grow and diversify, small ISPs have seized the opportunity to monetize the increasing demand for data content services. They achieve this by offering tiered packages with higher capacity and premium prices and by co-billing bundled VAS and content services (Prado, 2023).

To differentiate themselves competitively and overcome the historical absence of content services in their bundle offers, ISPs have developed a portfolio of zero-rating VAS offers. This deliberate strategy aims to build consumer loyalty and increase the average revenue per user (TIINSIDE, 2022). The table below summarizes a survey of VAS's services provided by ISPs as part of their users' retention strategy.

Table 2 - ISPs strategy to provide content in its service bundle.

ISP	Dgo+	CN	Amnet	HBO Max	McAfee	UOL Banc	Vero Vide	Aya	Uniq Play	Skeel o	Go Read	Glob Play	Dzer	Telec n	Premier	Ntflx	Pamt
EB Fibr ¹	yes	No	No	no	no	no	no	no	no	no	no	no	no	No	no	yes	yes
Brisagnet	no	No	No	no	no	no	no	no	no	yes	yes	no	no	Yes	yes	yes	no
Desktop	no	No	No	no	no	no	no	no	no	yes	no	yes	no	No	no	no	no
Algar	no	No	No	no	no	no	no	yes	no	yes	no	no	no	No	no	no	no
Vero	no	Yes	No	no	no	yes	yes	no	no	no	no	no	no	No	no	no	no
Amcnet	no	No	yes	no	no	no	no	no	no	no	no	no	no	No	no	no	no

Unifique	no	No	No	no	no	no	no	no	no	yes	no	no	no	No	no	no	no
Alares	yes	No	No	No	yes	no	no	no	no	yes	no	no	yes	No	no	no	no
Ligga	no	No	No	Yes	no	no	no	no	no	no	no	no	no	No	no	no	no
Mhnet	no	No	No	No	no	no	no	no	no	no	no	no	no	No	no	no	no

Source: authors' elaboration

Another notable feature of the business model is its approach towards clients. The gradual growth trend fostered stronger connections between the entrepreneurs and their clients, creating a sense of community. Consequently, ISPs gained a reputation for providing high-quality service, as reflected in the Regulatory Impact Assessment exercises (Anatel, 2016c). This recognition contributed to the image-building strategy of the pioneering entrepreneurs as 'heroes', an aura that would influence even the policy makers in favor of these companies (MCOM, 2023).

Regarding the credit flow for investment and operations. Initially, most ISPs in the country relied on private savings from local entrepreneurs to fund their operations. However, in recent years there has been an unprecedented influx of private investment into small ISPs in Brazil, leading to a transformation of the market dynamics and raising the professionalization standards. State-sponsored debentures with income tax exemptions (MCOM, 2022) and private funds have introduced new incentives into the sector's financing (Telesintese, 2022). By 2022, several ISPs had surpassed 1 million active users. For example, EB Fibra (formerly known as Alloha Fibra) reached this milestone in 2022 and currently operates in 280 cities with a network spanning 110,000 km of optical fiber (Alloha, 2024). This context has sparked some debate about the need to distinguish between small ISPs and those that have grown to become established business groups (Mendonça, 2023).

4. The internationalization of the Brazilian low-cost-low-fare connectivity business model

The push towards the current internationalization stage of the Brazilian low-cost-low-fare connectivity business model is evidence of its maturity and the willingness to embrace opportunities, acquire a competitive advantage, and develop new markets across international borders. This framework is relevant as the domestic ecosystem of connectivity businesses has already demonstrated higher efficiency and productivity in supplying the Brazilian market. Evidence of such performance is seen in the virtual maintenance and even a drop in average retail prices over the last decade (ITU, 2024), proof of mature competition, higher business efficiency, and the appropriation of technological advances.

The signs of saturation in the domestic market are another element behind the current trends in the sector. Over-competition and a sustainable track toward connectivity universalization are some factors supporting the market's saturation. The result is a progressive tendency towards consolidation, with mergers and acquisitions among the players. Between 2020 and 2022, the number of ISPs in the Brazilian market contracted by 9.3%, evidencing a rapid consolidation process in the sector (CETIC, 2023).

In turn, emerging nations view the progress in Brazil as a key to solving their connectivity challenges. A demonstrated willingness to develop the Brazilian model domestically and to welcome foreign ISPs represents an opportunity for local firms, entrepreneurs, and policymakers to engage in inter-firm transactions, enhance technology absorptive capacity, and extend technology transfers and spillovers that dictate connectivity dynamism. Internationalization is then a two-way avenue that should result in a win-win scenario.

