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Task Force 05

**INCLUSIVE DIGITAL TRANSFORMATION**

## Gaps in Digital Financial Inclusion: Lessons for G20

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## Abstract

This policy brief aims to construct and analyze indices for access and usage dimensions of digital financial inclusion (DFI) in G20 economies, incorporating demographic characteristics such as gender, age, income, education, and occupation. The G20's role in formulating policies to promote access and usage of digital financial services supports broader objectives of growth and inclusivity. Bridging gaps in the digital financial ecosystem is crucial for integrating financially excluded populations into formal systems, aligning with the United Nation's goal of accelerating progress towards achieving the 2030 Sustainable Development Goals. A disaggregated analysis of digital financial inclusion gaps aids policymakers in understanding societal penetration of financial inclusion measures via digitization. Utilizing the World Bank's Global Findex Database for 2011-2021, the study employs survey results from G20 economies to construct indices using Principal Component Analysis (PCA). The empirical analysis focuses on comparing aggregate access and usage indices, examining disparities in digital financial inclusion across demographics, and exploring the relationship between the gaps and SDGs. The study aims to provide tailored policy recommendations based on its findings.

**Keywords:** Digital Financial Inclusion, Gender Gap, Digitalization, Inclusivity

## The Challenge

Financial inclusion (FI) refers to ensuring access to financial products and services and timely and adequate credit for vulnerable and underserved groups at an affordable cost (Dua et al., 2023). According to the Global Findex data<sup>1</sup>, developing countries show improvements in account ownership from 42% in 2011 to 71% in 2021. Over the last decade, especially after the COVID-19 pandemic, technology has emerged as a key enabler in promoting financial inclusion, paving the way for the digitalization of financial services (Banik et al., 2023).

This policy brief looks at digital financial inclusion (DFI)<sup>2</sup> defined as the use of cost-saving digital means to provide formal financial products and services to financially excluded and underserved sections of the population (Ray et al., 2022). Some countries may have achieved notable advancement in financial inclusion in recent years, which is not reflected in the access and usage of digital financial services (Khera et al., 2021). Therefore, countries' rankings for DFI may differ from those for financial inclusion.

Digital financial services optimize government transfers via mobile phones, e-wallets, and digital tools, bolstering inclusivity and safety nets, thereby allowing deeper penetration of financial services in the economy. Yet, disparities in access, usage, and literacy levels create global and intra-country gaps, amplifying inequalities and hindering inclusive growth objectives. Furthermore, gaps in DFI exist according to individual characteristics of gender, age, education, income, and workforce. Such variations between two sets of countries and gaps within countries exacerbate inequalities, thus defying the objective of inclusive growth across the globe through DFI.

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<sup>1</sup> <https://www.worldbank.org/en/publication/globalfindex/Data>

<sup>2</sup> Saving in a bank account is an example of financial inclusion, but using mobile phones or the Internet to store money indicates digital financial inclusion.

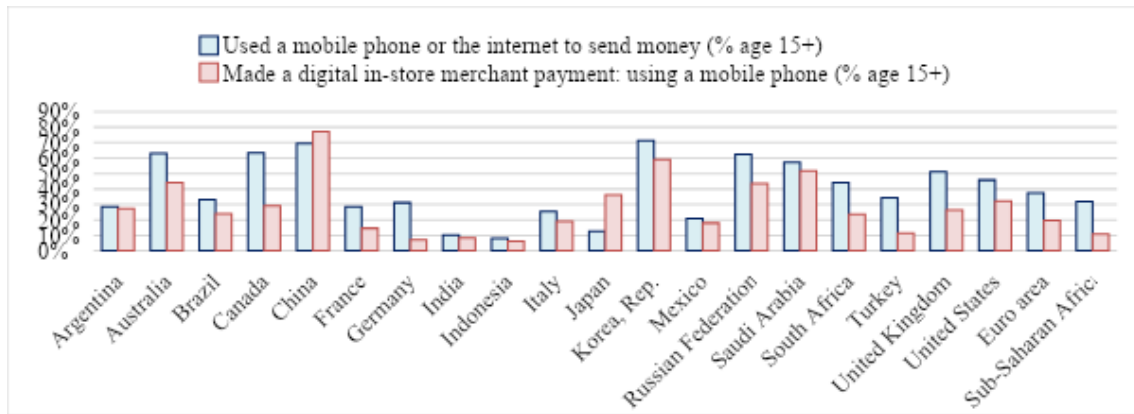


FIGURE 1: DFI – Usage, 2021. Source: Authors’ compilation using Global Findex Database, 2021. *Note: Figure refers to the proportion of adults (% age 15+) who report using mobile money, a debit or credit card, or a mobile phone to make a payment from an account--or report using the Internet to pay bills or to buy something online or in a store or send money to a relative or friend--in the past year.*

According to the Global Findex Database (2021), there exists a global disparity among G20 economies in utilizing mobile phones or the Internet for money transfers and making digital payments among individuals aged 15 years and above (Figure 1). Remarkably, 70% of the people in the Republic of Korea and China (PRC) use digital money transfer and transaction services. In both countries, more than 60% of adult consumers use their mobile phones to make digital in-store payments and transfer money. Compared to the G20 advanced economies (Germany, Japan, Italy, and France), this is a significantly higher level. On the other hand, among developing economies, the data shows that the propensity for digital money transfers in Indonesia and India is only 8% and 10%, respectively. Similarly, 6% and 8% of in-store transactions in these two nations are made using mobile phones respectively.

