TRADE TREASURY PAYMENTS

The unseen side of trade digitisation:

DATA INEQUALITY AND THE GLOBAL ECONOMIC DIVIDE

CONTENTS

The unseen side of trade digitisation: Data inequality and the global economic divide

As our world becomes increasingly digital, the digital divide has widespread implications, and the least developed countries (LDCs) are most likely to be negatively affected[1]. In addition to the three levels of the digital divide commonly explored in the literature (i.e. the access gap, differences in digital skills, and differences in beneficial outcomes), data inequality should be included as a new level of the digital divide[2]. Data inequality can further be classified into three divides: access to data, representation of the world as data, and control over data flow[3].

With these divides as the primary markers for data inequality and using international trade and investment as guideposts for economic development, this report aims to highlight the potential implications that digital advancements in the international trade industry will have in terms of widening data inequality. Given that the least developed countries are most impacted by data inequality and that there is a positive relationship between data availability and international trade and investment, data inequality can exacerbate economic inequality as international trade becomes more digitalised.

[1] *Ganne & Patel, 2021, p. 26*
[2] *Lythreatis, Singh, and El-Kassar, 2022, p. 175*
[3] *Cinnamon, 2019, p. 6*

International trade and investment are vital for economic development

International trade and investment are major drivers of global economic development, and they play a key role in helping to attain several of the United Nation's Sustainable Development Goals (SDGs)[4], including SDG8: Decent Work and Economic Growth[5]. The World Economic Forum articulates that "promoting trade, attracting private investment, and achieving export diversification" are key drivers in helping the world's least developed countries (LDCs) shed this status.[6]

To provide just one practical example of the potential benefits, one can look at the landlocked former Soviet satellite state of Mongolia, which liberalised its trade policy in 1996[7]. Between 1993 and 2019, Mongolia experienced a 22% gain in welfare from expanded import opportunities and a 35% boost in its human development index[8]. The nation's GDP per capita, widely accepted as a proxy for the standard of living[9], also tripled from $4,923 to $15,963 (in constant 2021 international dollars) over this same time frame[10]. While several factors had a role in this growth, including the development of Mongolia's mining sector[11], without the benefits of trade and investment, this scale of development would not have been possible.

[4] *Sudsawasd, Charoensedtasin, and Pholphirul, 2020, p. 405*
[5] *UN General Assembly, 2015, p. 14*
[6] *Reiter and Adhikari, 2016*
[7] *Battogtvor & Parsons, 2019, p. 5*
[8] *UNDP, 2022*
[9] *OECD, 2016*
[10] *World Bank, 2023*
[11] *Battogtvor & Parsons, 2019, p. 5*

The least developed countries (LDCs) are most impacted by data inequality

The digital divide is most prevalent in the world's LDCs, landlocked developing countries (LLDCs), and small-island developing states (SIDS)[12]. In LDCs, only 20% of the population uses the internet - compared to 90% in developed economies - and when they do, download speeds are usually slow and prices are high[13]. This divide between LDCs and the developed world is not getting smaller.

The International Telecommunication Union observes that the gap between LDCs and the world in terms of digital differences has increased from 27% in 2011 to 30% in 2022[14]. Data collection on a society-wide level is also lacking for developing countries, which "account for 99% of the estimated 48 million unregistered births globally, with South Asia and Sub-Saharan Africa together accounting for 79% of all unregistered births"[15].

20% of people use the internet in LDCs, LLDCs, and SIDS

90% of people use the internet in developed economies

As the digital economy continues to grow and evolve, the data-related divide between developed nations and LDCs grows alongside it. According to the United Nation's Commission of Trade and Development (UNCTAD), "Developing countries risk becoming mere providers [of raw data, with their] data and associated value capture being concentrated in a few global digital corporations, [which are almost exclusively located in the world's most developed economies]"[16]. As long as developing countries lack ownership, equal access, and the autonomy to use their data, they will suffer severe economic and developmental disadvantages[17].