The role of regulatory diplomacy is part of this business engine, and its presence allows for the creation of a platform for standard-setting, inter-firm integration, regulatory exchange, and a better understanding of the economic, legal, and market structures. From the perspective of overseas partners, regulatory diplomacy is a trusted inspiration for regulatory reforms and a guarantor of the business model's reputation (OECD, 2018; Maggi and Ossa, 2023). These aspects are increasingly important considering the risks of entering global markets and the urgent need for partner countries to adopt a sustainable policy towards connectivity. This sense of mutual benefit creates a favorable environment for the current debates and progress on tech bilateralism.

Another typical pattern reported in the internationalization literature is the search for new international markets that share common cultural ties and geographical proximity (Ojala, 2015). Although further empirical analysis is needed, the available evidence for the Brazilian case confirms that neighboring countries and regions with cultural affinity are considered preferential destinations for the internationalization of the Brazilian connectivity industry. Ongoing experiences in Argentina, Paraguay, and Colombia (PontoISP, 2018, 2019; Commsupdate, 2023), as well as reported business missions to Portuguese-speaking African nations, are indicative of this trend (Telesintese, 2023).

The rationale behind the emphasis on cultural and geographical proximity is the belief that it provides an incremental strategy that can mitigate the additional transaction costs typically associated with unfamiliar markets. In practice, savings on production costs, cognitive costs such as language adaptation, and the expenses of network setups are generally lower between countries with such ties.

Regulatory diplomacy is particularly active in efforts to engage with Portuguese-speaking African nations. From a bilateral standpoint, this trend is evident in the relatively recent Memoranda of Understanding (MoUs) signed between the Brazilian regulator, Anatel, and regulatory authorities from countries such as Guinea Bissau (Anatel, 2022) and Cape Verde (Anatel, 2023). Public support for this market initiative dates back to 2019 when Anatel officially endorsed the internationalization of the ISP model at the International Telecommunications Union Plenary (Anatel, 2019).

Countries like Angola, Cabo Verde, and Mozambique are then natural targets for internationalization of the Brazilian digital ecosystem. Enhancing connectivity in these countries would not only provide digital emancipation for their citizens and businesses but also unlock new opportunities for growth and development. Collectively, these nations are actively implementing policies to bridge the connectivity gap, and promoting the low-cost-low-fare business model could be a strategic way to accelerate connectivity in the region.

5. Conclusions and policy guidelines

This paper offers a structured review of the rise and internationalization of the Brazilian low-cost-low-fare connectivity model. This business model, involving a broad range of service providers, industry experts, and stakeholders, has been instrumental in transforming the Brazilian connectivity market. It has also contributed to the growth of technology-related jobs, the development of the local technology industry, and significant progress in bridging the country's connectivity gap (CETIC, 2023).

The paper discusses the complex interplay of regulatory initiatives and entrepreneurial capacity that has enabled this business segment to provide high-quality and lower-cost broadband connectivity to underserved communities, leading small ISPs to achieve over a 54% market share in fixed broadband.

It also examines the trend towards the internationalization of the connectivity business model, which presents an opportunity for Brazil to strengthen its position on the global digital stage, particularly with historical partners and nations with cultural ties. Regulatory diplomacy is highlighted as a legitimate instrument for advancing global interests.

Finally, the paper outlines the initiatives and instruments that might be employed by Brazilian authorities to enhance the competitiveness of local business models and entrepreneurs. These include joint international markets assessments, support for regulatory reforms, the development of synergies with business associations and chambers of commerce, the promotion of robust statistical information, involvement with regional and international telecommunications policy institutions, and collaboration with external financing bodies and funds.

Additional recommendations for promoting internationalization include creating a better framework for credit inflow to facilitate the expansion of the business model and extend its benefits to partner countries. This is particularly relevant for a business model that encompasses diverse value-added chains, from manufacturing to advanced digital services. While investment funds have played a role in capitalizing parts of the industry and supporting international expansion, many ISPs looking to internationalize still require further assistance to secure long-term bank loans, working capital, and bridge financing.