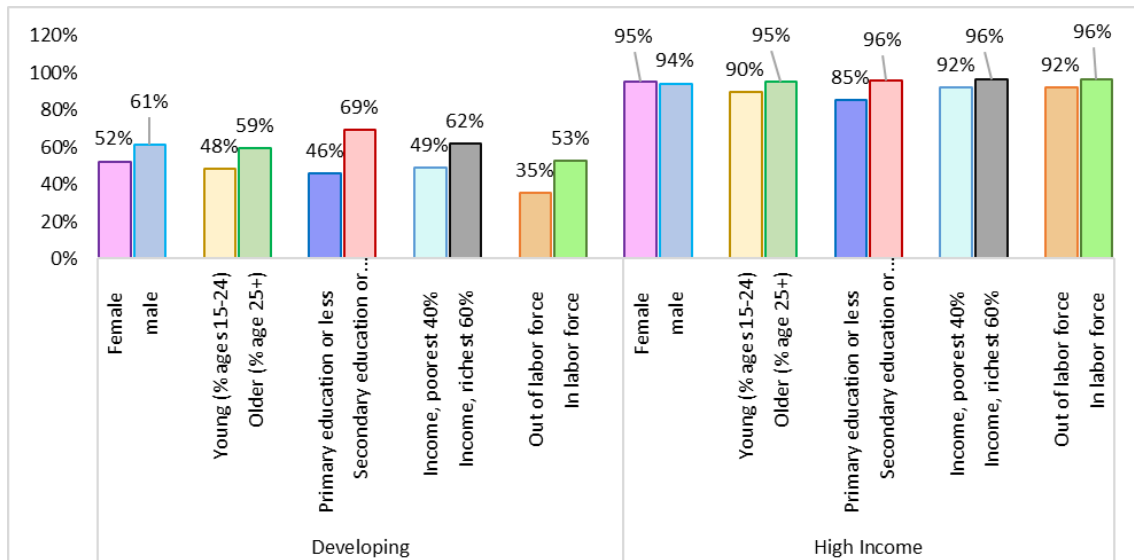


FIGURE 2: DFI – Usage, by Demographics (2021). Source: Authors’ compilation using Global Findex Database, 2021. *Note: Proportion of adults (age 15+) who report using mobile money, a debit or credit card, or a mobile phone to make a payment from an account--or report using the Internet to pay bills or to buy something online or in a store--in the past year.*

According to the Global Findex Database (2021), the share of adults making or receiving digital payments in developing countries increased significantly from 2014 to 2021. However, large variations exist in terms of gender, age, income, education, and workforce within developing economies and also between high-income and developing countries (Figure 2).

In light of these gaps in DFI, in this policy brief, we apply the Principal Component Analysis (PCA)<sup>3</sup> to create indices of DFI for G20 countries<sup>4</sup> for 2017 and 2021<sup>5</sup> along

<sup>3</sup> Numerical data from the Findex database made PCA preferable to Multiple Correspondence Analysis (MCA), which is for categorical data only.

<sup>4</sup> All the member countries and regions of G20 are included in the sample. Due to the unavailability of data for the African Union (Sub-Saharan Africa + North Africa), only Sub-Saharan Africa (SSA) is included for analysis.

<sup>5</sup> Since the data for 2011 and 2014 was not consistently available for all indicators, analysis is done only for 2017 and 2021.

with analyzing the comovement between DFI and SDG performance of economies (Section 2). We first build indices for the access and usage dimensions of DFI and then combine them to create an overall index. In a similar vein, indices are also created using demographic data related to gender, age, education, income, and workforce<sup>6</sup>. Section 3 elucidates the role of G20 in the present context, and Section 4 presents policy recommendations.

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<sup>6</sup> Data sources and methodology are provided in [Appendix A.1 & A.2](#), respectively

This section covers the analysis based on the constructed aggregate and disaggregated indices for DFI.

### Aggregate indices

The relative positions of the G20 nations in the overall index of DFI are shown in Figure 3.