[12] *Ganne and Patel, 2021, p. 26*
[13] *UNCTAD, 2021, p. 2*
[14] *International Telecommunication Union, 2023*
[15] *Setel et al., 2007, p. 1571*
[16] *UNCTAD, 2021, p. 64*
[17] *Shah, Abdulaal & Peristeras, 2022, p. 432*

Data access and control facilitate cross-border trade and investment

When it comes to international trade and investment, data is a key driver. Research studies have confirmed that cross-border data flows can promote international trade, with free data flow clauses in trade agreements promoting the growth of goods and services trade between signatory nations[18]. This is partly because increased data flows from a nation reduce uncertainty at a firm level, decreasing the cost of market entry[19]. These economic forces will guide investment and export opportunities away from nations that do not generate and promulgate data and towards nations that do.

Cross-border data flow provisions in bilateral trade agreements are more beneficial to economies with better digital environments[20]. This means nations that have greater access to digital infrastructure and data facilities are likely to attract more foreign investments than those that do not[21]. Conversely, nations or regions without strong digital environments are poised to benefit less from data-sharing provisions since a lack of data infrastructure means they will have less access to and control over their own data flows. Further, any data that is provided will likely be skewed to represent the most digitally active - and thus already most affluent[22] - members of the nation, excluding the most in-need subsections of the population from being represented in the data[23].

Recent advancements, such as e-invoicing and open banking, are impacting the volume of cross-border data flows. E-invoicing regulations, aimed at combating VAT fraud[24], and open banking frameworks, enabling real-time access to granular payment flows, are creating trusted digital transaction data sources[25]. These data sources, trusted due to their origin from regulated platforms or direct reporting mechanisms (e.g., France's regulated e-invoicing platforms[26]), allow innovative lenders to extend working capital even to sub-investment-grade businesses. For instance, open banking enables banks to verify that an invoice has not been funded twice and assess client payment performance[27].

[18] *Ma, Shen, and Fang, 2023, p. 353*
[19] *Ma et al., 2023, p. 357*
[20] *Ma et al., 2023, p. 343*
[21] *UNCTAD, 2021*
[22] *Shah et al., 2022*
[23] *Cinnamon, 2019, pp. 8-10*
[24] *European Commission's Taxation and Customs Union, 2022*
[25] *Bank of England, 2024*
[26] *European Commission, 2024*
[27] *Federation of Small Business, 2023*

Despite these advancements, nations or regions without strong digital environments remain at a disadvantage. A lack of data infrastructure means limited access to these trusted data flows, further entrenching data inequality. This "scandal of invisibility"[28] can lead to situations where those on the extreme end of the data inequality scale are passed over for desperately needed development aid. Many countries with poor data are trapped in a reinforcing cycle of underdevelopment because funders and organisations prefer to work in areas with a data-demonstrated need and where they can measure the impact of interventions[29]. Limited data leads to limited development aid, which, in turn, inhibits the ability of those nations and regions to develop the data infrastructure needed to attract development aid in the first place[30]. In all, whether it be in the form of limited organic investment and exports or reduced foreign aid, data-poor nations face challenges in the international economy.