References

- ALLOHA. 2024. Alloha: sobre. <https://alloha.com/sobre/>
- ANATEL. 2012. Resolução nº 600/2012: Aprova o Plano Geral de Metas de Competição – PGMC. Anatel: Brasília.
- ANATEL. 2016a. IDA - Índice de Desempenho do Atendimento Banda Larga Fixa – SCM, Dezembro/2015. Anatel: Brasília.
- ANATEL. 2016b. Pesquisa de Satisfação e Qualidade Percebida. Anatel: Brasília.
- ANATEL. 2016c. Processo 53500.207215/2015-70: Análise de impacto regulatório: reavaliação da regulamentação de mercados relevantes. Anatel: Brasília.
- ANATEL. 2018. Resolução nº 694, de 17 de julho de 2018: Altera o Plano Geral de Metas de Competição – PGMC, aprovado pela Resolução nº 600, de 8 de novembro de 2012. Anatel: Brasília.
- ANATEL. 2019. Comissão Brasileira de Governança e Regimes Internacionais (CBC 1): Contribuição - Experiência dos provedores regionais na massificação da banda larga no Brasil. Available at: https://cloud.anatel.gov.br/index.php/s/d53yWVwWuWcY0fC/download?path=%2FMinutas%20de%20contribuicoes%20brasileiras&files=Brazil_TopicsInternet%20v5.docx
- ANATEL. 2022. Memorando de Entendimento entre a Agência Nacional de Telecomunicações (Anatel) da República Federativa do Brasil e a Autoridade Reguladora Nacional das Tecnologias de Informação e Comunicação (ARN-TIC) da República da Guiné-Bissau, Available at:

https://sei.anatel.gov.br/sei/modulos/pesquisa/md_pesq_documento_consulta_externa.php?8-74Kn1tDR89f1Q7RjX8EYU46IzCFD26Q9Xx5QNDbqaYY30AcxhI8uOs4wYsMBs7Psu8IDMYkOda1TI1MVvW1DZm49CpjkoNnz1uIqQhfX9KVIjG5WWYv-aIrioxJ4dW

ANATEL. 2023a. Anatel Dados: Acesso SCM por 100 habitantes, por velocidade de conexão. Anatel: Brasília.

ANATEL. 2023b. Memorando de Entendimento entre a Agência Nacional de Telecomunicações (Anatel) da República Federativa do Brasil e a Agência Reguladora Multissetorial da Economia (ARME) da República de Cabo Verde. Available at: https://sei.anatel.gov.br/sei/modulos/pesquisa/md_pesq_documento_consulta_externa.php?8-74Kn1tDR89f1Q7RjX8EYU46IzCFD26Q9Xx5QNDbqZcE6ASwNKqW_X29iLQeJegTDQ5SQegnO7o_xTHKrH2FTr4JTjy73V8h9uCWRH4Qs8qPTs8ATjajZvXgOPiyq2Eh

BAIGORRI, C. M. 2014. A estrutura concorrencial do mercado de redes de transporte de telecomunicações e os impactos de políticas de massificação da banda larga no Brasil. Prêmio SEAE, Regulação da Atividade Econômica. ENAP: Brasília.

Presidence of Republic. 2003. Decreto nº 4.733/2003: Dispõe sobre políticas públicas de telecomunicações e dá outras providências. Presidência da República: Brasília.

BRASIL. 2010. Decreto nº 7.175/2010: Institui o Programa Nacional de Banda Larga – PNBL. Presidência da República: Brasília.

BRASIL. 2024. Decreto nº 12.034/2024: Institui a Comissão Interministerial para a Infraestrutura e o Planejamento da Integração da América do Sul. Presidência da República: Brasília.

CETIC. 2011. ICT providers 2011: survey on the use of information and communication technologies in Brazil. CETIC: São Paulo.

CETIC. 2023. ICT providers 2022: Survey on the Internet Service Provider Sector in Brazil. CETIC: São Paulo.

Center for Strategic Studies and Management (CGEE). 2022. Brazilian Digital Transformation Strategy (E-Digital). CGEE/ Ministry of Science, Technology and Innovations (MCTI): Brasília.

COMMSUPDATE. 2023. Colombian 5G auction attracts four bidders; Brazil's Telecall is a surprise participant. Available at: <https://www.commsupdate.com/articles/2023/11/15/colombian-5g-auction-attracts-four-bidders-brazils-telecall-is-a-surprise-participant/>

ETEMAD, H., WRIGHT, R.W. 2003. Internationalization of SMEs: Toward a New Paradigm. *Small Business Economics* 20, 1–4 (2003). <https://doi.org/10.1023/A:1020274419262>

HENRIKSEN, Alexandre Lauri. 2012. A competição no mercado de banda larga no Brasil: uma análise de possíveis determinantes da penetração do serviço de acesso à Internet em banda larga em municípios brasileiros. Prêmio SEAE Regulação Econômica. ENAP: Brasília.