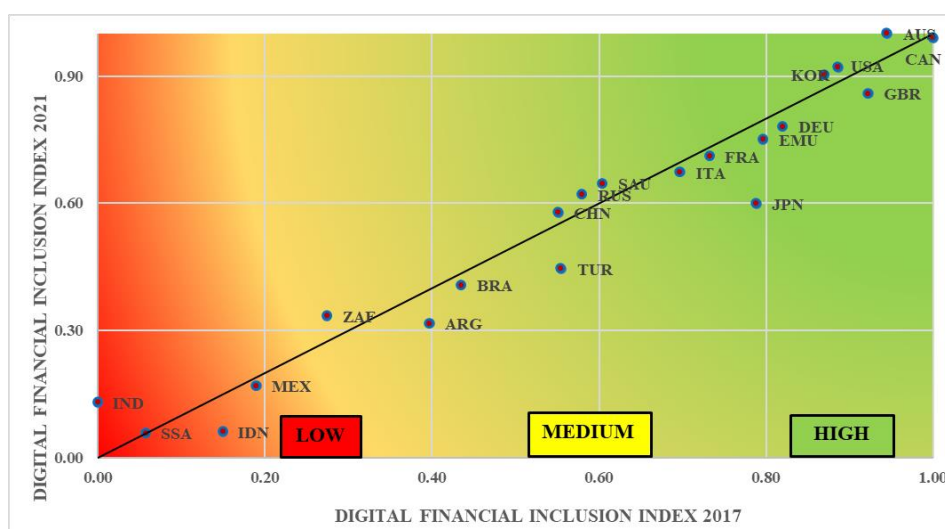


FIGURE 3: DFI Index of the G20 countries: Relative Positioning. Source: Authors' calculations using Global Findex data, 2021. *Note: "High," "medium," and "low" classifications for countries are based on their Digital Financial Index scores, ranging from 0.75-1, 0.25-0.75, and below 0.25, respectively. Country names are abbreviated, and details are provided in the [Appendix A.1](#).*

In contrast to developing countries, developed countries exhibit a distinct advantage. Sub-Saharan Africa, Mexico, Indonesia, and India have lower rankings among the former, indicating a low level of DFI. Since 2017, there hasn't been a discernible increase in the

digitization of financial services in nations including Argentina, Brazil, Turkey, Japan, Indonesia, Europe, the United Kingdom, and Germany (See Figure 4).

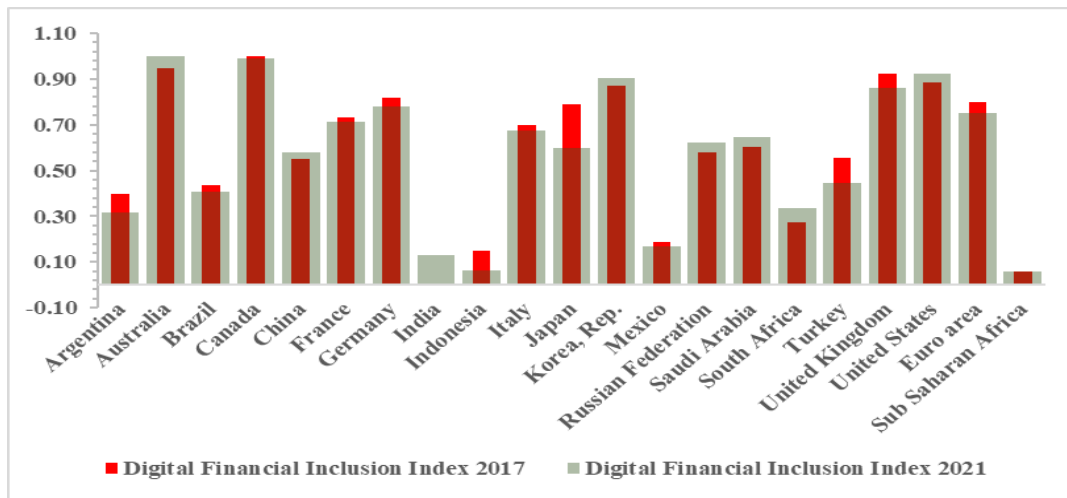


FIGURE 4: Digital Financial Index of the G20 countries: 2017 vs 2021. Source: Authors’ calculations

### Existence of Gaps: Disaggregated Indices

The gaps in DFI are defined as shown in Figure 5.

