Digitalization and the gender divide

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What is gender digital divide?

- The digital gender divide refers to the “gap between individuals, households, businesses, and geographic areas at different socio-economic levels” (OECD, 2021).
- Statistics from 2022 reveal that compared to 62% of men globally, 57% of women have access to the Internet (GDDI, 2022). The disparity is particularly pronounced in developing and low-income countries.
- Furthermore, in Least Developed Countries (LDCs), a mere 19% of women accessed the Internet in 2020, starkly contrasting to the 86% figure in developed nations in 2019.
- Barriers to girls and women's engagement in the digital realm include insufficient resources, lack of digital skills, societal norms, limited educational opportunities, inadequate infrastructure, affordability constraints, low digital confidence, and limited ownership of ICTs (Khera et al., 2022; ITU, 2022).
- While digitalization has the potential to significantly boost economic growth and job creation, the literature lacks specific insights into how these benefits are distributed across genders.
- More research is needed to understand the gender dimensions of digitalization and its impact on labor productivity and economic growth.

Concept of time and time use surveys

- Addressing the gender gap in mobile phone ownership, given its significance as a primary tool for Internet access, holds promise for mitigating the broader Internet usage gender divide.
- **The allocation of time available to women remains an understudied aspect among these barriers.**
- Understanding how time constraints impact women's ability to engage with digital technologies and develop digital skills is crucial for addressing the gender digital divide. Time-use Surveys (TUS) have typically measured unpaid work, but these surveys are not widespread, creating data gaps. Accurate data on unpaid work is essential for understanding gender inequalities in time allocation.
- ADB (2023) provides evidence of how time savings can help gender equality. Based on data from Rajasthan in India which provided 173418 house service connections in 5 project towns, freeing women from the chore of water collection and thus saving time. Reduction of time spent on chores or unpaid work can lead to favourable outcomes
- Using data from time-use surveys (collected by the UN, World Bank, etc.), we will analyze the empirical evidence of time available for women for other activities including digital devices, and time available for them to upgrade digital skills.
- For example, the World Bank reports the proportion of time spent on unpaid domestic and care work (as a proportion of 24 hours) for both sexes. Data on time spent on digital devices by women is sparse, reinforcing the need for better time-use surveys to inform labor policies.
- The data from time-use surveys in the Asia-Pacific region highlight that women predominantly spend time on unpaid domestic work, reducing their availability for employment, thus impacting LFPR negatively.

Time-Use Data of Women in Asia-Pacific (minutes per day)

