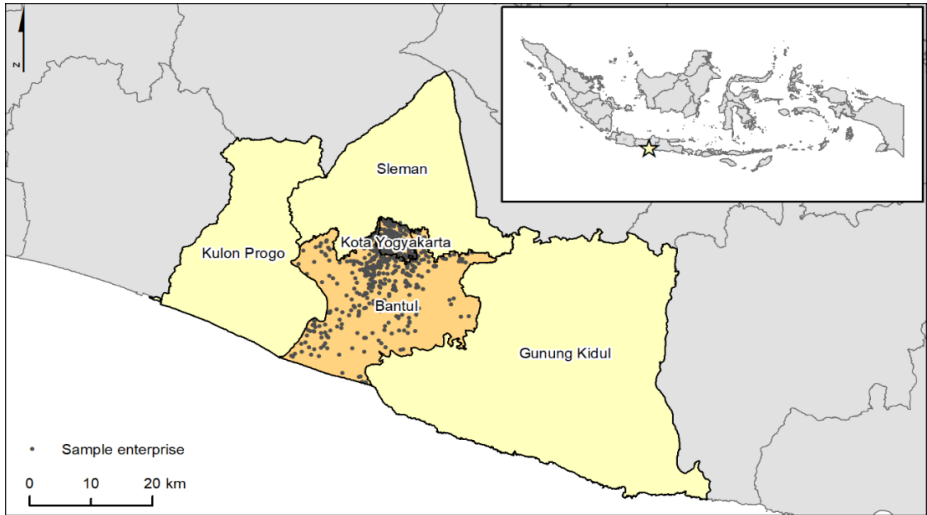


Digitalisation and the performance of micro and small enterprises in Yogyakarta, Indonesia

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Introduction

The world is going digital. Little is known about how this digitalisation affect the performance of micro and small enterprises (MSEs) — one of the major foundations of the economy in many developing countries but with relatively low productivity.



We examine the impact of internet utilisation — as part of digitalisation — on labour productivity and exports, and explore what platforms assist MSEs in gaining benefits from the digital economy.

Identification strategy

Relying on primary data collected from MSEs in Yogyakarta — the province with the densest MSE population in Indonesia — the identification is achieved through an instrumental variable strategy, instrumenting internet utilisation using cellular signal strength.

We exploit the fact that the differences in geographic topography produce conceivably exogenous variations in the strength of cellular signal that MSEs in various areas can receive to connect to the internet.

Once geographical proximity factors had been controlled for, the difference in cellular signal strength should be due to geographical happenstance (Olken (2009), Yanagizawa-drott (2014)).

Results

We found that internet utilisation has helped MSEs to engage in the digital economy and improved their performance. The internet uptake increased labour productivity and exports.

The findings are robust even after excluding some of the context variables, i.e., elevation and the number of base transceiver towers in villages, replacing cellular signal strength with cellular data type (e.g. 2G, 3G), and taking into account spatial spillovers from adjacent villages.

Among different types of digital related activities, we found that **email** and **social media** are the platforms that significantly help enterprises to engage in the digital economy and gain benefits.

Variables	Labour productivity				(%) Proportion of	
	(IDR million per month)				exports	
	Revenue per worker		Profit per worker			
	(1)	(2)	(3)	(4)	(5)	(6)
Internet utilisation	16.15*** (3.887)	10.23*** (3.719)	7.957*** (2.119)	5.459* (2.832)	1.972*** (0.350)	1.729*** (0.581)
Coefficient on instrument:						
Cellular signal strength	0.095*** (0.008)	0.165*** (0.021)	0.095*** (0.008)	0.170*** (0.023)	0.095*** (0.008)	0.165*** (0.021)
Excluded F statistic	147.230	61.853	134.499	55.179	149.273	65.286
Controls & FE	N	Y	N	Y	N	Y
Observations	567	567	564	564	575	575
R squared	0.038	0.264	0.018	0.197	0.040	0.058

Clustered standard errors by subdistricts in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Districts: Bantul and Yogyakarta; Sectors: mining, manufacturing, and services; Entrepreneur controls: gender, education, age, experience, Firm controls: home based, export status (for labour productivity only), association membership, cooperative membership, license, scale, firm age, road width, elevation; number of BTSs in village. Fixed effects include district FE, and sector FE. Weighted using sampling weight.

Using the OLS estimation results (not shown), we calculated the monetary benefit MSEs obtain from internet utilisation associated with stronger cellular signal strength.

Internet uptake increases the revenue per worker by IDR4.466 million per month (or approximately 58% of average revenue per worker) and increases profit per worker by IDR1.141 million per month (or approximately 34% of average profit per worker).

With the minimum wage of IDR1.454 million per month, the associated monetary benefit due to internet utilisation, hence, is substantial for local people.

Conclusions

This paper has been able to provide evidence that the digital economy, represented by access to and use of the internet, has a significant potential to contribute to development and inclusiveness by increasing productivity and expanding trade opportunities.

The results are also encouraging since email and social media are relatively easy to access using smartphones — the most used digital technology by MSEs — and require less technological savviness. Hence, the barriers to participating in the digital economy are relatively low.

The evidence provides stronger justification for developing public policies aimed at boosting good quality internet availability as well as fostering firms’ use of the internet in developing countries. With a much higher penetration of decent quality internet, developing countries can expect that the productivity of their MSEs will be significantly improved.

Literature cited

Olken, B. A. (2009). Do Television and Radio Destroy Social Capital ? Evidence from Indonesian Villages. *American Economic Journal: Applied Economics*, 1(4), 1–33. Retrieved from <http://www.jstor.org/stable/25760180>

Yanagizawa-drott, D. (2014). Propaganda and Conflict: Evidence from the Rwandan Genocide. *The Quarterly Journal of Economics*, 129(4), 1947–1994. <https://doi.org/https://doi.org/10.1093/qje/qju020>

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Further information

Please see <https://acde.crawford.anu.edu.au/publication/working-papers-trade-and-development/14343/digitalization-and-performance-micro-and> I’m at anna.falentina@gmail.com if you have a question or comment.