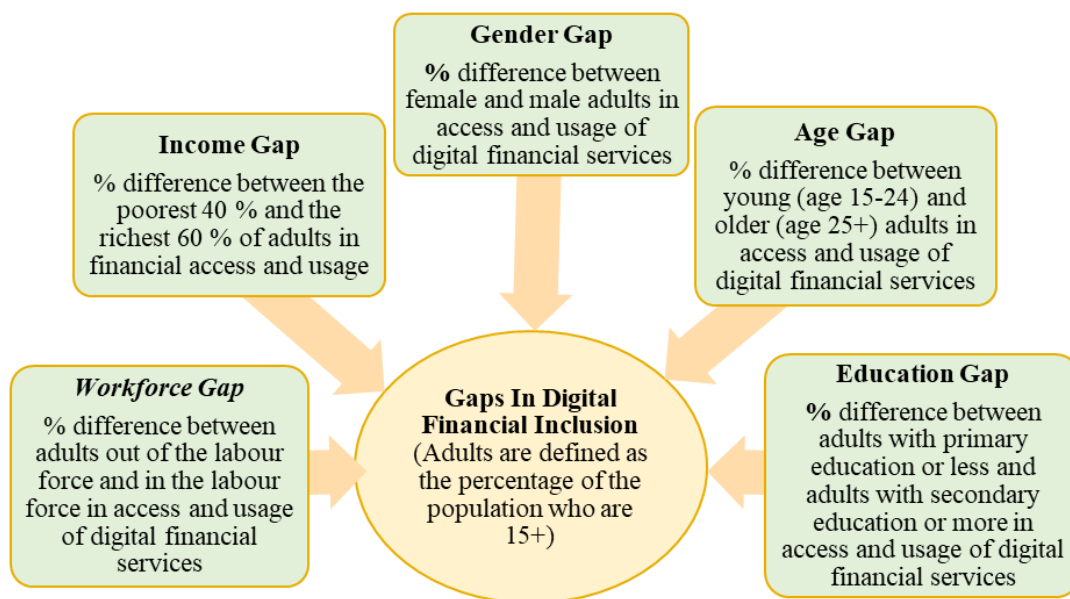


FIGURE 5: Gaps in DFI – Definitions. Source: Authors’ Contribution



The disaggregated indices constructed for various demographics like age, gender, income, education, and workforce are shown in Table 1.

TABLE 1: Gaps in DFI (2017, 2021)

G20 Member Country/Region name	GENDER GAP		AGE GAP		EDUCATION GAP		INCOME GAP		WORKFORCE GAP	
	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021
<b>Developed Economies</b>										
Australia	2%	7%	-30%	-18%	-4%	-36%	-9%	-4%	-10%	-2%
Canada	0%	0%	0%	0%	-4%	-22%	0%	0%	0%	0%
France	-2%	1%	-29%	8%	-6%	1%	3%	8%	-11%	-6%
Germany	-1%	4%	-14%	4%	-13%	19%	-7%	6%	-11%	5%
Italy	-13%	4%	-42%	-11%	7%	18%	-9%	5%	-10%	0%
Japan	-1%	0%	-20%	-27%	-18%	-17%	-6%	-1%	-17%	-12%
Korea, Rep.	4%	-2%	-31%	-22%	-27%	-18%	-10%	-12%	-19%	-15%
Saudi Arabia	-24%	-14%	-15%	-7%	-2%	-10%	-7%	-9%	-26%	-26%
United Kingdom	-3%	3%	-13%	-4%	7%	13%	-3%	7%	-2%	6%
United States	-1%	7%	-4%	-19%	-24%	-45%	-24%	-14%	5%	-6%
Euro area	-6%	0%	-23%	-2%	-2%	9%	-5%	5%	-12%	-1%
<b>Developing Economies</b>										
Argentina	6%	-2%	-14%	5%	2%	-21%	-10%	-9%	-12%	-12%
Brazil	-5%	-12%	-15%	3%	-3%	3%	-18%	-7%	-13%	-13%
China	-2%	2%	19%	0%	-27%	-9%	-26%	-10%	-13%	NA
India	-5%	-4%	-2%	0%	-3%	2%	-3%	0%	0%	-7%
Indonesia	10%	12%	9%	11%	-7%	-1%	-5%	5%	1%	-7%
Mexico	0%	-6%	6%	6%	3%	-7%	-4%	-18%	-7%	-17%
Russian Federation	5%	0%	3%	4%	-11%	6%	-1%	-5%	-17%	-8%
South Africa	2%	3%	1%	-12%	5%	0%	-3%	-12%	-7%	-16%
Turkey	-24%	-31%	-6%	0%	-12%	-15%	-14%	-18%	-49%	-22%
Sub-Saharan Africa	0%	-1%	1%	-5%	-5%	-6%	1%	-2%	0%	-12%
LEGEND		<0		=0		>0				

Source: Authors' calculations

Table 1 illustrates how the G20 countries' demographic differences in DFI—highlighted in light red—are rather widespread. In Italy, for instance, in 2017, 13% more men than women had access to and used digital financial services. In 2021, 4% more women than males became a part of the digital financial ecosystem, indicating improvement. In Brazil, compared to the younger population, older adults used and had access to 3% more digital financial services in 2021. The prevalence of age gaps is reported to be higher in industrialized economies than in developing ones. Gaps in workforce participation, education, and income are increasingly evident across all the countries in the sample. This suggests that the most vulnerable groups in society, such as

individuals with only primary education, 40% of the poorest adults, and those out of the labour force relatively have less access to and use digitized financial services.

### **DFI: A Catalyst for Sustainable Development Goals**

The UN's 2030 Agenda outlines 17 Sustainable Development Goals (SDGs) for an equitable and sustainable future, with Digital Financial Inclusion (DFI) emerging as a pivotal factor for expediting progress towards these objectives. DFI empowers economic resilience (SDG 1, 8), fosters gender equality (SDG 5), reduces income inequality (SDG 10), enhances food security (SDG 2), improves healthcare payment and insurance mechanisms (SDG 3), streamlines business operations (SDG 9), aids climate financing (SDG 13), and promotes government transparency (SDG 16). Through correlation analysis between SDG scores and DFI indices, as well as examination of demographic-based DFI gaps, the profound impact of DFI on achieving SDGs becomes evident. The SDG score for each country represents the optimal SDG performance of that country.