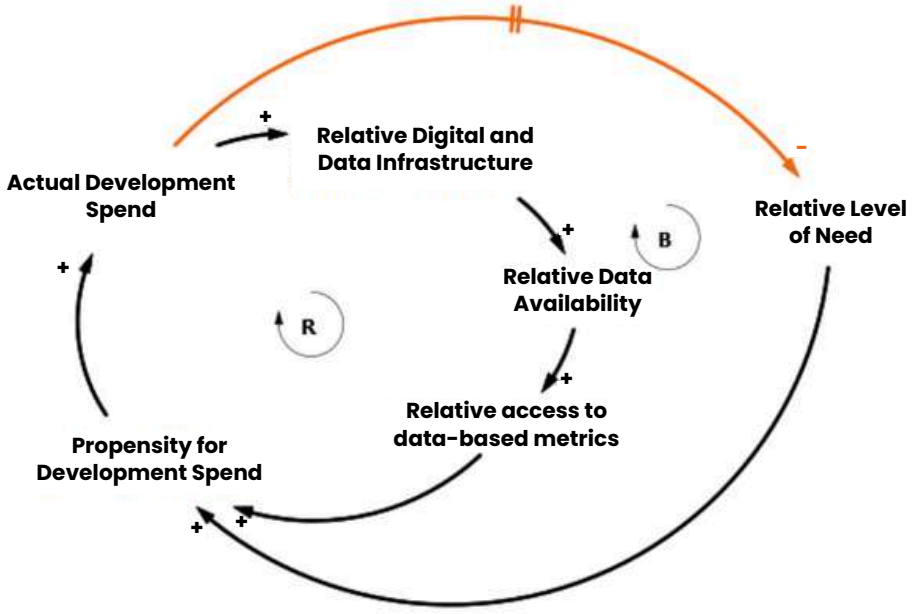


Figure 1: A simplified causal loop diagram depicting the scandal of invisibility. Positive polarities are indicated by a plus sign (+) and shown in black. Negative polarities are marked with a minus sign (-) and displayed in orange. The outside balancing loop (B) shows the standard development cycle, where an increase in relative need increases the propensity for development spend, which increases development spend, which, with a delay, decreases the relative level of need. The internal reinforcing loop (R) shows how a lower relative data availability will decrease relative access to data-based metrics, which decreases the propensity for development spend, decreasing actual development spend, which decreases relative digital and data infrastructure, which will further decrease relative data availability.

[28] *Setel et al., 2007, p. 1569*
[29] *Ashraf, 2005, Center for Global Development, 2014*
[30] *Center for Global Development, 2014*

Without collaborative efforts, trade digitalisation can exacerbate economic inequality

International trade - a traditionally paper-based industry - is currently experiencing a significant push towards digitalisation[31]. Countless digital trade solutions are being developed, with experts speculating that only outdated and digitally unfriendly legislation in many jurisdictions stands in the way of rapid growth[32]. As with any industry that becomes progressively digitalised, increased trade digitalisation will lead to an exponential increase in the volume of trade data generated[33]. Unfortunately, the low existing data capacity of LDCs means that, in relative terms, the data gains they experience will be lower than what developed economies experience.

Since data availability lowers the costs of market entry and increases international trade and investment flows, widespread digitalisation will make international trade and investment relatively more risky and expensive in data-poor nations, incentivising economic actors towards more data-rich and, thus, less expensive environments. Left to market forces alone, this asymmetric data environment can exacerbate worsening global economic inequality[34].

[31] *González et al., 2023*
[32] *Ganne & Patel, 2021*
[33] *UNCTAD, 2021*
[34] *World Bank, 2022*
[35] *Bank for International Settlements, 2013*
[36] *UN Capital Development Fund, 2021*
[37] *According to Shah et al., 2022, p. 434*
[38] *German Marshall Fund of the United States (GMF), 2023, p. 5*
[39] *UN Capital Development Fund, 2022*
[40] *Hamidi & Singh, 2024*
[41] *UN Capital Development Fund, 2022*

This lack of data capacity has implications for access to liquidity at the firm level. Financial institutions and credit insurers rely on data about obligors to evaluate creditworthiness and provide risk cover. Typically, originators like banks and trade-focused fund managers prefer to extend liquidity to trade receivables that are credit insured[35]. However, in LDCs, insufficient data on businesses hinders credit insurers from extending risk cover, limiting the working capital liquidity available to these businesses[36]. This cycle underscores the importance of collaborative efforts: regulated data feeds create trusted data sources, enabling credit insurers to engage and increasing the liquidity available to businesses to promote sustained development in their regions.

According to a report from the International Conference on Theory and Practice of Electronic Governance (ICEGOV), “Without collaborative efforts to frame international trade agreements by the international trade bodies and other stakeholders, the data divide in digital trade will become the new face of inequality and create barriers to reaching the agreed 2030 SDGs”[37].

Policy barriers and the self-perpetuating cycle of data inequality

Least Developed Countries (LDCs) often find themselves disadvantaged in the global digital economy, not solely because of infrastructural gaps but also due to inward-looking cross-border data flow policies. These restrictive policies, aimed at safeguarding national security and mitigating cyber threats, inadvertently deepen the data divide[38]. By limiting the free flow of data, nations that have implemented such policies discourage foreign investment, impede access to international digital markets, and stifle innovation.

At the individual level, inconsistent data protection laws impair consumers' ability to participate fully in the digital economy[39]. This creates another reinforcing cycle: low data flows lead to underdevelopment, which further entrenches fears of digital vulnerabilities. This perpetuates restrictive policy stances, which further limit data flows. The concerns driving these policies are not always unfounded.