ITU. 2023. Statistics and Indicators: DataHub. Available at: <https://datahub.itu.int/data/?e=AGO>

ITU. 2024a. ICT Price Baskets. Available at: <https://www.itu.int/en/ITU-D/Statistics/Dashboards/Pages/IPB.aspx>

MAGGI, Giovanni, OSSA, Ralph. 2023. The Political Economy of International Regulatory Cooperation. *American economic review*, vol. 113, no. 8, august 2023, (pp. 2168-2200).

MENDONÇA, S. 2023. Desvendando a excelência dos ISPs na competição. Available at: https://telesintese.com.br/sandro-mendonca-desvendando-a-excelencia-dos-isps-na-competicao/?utm_term=Autofeed&utm_medium=Social&utm_source=Twitter#Echobox=1687017959

Ministério das Comunicações (MCOM). 2022. Portaria nº 6.197/2022: Estabelece os procedimentos de aprovação e acompanhamento dos projetos de investimento considerados como prioritários em infraestrutura no setor de telecomunicações, altera a Portaria nº 330, de 5 de julho de 2012, e dá outras providências, no âmbito do Ministério das Comunicações – MCOM. MCOM: Brasília.

Ministério das Comunicações (MCOM). 2023. Pequenos provedores de internet são fundamentais para a inclusão digital dos brasileiros. Available at: <https://www.gov.br/mcom/pt-br/noticias/2023/maio/pequenos-provedores-de-internet-sao-fundamentais-para-a-inclusao-digital-dos-brasileiros-diz-ministro>

NIC.br. 2023. Pesquisa sobre o Setor de Provedimento de Serviços de Internet no Brasil – TIC Provedores 2022. Available at: <https://cetic.br/pt/publicacao/pesquisa-sobre-o-setor-de-provimento-de-servicos-de-internet-no-brasil-tic-provedores-2022/>

OECD. 2018. International Regulatory Co-operation: Adapting rulemaking for an interconnected world. OECD: Regulatory Policy Division. OECD: Paris.

OVIATT, Benjamin M., MCDOUGALL, Patricia Phillips. Toward a theory of international new ventures. *J Int Bus Stud* 25, 45–64 (1994). <https://doi.org/10.1057/palgrave.jibs.8490193>.

PRADO, Tiago S. 2023. Value-Added Services and the Future of Telecommunications: Empirical Evidence to Inform the Network Fees Debate in Brazil. SSRN 4517581.

PONTOISP. 2018. Ampernet amplia rede para chegar ao Paraguai e Argentina. Available at: <https://www.pontoisp.com.br/ampernet-amplia-rede-para-chegar-ao-paraguai-e-argentina/>

PONTOISP. 2019. Rede da Celérix vai atender a provedores do Paraguai. Available at: <https://www.pontoisp.com.br/rede-da-celerix-vai-atender-a-provedores-do-paraguai/>

Telesintese. 2022. O capital estrangeiro chega aos ISPs. Available at: <https://www.telesintese.com.br/vianna-coelho-o-capital-estrangeiro-chega-aos-isps/>

Telesintese. 2023. Anatel, Apex e Neo querem levar modelo de ISP para países de língua portuguesa. Available at: <https://www.telesintese.com.br/anatel-apex-e-neo-querem-levar-modelo-de-isp-para-paises-de-lingua-portuguesa/>

Telesintese. 2024. Brasil tem conhecimento para exportar em negócios e regulação de telecom. Available at: <https://telesintese.com.br/brasil-tem-conhecimento-para-exportar-em-negocios-e-regulacao-de-telecom/>

TIINSIDE. 2022. Oferecer conteúdo é o caminho para os provedores de internet agregarem valor às redes. 5x5 tec Summit, Tiinside, 8 de dezembro de 2022. Available at:

<https://tiinside.com.br/08/12/2022/oferecer-conteudo-e-o-caminho-para-os-provedores-de-internet-agregar-em-valor-as-redes/>

OJALA, Arto. 2015. Geographic, cultural, and psychic distance to foreign markets in the context of small and new ventures. *International Business Review*, march 2015. DOI: 10.1016/j.ibusrev.2015.02.007.