FIGURE 6: Correlation of Overall DFI Index with Scores of Different SDGs. Source: Authors' Calculations. *Note: A t-test of Significance for Pearson's correlation coefficient is conducted. p-value is in the brackets.*

Figure 6 shows that the overall DFI index is significantly and strongly associated with SDG 1, 3, 6, 7, 8, 9, 10, 13 and 16. Moderate and significant association is also seen with SDG 4 and 5.

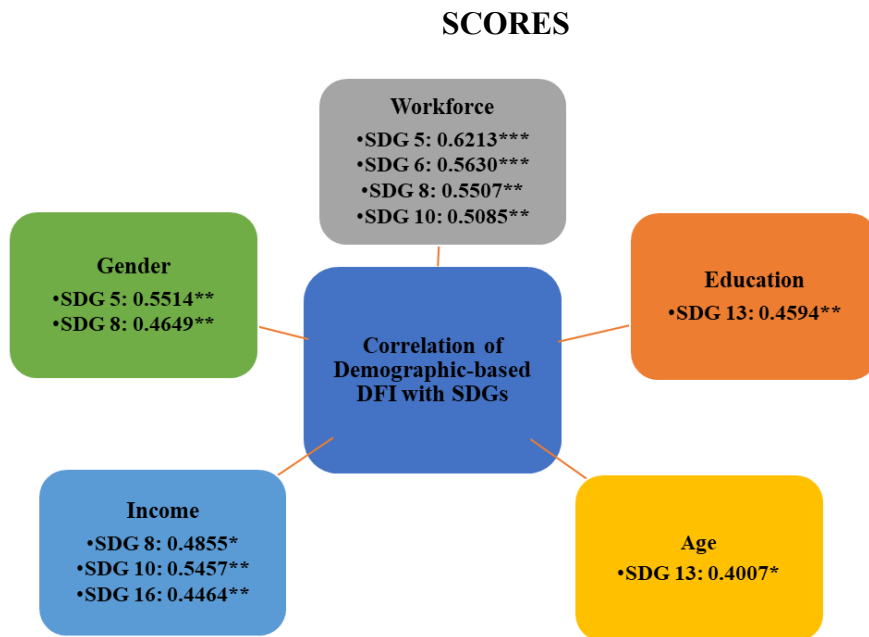


FIGURE 7: Correlation between Demographic-based DFI with SDG Scores. Source: Authors' calculations using constructed DFI index and SDG scores<sup>7</sup>. Note: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . A *t*-test of Significance for Pearson's correlation coefficient is conducted.

Similarly, Figure 7 reveals that the demographics-based inclusiveness in DFI is significantly associated with some SDGs.

<sup>7</sup> <https://dashboards.sdgindex.org/chapters/methodology>

## Role of G20

The G20 plays a crucial role in driving global financial inclusion through digital financial services. The G20 can anchor the deployment of interoperable Fast Payment Systems (FPS) like India's UPI<sup>8</sup>. By sharing knowledge and facilitating collaboration, the G20 can help nations develop robust digital infrastructure essential for the widespread adoption of digital financial services.

The G20 can bolster financial literacy and access to digital financial services through multilingual resources and targeted campaigns, particularly focusing on demographics such as women, youth, and low-income groups.

India's Aadhaar system highlights the power of secure digital IDs for financial inclusion. G20 should promote the development of national digital IDs within privacy regulations. Interlinking FPS systems like UPI-PayNow aligns with G20's goal of facilitating faster, cheaper cross-border payments, boosting economic growth, and integrating marginalized populations into formal finance for inclusive growth and global equity.

The policy brief outlines different critical components and facilitators that collectively contribute to establishing a robust digital financial ecosystem in an economy (Figure 8).

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<sup>8</sup> The star of India's payment systems is the Unified Payments Interface (UPI). As of January 2024, a staggering 560 banks are live on UPI, processing close to 420 million transactions daily.