Many LDCs lack robust cybersecurity frameworks, which can make them more vulnerable to illegitimate actors[40]. However, the perception that opening borders to data flows inherently jeopardises national security is counterproductive as these regulations can also hinder national economies and living standards by limiting integration into the global economy. Participation in cross-border data ecosystems drives economic development and enables countries to build resilient digital infrastructures through collaboration and investment.[41]

Breaking this cycle requires massive education and capacity-building efforts. Policymakers in LDCs must be equipped with the knowledge to balance the benefits of digitalisation with its risks. Public awareness campaigns, targeted training, and real-world success stories can help dismantle misconceptions about the risks of data sharing and lay the legislative foundation for a jurisdiction to thrive in a digital world.

Policy changes to break the cycle: Case study of Rwanda

Rwanda is a notable example of a developing nation adopting progressive digital trade policies to bridge the data divide. Through its partnership with the World Economic Forum, Rwanda officially passed legislation on the protection of personal data and privacy in October 2021, which became effective in October 2023 after a two-year transition period. According to the nation's Minister of Information Communication Technology and Innovation, Paula Ingabire, "This law provides the necessary foundation to transform Rwanda into a data-empowered society."

The country's efforts to create a digital-friendly investment climate[42] have come alongside increases in FDI levels. Total FDI in Rwanda grew from around $150 million in 2020 to around $460 million in 2023[43]. This upward trend continued into 2024, with FDI inflows reaching $289 million in the first half of the year, marking a 63.5% increase compared to the same period in 2023[44].

While a WEF report indicates that Rwanda still experiences challenges in attracting FDI due to regulatory challenges and concerns regarding connectivity and data infrastructure, among other factors[45], by embracing digitalisation and creating an enabling legislative environment for data flows and investment, Rwanda has positioned itself to better leverage digital trade for inclusive economic development.

Rwanda's experience demonstrates that addressing restrictive data policies and fostering digital trade can significantly reduce the barriers created by the data divide. By implementing comprehensive data governance frameworks and engaging in international collaboration, LDCs can begin to break the cycle of underdevelopment tied to limited data flows. However, achieving this requires sustained efforts in education, capacity-building, and targeted policy reforms that account for the unique challenges faced by each nation. As digital trade continues to reshape the global economy, LDCs have the potential to become active participants rather than passive observers, provided they take decisive steps to integrate into the digital ecosystem. Rwanda's progress is both a roadmap and a call to action for other developing nations to embrace the transformative potential of digitalisation.

[42] *WEF, 2025*
[43] *Macrotrends, 2025*
[44] *National Bank of Rwanda, 2024*
[45] *WEF, 2025*

Calls to action and recommendations

The digital transformation presents opportunities and challenges, with data inequality playing a pivotal role in shaping the trajectory of economic equality. As the digital revolution gains momentum, addressing data inequality remains central to fostering a more balanced and sustainable global economic environment.

To achieve this, this paper proposes three priorities for action:

i. Expand global digital development assessments to explicitly monitor and report progress on data inequality:

Without robust monitoring and evaluation, it can be easy for those in the digitally developed world to remain blind to the challenges of digitally undeveloped demographics. To effectively address the global data divide, existing assessments like the United Nations E-Government Development Index (EGDI) and the OECD Digital Economy Outlook, among others, should be expanded to include targeted metrics on data inequality. The EGDI, which currently evaluates ICT use for public service delivery, could incorporate indicators that measure cross-border data flow policies, the inclusivity of digital services, and the availability of data for economic and financial decision-making.

Similarly, the OECD Digital Economy Outlook could broaden its scope to assess data governance frameworks in LDCs, the availability of trusted data for trade finance, and the impact of digital trade policies on economic inclusion. Expanding these surveys would provide policymakers and stakeholders with actionable insights, enabling them to track progress, identify gaps, and implement solutions to bridge the data divide.

ii. Support data collection and management initiatives:

Fund and support initiatives aimed at improving data collection and management in developing countries. This will help provide a clearer picture of the economic and social needs in data-poor regions and help with overcoming the scandal of invisibility. Additionally, policymakers and stakeholders should advocate for the adoption of emerging data-sharing regulations, such as the Bank for International Settlements' (BIS) Project Aperta. Initiatives such as this promote cross-border data portability, enabling clearer guidelines for the sharing of client data among banks and their providers, including credit insurers.