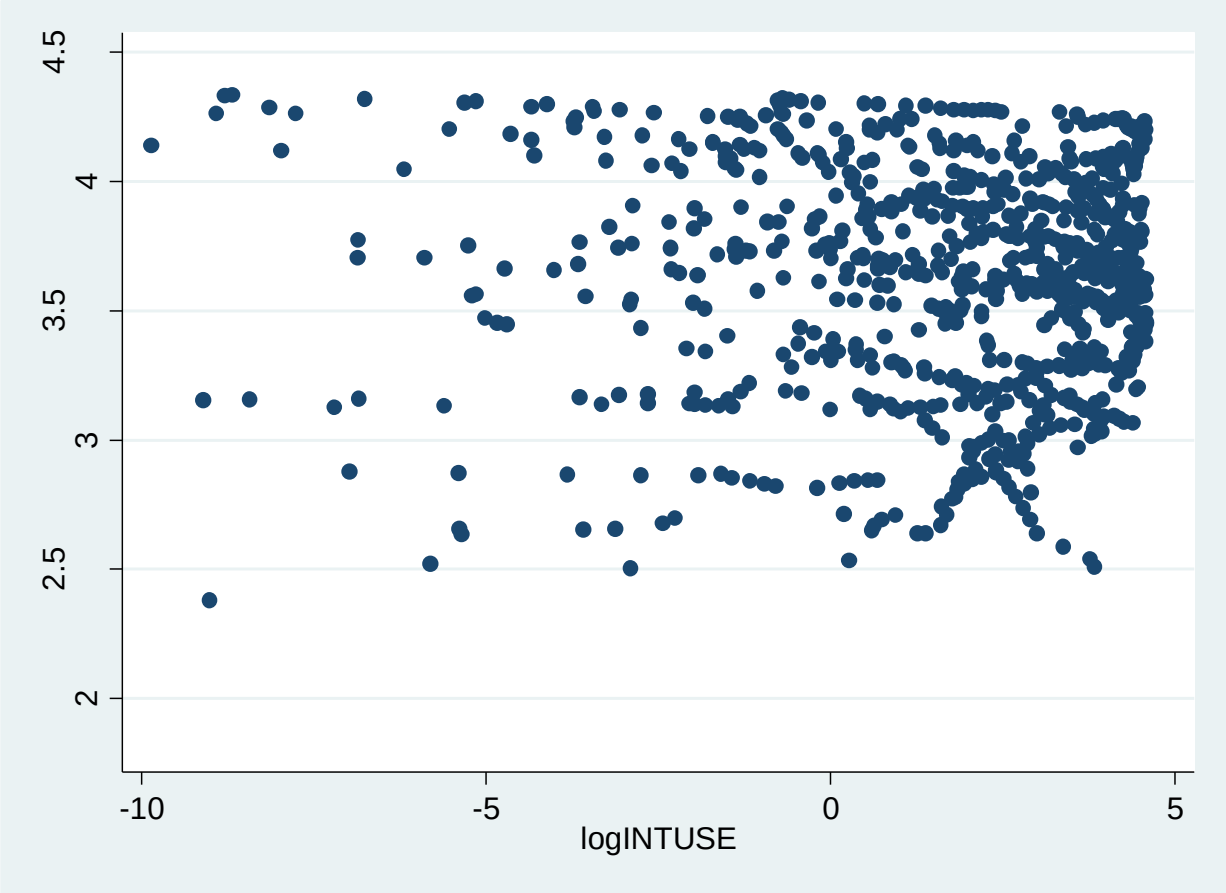
Country	Employment-Related Activities	Unpaid Domestic Work + Care Services	Volunteering	Personal Time	Leisure + Socializing
Afghanistan*	168	685	14	1502	
Bangladesh	120	348	6	654	
Cambodia	275	210			
India (2019)*	333	299	99	723	
Japan	310	213	3		
Malaysia (2019)	396	216		546	
Mongolia	238	290		912	
Nepal*	275	461	57	814	140
New Zealand (1999)	132	264			
Pakistan (2019)	218	258			
Philippines (2023)		136			
South Korea (2019)		193			
Sri Lanka	426	390	132		
Taiwan (2004)	218	150			

Source: compiled

Objective

- Methodology: panel VAR
- **Estimated equation: $LFPR_t = f(Digitalization,)$**
- Frequency of the data: Annual data from WDI, World Bank
- Countries: Asia Pacific
- Log form of all the variables has been used
- Variables:
- The dependent variable is the log of labour force participation for women between the ages of 15-24 (ILO estimates).
- Alternatively, the log of labour force participation (national estimates) was also tried with similar results for internet use.
- The source of the data is the World Development Indicators (WDI).

Scatterplot between LFPR and internet use in our sample



Independent variables

Variable	Description	Expected sign
Digitalization	Individuals using the internet as a percentage of the population	+
Fertility rate	Total (births per woman)	- / +
GDP per capita	GDP per capita at 2015 constant dollars	+
Female life expectancy at birth		-
Trade GDP ratio		+
Agriculture value added	The share of agriculture to GDP	+
Services value added	The share of services to GDP.	+
Literacy rate		+
School enrolment	School enrolment, primary, female (% gross)	+

Variables/ 2

- **Unpaid domestic work and care services -** The more hours a woman spends on unpaid domestic and care work activities, the lower is her participation in the labour force likely to be (Chakraborty and Sutradhar, 2023). Hence, we expect a negative relation between this variable and LFPR.

- This variable has been constructed in the following manner – we have used the data reported by the countries on unpaid domestic work and care services as an interaction term with the time dummy.

- The definition of unpaid work from ADB's Tracking Indicators Definitions is the proportion of time spent on unpaid domestic and care work (in %).
- **Mobile cellular subscriptions per capita -** measured by mobile cellular subscriptions per 100 people by the total population**.** As an alternative to internet use, we have also tried this variable. It is also expected to aid LFPR.