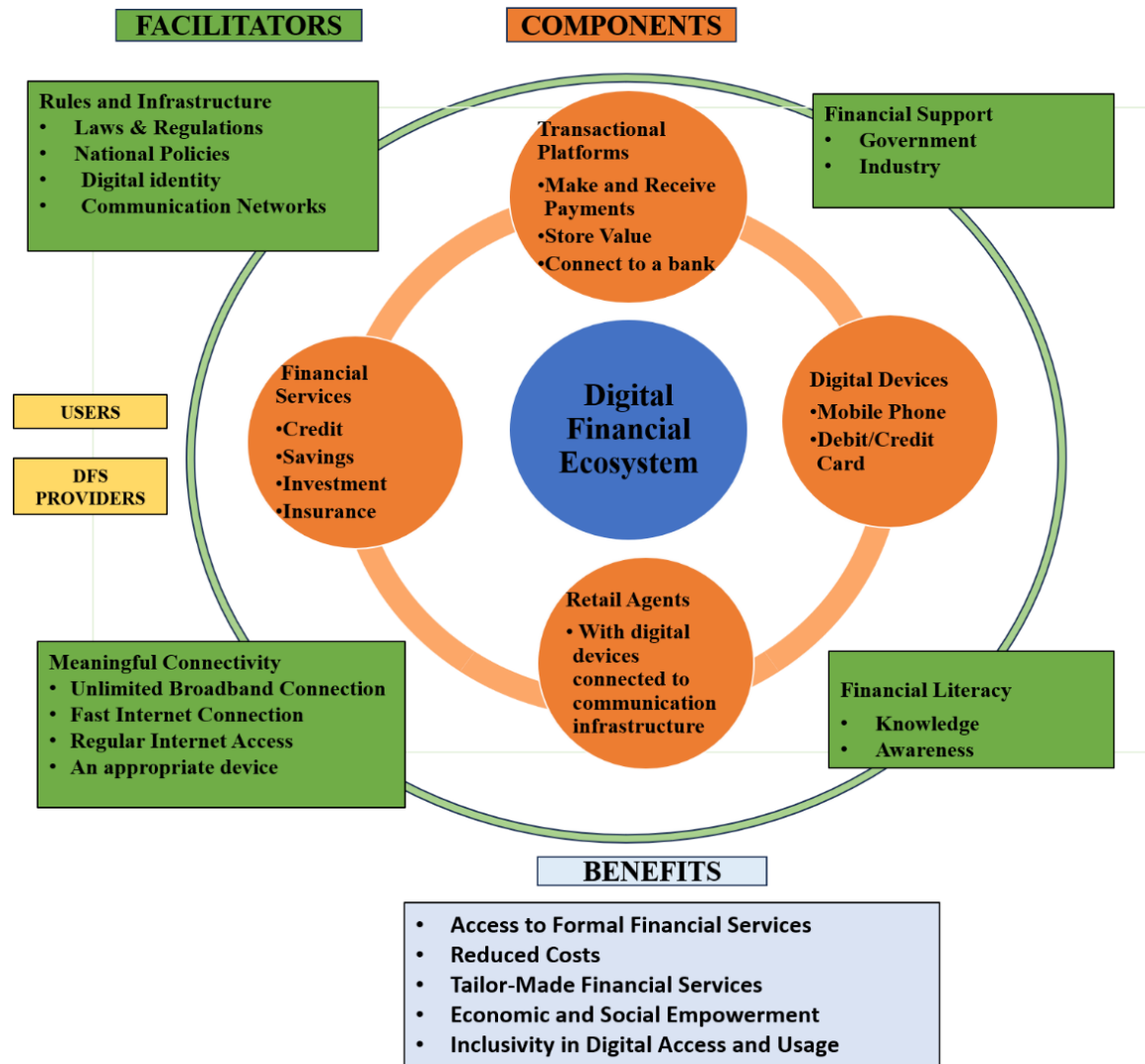


FIGURE 8: Digital Financial Ecosystem. Source: Authors’ contribution

For enhancing DFI, the G20 plays a pivotal role in strengthening, redesigning, and positioning the digital ecosystem appropriately. The group can bolster the digital financial ecosystem through knowledge sharing, prioritizing components such as digital literacy and governance to foster inclusive growth globally. This is outlined in policy recommendations for fostering technologically enabled financial inclusion.

**A. Enabling Financial & Digital Infrastructure, Connectivity & Resilience**

**A.1 Nationwide and cross-border mobile and broadband infrastructure needs to be strengthened.** Weak infrastructure and connectivity pose significant challenges to DFI (The International Telecommunication Union (ITU)<sup>9</sup>, 2022). Therefore, enhancing infrastructure, particularly through improved broadband and mobile networks tailored to different regions, is essential to speed up and broaden internet access. For instance, in Brazil, the low adoption of the Internet (See Figure 9) is attributed to high costs (29%), lack of connectivity (20.4%), and privacy/security concerns (26.2%) by the people. Similarly, in Mexico, 6.74% of respondents reported security concerns for not purchasing goods and services online