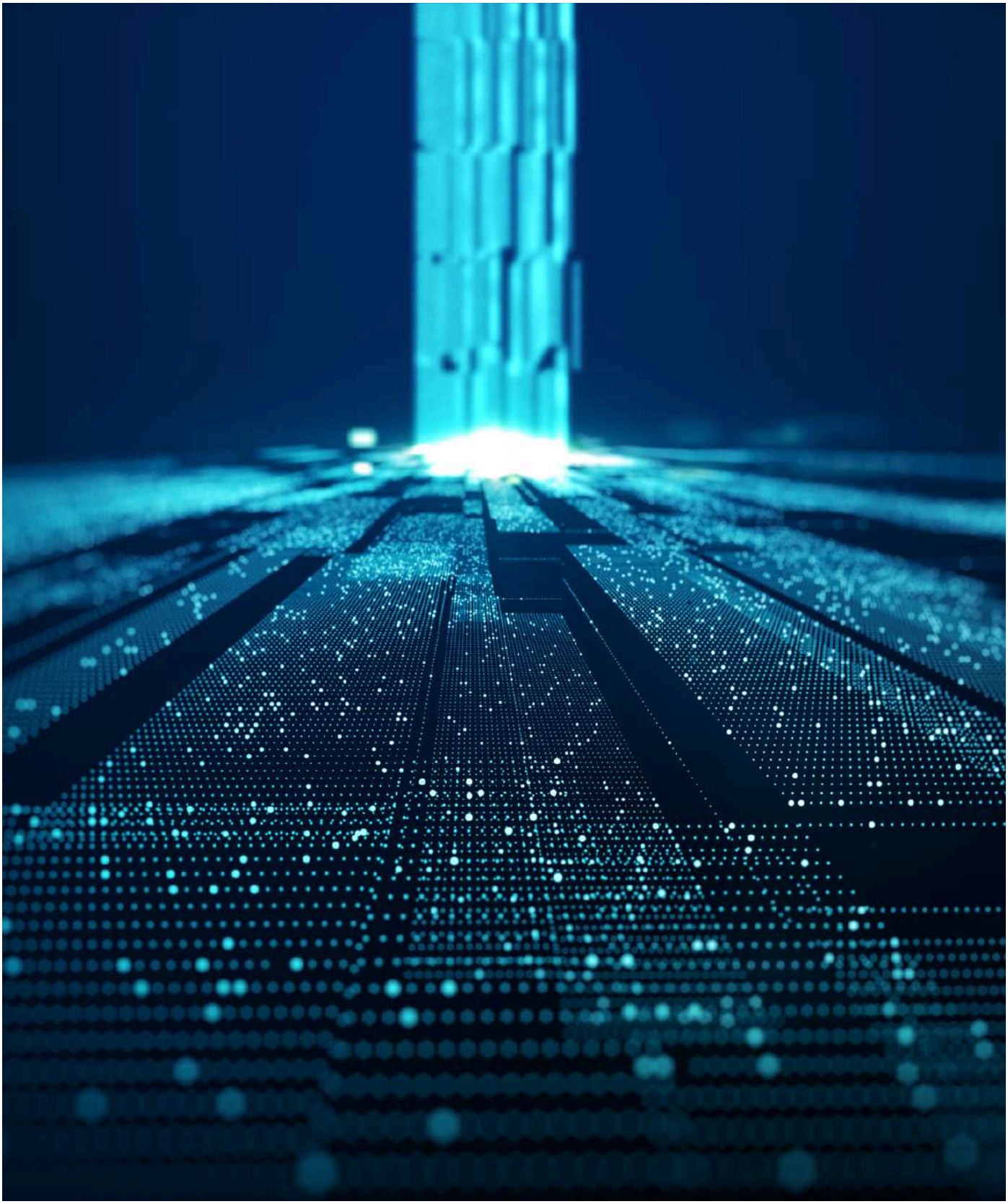
iii. Encourage policy reforms in LDCs:

Developed nations and international organisations have a critical role to play in supporting LDCs to adopt more open and progressive data policies. This can be achieved by fostering capacity-building initiatives that equip policymakers with the tools to understand the economic potential of cross-border data sharing and digitalisation. Efforts should focus on providing technical expertise, sharing international best practices, and highlighting successful examples, such as Rwanda's digital transformation, to build trust in the process. By offering targeted support and creating collaborative frameworks, stakeholders can help LDCs establish balanced data-sharing policies that address security concerns while unlocking opportunities for economic growth.