Results

	(1)	(2)	(3)	(4)	(5)
Ln INTERNET USE	-0.01 (-3.25)***	0.00 (0.22)	0.01 (2.35)***		0.03 (3.37)*
Ln GDP per capita		-0.25 (-10.56)***	-0.48 (-6.51)***	1.44 (1.90) ***	-0.51 (-6.94)***
Ln FERT			-0.07 (-0.87)	-0.04 (-0.13)	
Ln EDU			-0.10 (-2.09) ***	0.28 (1.66)*	
Ln AGR VA			-0.63 (-1.27)	-0.31 (-1.63)	-0.10 (-1.93)***
Ln SERVICES VA			0.25 (2.15)**	-0.09 (-0.21)	0.22 (1.87)***
Ln TRADE GDP ratio			-0.15 (-3.48)***	- 0.29 (-2.53)***	-0.15 (-3.49)***
Ln LIFE EXPECT				-3.42 (-1.47)	
Ln MOBILE per capita				0.04 (0.84)	
Ln LITERACY				0.04 (0.28)	
Ln SCHOOL ENROLMENT				0.08 (0.31)	
INTERACT_UNPAID WORK					-0.11 (-2.40)***
Time dummies	-0.00 (-6.15)***	-0.00 (-0.97)	0.00 0.17	-0.07 (-2.46)***	0.01 (1.98)***
Constant	3.75	5.74	7.17	8.61	8.64

Results

- Digitalization proves to be significant and positive in explaining LFPR in various equations but becomes negative and insignificant when included with mobile penetration.
- Mobile penetration is positive and significant but loses significance when included with other variables.
- Contrary to expectations, expenditure on primary education negatively affects LFPR. However, it is positive and significant when included along with mobile penetration.
- GDP per capita has a negative, significant correlation with LFPR but is positive and significant when included with mobile penetration.
- Unpaid domestic work significantly and negatively affects LFPR.
- Agriculture's share in value-added shows a negative significance in some cases.
- The services sector positively impacts LFPR, while the trade GDP ratio, unexpectedly, has a negative effect.
- The fertility rate, indicated by births per woman, shows a negative but insignificant impact on LFPR.

Recommendations

1. There is limited data on the time women spend using digital devices, underscoring the need for improved time-use surveys.

- Recommendation: Improve time-use data collection & incorporate them into policy making: Regularly collect and analyze time-use data to inform labor policies that recognize the value of unpaid care work. This data should be used to design gender-responsive labor policies.

2. While internet use alone has a mixed impact, when combined with broader economic development (as shown in regressions 3 and 4), digital infrastructure enhances FLFP. Therefore, ensuring that women have equal access to these services will help them leverage digital tools for economic empowerment.

- Recommendation: Expend digital access (digital infrastructure, mobile & internet access) while integrating digital literacy and skills programs targeted specifically at women, including STEM education.

Policy implications

- To increase the labour force participation of women, not only women friendly labour policies need to be incorporated, but in investment projects, gender design features need to be added (Begzsuren et al., 2022).

- Moreover, capacity and public awareness need to be increased on gender-related issues for better labour outcomes for women.

- In summary, addressing the digital gender gap requires a multifaceted approach, incorporating gender-sensitive statistics, implementing gender-responsive policies, and promoting digitalization and education.

- These steps are crucial for advancing gender equality and enabling women and girls to participate in and benefit from the digital economy fully.

Conclusion

- The persistence of digital gender gaps is a well-acknowledged issue that cannot be resolved merely through access to the internet and digital resources.
- Access alone does not ensure equitable digital skills, with gender biases even present in affluent households hindering the digital inclusion of women and girls (UNICEF, 2023).
- Empowering women and girls through information and communication technologies (ICTs) yields multifaceted benefits for society, enabling them to establish enterprises, expand market reach, secure higher-paying employment, pursue education, access essential health and financial services, engage in information exchange, and participate actively in public discourse.
- We also note the importance of understanding the time-use of women particularly, unpaid work and care work.

Thank you

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