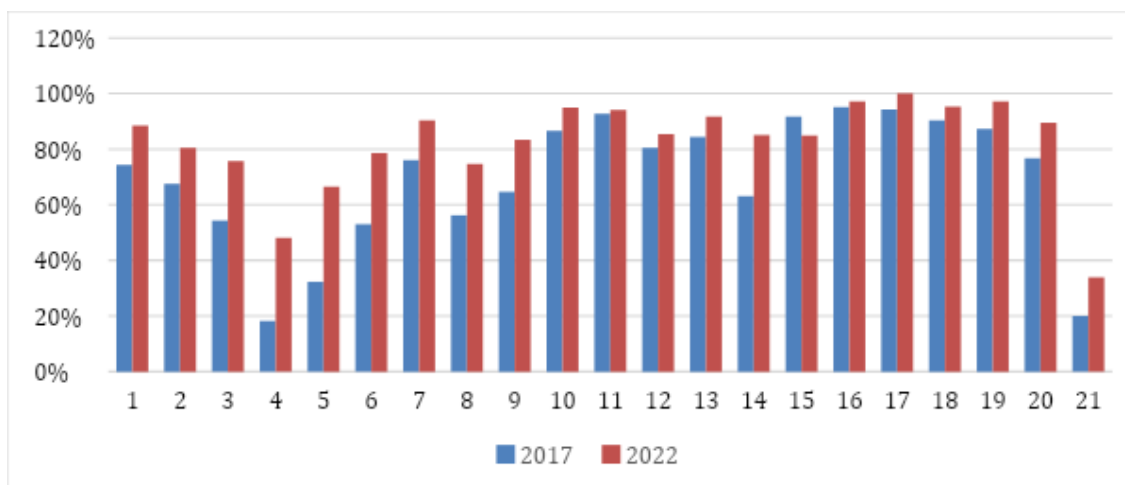


FIGURE 9: Internet Penetration Rate in the G20 countries. Source: ITU, World Telecommunication/ICT Indicators Database

<sup>9</sup> <https://datahub.itu.int>

**A.2. Ensure meaningful connectivity<sup>10</sup> by setting higher standards for internet access and, thus, digital development as per the A4AI framework.** The target for meaningful connectivity can be universally achieved through low-cost digital devices, Broad-based devices to accommodate different users and experiences, cost-effective models that offer unlimited data plans, larger and safer internet access at public places, spectrum assignment for maximum society benefit, and digital literacy and skill.

**A.3 Ensure digital identity for all and develop mechanisms to track and regularly update the enrollment of vulnerable sections.** G20 member nations can implement a national digital identity framework similar to India's Aadhaar system to promote transparent, inclusive, and equitable access to digital financial services. This requires secure storage of personal information and robust and accessible identity verification.

**A.4 Ensure security, privacy, and transparency in digital infrastructure.** The Global Financial Inclusion and Consumer Protection (FICP) Survey<sup>11</sup> highlights concern among regulators about the risks posed by unregulated consumer credit providers and fintech innovations due to inadequate FCP regulatory frameworks in some economies. Addressing these concerns is crucial for enhancing consumer protection in financial product usage.

**A.5 Strengthen the collection, availability, and sharing of high-quality disaggregated data.** G20 economies ought to promote high-frequency data collection incorporating gender, age, education, income, employment, and location, ensuring policy penetration across societal strata while prioritizing data protection, especially for vulnerable groups.

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<sup>10</sup> A4AI: Alliance for Affordable Internet, <https://a4ai.org/meaningful-connectivity/>

<sup>11</sup> <https://www.worldbank.org/en/topic/financialinclusion/brief/ficpsurvey>



**A.6 Digitally-enabled insurance services and targeted subsidies to counter Climate-change-related risks.** To counter global economic losses from natural disasters, G20 should boost insurance via digital means and support digital savings and credit for poor households to reduce climate disaster risks. This can be complemented by targeted subsidies and transfers to underserved groups through DFI.

## **B. Conducive Regulatory and Enabling Environment**

**B.1. Motivate government collaborations with non-profit organizations, bilateral partners, and the private sector to augment digital financial products and services.** The G20 can promote private sector participation and innovation via credit support initiatives and sustainable revenue models, utilizing blended financing to expand digital service penetration in the economy rapidly.

**B.2. Implement cybersecurity legislation and develop mandates for ICT regulators.** ITU data for 2022 reveals cybersecurity legislative gaps in certain G20 economies, necessitating the establishment of robust safeguards for digital financial infrastructure to mitigate vulnerabilities, bolster consumer confidence, and promote inclusivity.

## **C. Alleviating Constraints to Inclusivity in Digital Financial Access and Usage**

**C.1. Barriers to access to formal financial Services.** To boost access and use of digital financial services in the economy, any barriers to formal financial services like

account ownership should be reduced. Figure 10 shows that in economies where the barrier index<sup>12</sup> is high, the aggregate digital financial index is found to be low.