Conclusion

Growing data inequality will amplify global disparities and economic inequality as digitalisation continues to reshape the landscape of international trade. This report began by underscoring the significance of international trade and investment as pivotal drivers of economic progress before moving on to look at how data inequality disproportionately affects the world's least developed nations. Next, it delved into the relationship between data accessibility and international trade and investment, emphasising the positive outcomes of data's existence and the adverse consequences of its absence. The discussion then explored recent digital advancements within international trade that are poised to bring about a transformative phase in cross-border commerce, but that nations themselves must be both able (through digital infrastructure) and willing (through government policies) to participate to reap the benefits. We saw, however, that the prospect of expanded data inequality casts a foreboding shadow on trade digitalisation, with potential repercussions for global economic inequality.

By increasing awareness of the challenges that the world's least developed economies face – both digital and otherwise - the industry can help ensure that global trade remains inclusive. With concerted efforts and collaboration across all stakeholders, widespread data inequality can become a problem of the past.



References

Ashraf, H. (2005).

Countries need better information to receive development aid. Bulletin of the World Health Organization, 83(8), 565–566.

Bank for International Settlements. (2013).

Sound practices for the management and supervision of operational risk. https://www.bis.org/publ/bcbs238.pdf

Bank of England. (2024).

Customer data access and fintech entry: Early evidence from open banking. https://www.bankofengland.co.uk/working-paper/2024/customer-data-access-and-fintech-entry-early-evidence-from-open-banking

Battogtvor, E., & Parsons, C. (2019).

Measuring Mongolia's gains from trade and increased integration in the world economy. Global Economy Journal, 19(4). https://doi.org/10.1142/S2194565919500210

Castellani, L., & Hoffman, C. (2022, July 11).

Status update: MLETR adoption in the G7 and emerging markets. Trade Finance Global. https://www.tradefinanceglobal.com/posts/status-update-mletr-adoption-in-the-g7-and-emerging-markets/

Center for Global Development. (2014).

Delivering on the data revolution in Sub-Saharan Africa. Washington, DC: Data for African Development Working Group.

Central Intelligence Agency. (2022).

Field Listing: Legal system. The World Factbook. https://www.cia.gov/the-world-factbook/about/archives/2022/field/legal-system/

Cinnamon, J. (2019).

Data inequalities and why they matter for development. Information Technology for Development. https://doi.org/10.1080/02681102.2019.1650244

European Commission's Taxation and Customs Union. (2022).

VAT in the digital age (ViDA). https://taxation-customs.ec.europa.eu/taxation/vat/vat-digital-age-vida_en

Federation of Small Businesses. (2023).

How open banking can help small businesses. https://www.fsb.org.uk/resources-page/how-open-banking-can-help-small-businesses.html

Ganne, E. & Patel, D. (2021).

Accelerating Trade Digitalization to Support MSME Financing. WTO, TFG, ICC. https://www.wto.org/english/res_e/booksp_e/tradedigitaltomsmes_e.pdf

German Marshall Fund of the United States. (2023).

A trusted framework for cross-border data flows. https://www.gmfus.org/sites/default/files/2023-10/A%20Trusted%20Framework%20for%20Cross-Border%20Data%20Flows%20Report.pdf

González, J. L., Sorescu, S., & Kaynak, P. (2023).

Of bytes and trade: Quantifying the impact of digitalisation on trade.

Hamidi, R., & Singh, P. (2024).

Designing a Novel Cybersecurity Framework to Prevent Cyber-Attacks with Reference to Least Developing Countries. Nano Journal. https://nano-ntp.com/index.php/nano/article/download/581/490/897

Hoffman, C., & Patel, D. (2022).

UK introduces electronic trade documents bill into parliament. Trade Finance Global. https://www.tradefinanceglobal.com/posts/breaking-uk-introduces-electronic-trade-documents-bill-into-parliament/

International Telecommunication Union. (2023, March 5).

World's least developed countries threatened by deepening digital divide. https://www.itu.int/en/mediacentre/Pages/PR-2023-03-05-facts-and-figures-focus-on-least-developed-countries.aspx

Lythreatis, S., Singh, S. K., & El-Kassar, A. N. (2022).

The digital divide: A review and future research agenda. Technological Forecasting and Social Change, 175. https://doi.org/10.1016/j.techfore.2021.121359

Ma, S., Shen, Y., & Fang, C. (2023).