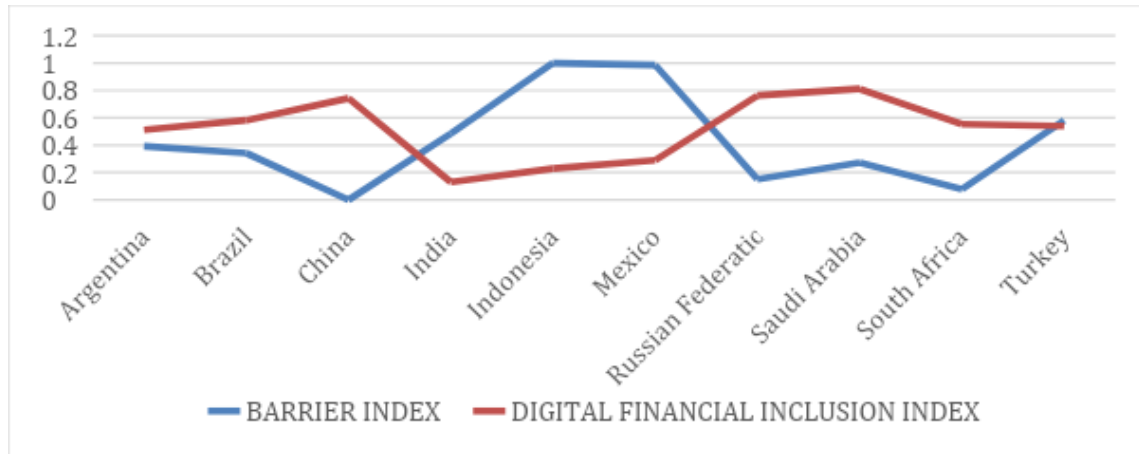


FIGURE 10: Relationship between Barriers and DFI (Developing Economies), 2021.

Source: World Bank Findex Data, 2021

**C.2. Gender-sensitive agent networks, simplified KYC norms, and gender bias in product offerings** would facilitate the closing of the gender gap in DFI. G20 can promote financial inclusion by using women banking agents and financial workers in rural regions, tackling social barriers via awareness campaigns for community leaders. This will further help in countering women's access to financial tools, especially in developing Asian economies.

**C.3. The development of Artificial Intelligence-based digital tools can close the gaps for younger cohorts.** G20 economies should invest in AI-based digital tools to engage younger cohorts in the financial ecosystem, closing access and usage gaps through

<sup>12</sup> See [Appendix A.2.](#)

education initiatives that provide need-based assistance throughout their educational journey.

**C.4. The compliance requirements should be simplified to close the income gap in digital financial inclusion.** G20 economies should prioritize affordable digital infrastructure and technology-enabled platforms linking borrowers and lenders, simplifying KYC authentication norms and reducing transaction costs to ensure inclusivity across all income groups in the digital ecosystem.

**C.5. Develop an interactive voice-response system to avail financial services and use AI models to close the language barrier.** The education level gap in digital access and usage and the gap emanating from cultural/regional differences can be bridged with technology-enabled solutions like building interactive platforms run by voice commands and the availability of multiple regional languages on these platforms.

**C.6. Enhance the connectivity infrastructure at school and healthcare center levels within the city landscape, with particular attention to granular reach and implementation.** Through this initiative, the G20 economies integrate financial literacy programs into the teaching curriculum at the school level and enhance the use of digital tools in teaching financial concepts. Moreover, better connectivity at healthcare centers can boost digital healthcare payments.

## **D. Promote Digital Financial Literacy and Awareness**

**D.1. The Information-Education-Communication (IEC) campaigns** in remote areas can improve awareness and inclusivity. This would help in addressing issues such as online purchasing hesitancy due to a lack of confidence (ITU data, 2022).

**D.2. Encourage greater knowledge exchange and interaction to develop new technology-driven ways to deliver financial education.** Mobile applications, online courses, and virtual reality can be used as a medium to exchange knowledge and transfer technology. Such initiatives would specifically help close the demographic-based usage gaps.

**D.3. Encourage vulnerable section-sensitive digital financial literacy and awareness campaigns.** The G20 can develop short-term courses or campaigns that deliver financial education tools to the underserved population with hands-on experience, enabling people to understand simple financial concepts such as returns on savings for 10 years, calculating compound interest, etc.

## References

- Banik, Banna, and Chandan Kumar Roy. "Measuring fintech-driven financial inclusion for developing countries: Comprehensive Digital Financial Inclusion Index (CDFII)." *Economic Journal of Emerging Markets* (2023): 143-159.
- Dua, Pami, Neha Verma, Neeraj Kumar and Deepika Goel. "Financial Inclusion, Economic Growth and Taxes: An Overview," in *Financial Inclusion Perspectives and Recent Initiatives*, ed. Pami Dua, 36-98. India: National Book Trust, India, 2023.
- Khera, Purva, Stephanie Ng, Sumiko Ogawa, and Ratna Sahay. "Measuring digital financial inclusion in emerging market and developing economies: A new index." *Asian Economic Policy Review* 17, no. 2 (2022): 213-230.
- Ray, Saon, Peter Morgan, and Vasundhara Thakur. "Digital Financial Inclusion and Literacy from a G20 Perspective." *ADB Institute Policy Brief* (2022).  
<https://doi.org/10.56506/UXOQ1249>
- Sachs, J. D., Guillame Lafortune, Grayson Fuller, and Eamon Drumm. "Implementing the SDG stimulus. Sustainable Development Report 2023." Dublin University Press (2023).
- World Bank. 2014. *Digital Financial Inclusion*. Washington, DC: World Bank.  
<https://www.worldbank.org/en/topic/financialinclusion/publication/digital-financial-inclusion#:~:text=Digital%20financial%20inclusion%20involves%20the,customer%20and%20sustainable%20for%20providers> (accessed 12 March 2023).



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