Can data flow provisions facilitate trade in goods and services? —Analysis based on the TAPED database. The Journal of International Trade & Economic Development. https://doi.org/10.1080/09638199.2023.2179860

Ma, S., Shen, Y., & Fang, C. (2023).

Can data flow provisions facilitate trade in goods and services? —Analysis based on the TAPED database. The Journal of International Trade & Economic Development. https://doi.org/10.1080/09638199.2023.2179860

Macrotrends. (2025).

Foreign direct investment: Rwanda. https://www.macrotrends.net/global-metrics/countries/RWA/rwanda/foreign-direct-investment

Ma, S., Shen, Y., & Fang, C. (2023).

Can data flow provisions facilitate trade in goods and services? —Analysis based on the TAPED database. The Journal of International Trade & Economic Development. https://doi.org/10.1080/09638199.2023.2179860

Macrotrends. (2025).

Foreign direct investment: Rwanda. https://www.macrotrends.net/global-metrics/countries/RWA/rwanda/foreign-direct-investment

National Bank of Rwanda. (2024).

Monetary policy and financial stability statement. https://www.bnr.rw/documents/20240924_MPFSS_PPT_Final.pdf

OECD. (2016). Statistical Insights: What Does GDP Per Capita Tell Us About Households' Material Well-being?

Organisation for Economic Co-operation and Development. https://www.oecd.org/sdd/na/statistical-insights-what-does-gdp-per-capita-tell-us-about-households-material-well-being.htm

Patel, D., & Canup, B. (2023, July 20).

Breaking: King signs off the Electronic Trade Documents Bill. Trade Finance Global. https://www.tradefinanceglobal.com/posts/breaking-king-signs-off-the-electronic-trade-documents-bill-act/

Reiter, J. & Adhikari, R. (2016, May 27).

4 ways the world's least developed countries can improve trade. World Economic Forum. https://www.weforum.org/agenda/2016/05/4-ways-the-world-s-least-developed-countries-can-improve-trade/

Setel, P. W., Macfarlane, S. B., Szreter, S., Mikkelsen, L., Jha, P., Stout, S., & AbouZahr, C. (2007).

A scandal of invisibility: Making everyone count by counting everyone. The Lancet, 370(9598), 1569–1577.

Sudsawasd, S., Charoensedtasin, T., & Pholphirul, P. (2020).

Delivering on the data revolution in Sub-Saharan Africa. Washington, DC: Data for African Development Working Group.

Shah, S. I. H., Abdulaal, A. & Peristeras, V. (2022).

Data divide in digital trade, and its impacts on the digital economy: A literature review. In 15th International Conference on Theory and Practice of Electronic Governance (ICEGOV 2022), October 04-07, 2022, Guimarães, Portugal. ACM, New York, NY, USA, 11 Pages. https://doi.org/10.1145/3560107.3560173

UN Capital Development Fund. (2021).

Addressing the missing middle challenge in least developed countries. https://www.uncdf.org/article/6520/addressing-the-missing-middle-challenge-in-least-developed-countries

UN Capital Development Fund. (2022).

Brief: Cross-border data flows. https://policyaccelerator.uncdf.org/all/brief-cross-border-data-flows

UN General Assembly. (2015, October 21).

Transforming our world: the 2030 Agenda for Sustainable Development. A/RES/70/1. Retrieved from https://www.refworld.org/docid/57b6e3e44.html

UNCTAD. (2021).

Digital Economy Report 2021: Cross-border data flows and development: For whom the data flow. United Nations Conference on Trade and Development. Retrieved from https://unctad.org/system/files/official-document/der2021_en.pdf

UNDP. (2022, September).

Mongolia. United Nations Development Programme. https://hdr.undp.org/data-center/specific-country-data#/countries/MNG

World Bank. (2022).

Poverty and Shared Prosperity 2022: Correcting Course. Washington, DC: World Bank. doi:10.1596/978-1-4648-1893-6.

World Bank. (2023).

GDP per capita,PPP (constant 2021 International $) - Mongolia. World Bank. https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.KD?locations=MN

World Economic Forum. (2025).

Digital foreign direct investment initiative 2025. https://reports.weforum.org/docs/WEF_Digital_FDI_Initiative_2025.pdf

World Population Review. (2024).

Common Law Countries 2024. World Population Review. https://worldpopulationreview.com/country-rankings/common-law-countries

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