WIDER Working Paper 2021/49

Heterogeneous impact of internet availability on female labour market outcomes in an emerging economy

Evidence from Indonesia

Niken Kusumawardhani, Rezanti Pramana, Nurmala Saputri, and Daniel Suryadarma*

March 2021

United Nations University World Institute for Development Economics Research

wider.unu.edu

Abstract: Greater female labour market participation has important positive implications not only for women's empowerment and the well-being of their families but also for the economy they live in. In this paper, we examine the various effects of internet availability on women's labour market outcomes in Indonesia. As each worker subgroup tends to respond differently to changes in technology, examining the heterogeneity in the impact of internet availability on female labour market outcomes is central to our research. By constructing a district-level longitudinal dataset covering the period 2007–18, we find that internet availability has only a small significant effect on the female labour force participation rate and no statistically significant effect on the employment rate. However, internet availability increases the probability of women having a full-time job, especially for women aged 15–45 and those with a low level of education. Our study shows that internet availability does not always bring favourable labour market outcomes for women. We find that internet availability lowers the probability of women with a low level of education working in a high-skilled job and in the formal sector. Our results are robust to several robustness checks. Analysis of our qualitative interviews with a subsample of recent mothers supports the conclusion that the ability to be prepared for and attain flexible working conditions are two important values provided by the internet. We argue that a women-friendly working environment and adequate IT infrastructure are crucial elements in maximizing the role of the internet in helping women to achieve more favourable labour market outcomes.

Key words: internet, labour market, Indonesia, female labour force participation

JEL classification: J16, O12, O33

1   Introduction

A consensus exists that the internet could promote economic growth through inclusion, efficiency, and innovation (World Bank 2016). Internet availability accelerates the diffusion of ideas and information. It fosters competition that could lead to improvement in the overall innovative capacity of an economy. By lowering search and information costs, the internet opens new markets, boosts the productivity of factors of production, and promotes inclusion in social interaction and in government service delivery systems.

The literature suggests that most of positive evidence on the impact of the internet on economic growth comes from developed countries (Czernich et al. 2011; Kolko 2012; Kretschmer 2012; Stanley et al. 2018). Developing and less-developed countries suffer a lack of resources such as skilled labour, solid economic infrastructure, and business environment that are required for potential returns from information and communication technology (ICT) to be fully realized (Kenny 2003; Stanley et al. 2018) and reflected in growth indicators.

For workers, Krueger (2000) argues that the internet has shifted job search and recruitment to the web such that, theoretically, job-seekers have improved access to information about job openings and firms can benefit more from a more efficient recruitment process. Past studies show that the positive labour market effect of the internet is more likely to be experienced by high-skilled workers. Market expansion of internet-based business models is made possible through increasing internet availability (Falck et al. 2015), and the accumulation of ICT skills is highly rewarded in the labour market (Falck et al. 2016; Vidgor et al. 2014). Meanwhile, negative employment effects for low-skilled workers are also likely as the internet replaces the performance of routine tasks through automation.

Studies find that internet availability may have a distinctly positive effect on female labour force participation (FLFP) and employment. It increases work flexibility, allowing mothers who wish to spend time at home raising their children to still work, at least part-time (Billari et al. 2019). Findings from high-income countries show that broadband internet has benefited mainly highly educated women, with little benefit for women with a low level of education. Dettling (2016) finds that high-speed internet increases the labour force participation of high-educated women with school-age children in the United States by 17 percentage points. Viollaz and Winkler (2020) conclude that better internet access in Jordan boosts women's labour force participation and employment, especially for skilled and older women, explained partly by an increase in online job search.

The conditions, however, could be different in low- and middle-income countries. The availability of internet may open new job opportunities even for women with a low level of education. In Indonesia, internet-based mobile phone applications allow women with a low level of education to offer cleaning or taxi services (Suseno 2018). Web-based marketplaces lower barriers to entry. Even more women, including those with a low level of education, begin selling products. Das et al. (2017) find that the share of revenue generated by women in online commerce in Indonesia is twice that in offline retail, suggesting that online commerce facilitates women's participation in the economy. Additionally, if the internet increases the employment of highly educated women, they may in turn need women with lower levels of education to perform household chores and childcare. This is especially true in urban areas. As the labour market effect of the internet tends to differ across worker subgroups, examining the heterogeneity in the impact of internet availability on female labour market outcomes is central to our research.

In this paper, we examine the impact of internet availability on female labour market outcomes in Indonesia, a country where gender gaps in the labour market are pronounced and evidence to date is scarce. The FLFP rate in Indonesia has remained unchanged at around 51 per cent over the last two decades despite rapid economic growth, fertility decline, and increased female educational attainment. Cepeda (2013) finds that the FLFP drops enormously for married women compared with that of single women in a similar age range, indicating that female employment in Indonesia often terminates after marriage or giving birth. Priebe (2010) confirms that decline in fertility rate has opposing effects on FLFP, as a considerable share of women in Indonesia work to finance expenditure on children. Halim et al. (2019) find that an additional increase in public preschool in Indonesia could boost the labour participation of mothers with preschool-age children by 7.1 percentage points. Policies focusing on childcare services, flexible working conditions, and part-time work schemes might encourage more women to remain in the labour force after they marry or start a family (Cameron et al. 2018).

We construct a pseudo-panel dataset from four rounds of nationally representative labour force and socioeconomic surveys covering 2007–18. We then combine the resulting dataset with four rounds of village census around the same period, which record the availability of internet infrastructure in every village in Indonesia. Additionally, we explore the working mechanisms through which internet availability influences women in terms of their labour market outcomes based on interviews with a dozen young mothers who had recently given birth to their first child.

We find that a higher level of internet availability has only a small significant effect on the FLFP rate and no statistically significant effect on the employment rate. Once women are employed, however, the impact of internet availability on the likelihood of having a full-time job is more evident. Heterogeneity analysis reveals that internet availability benefits women in the 15–45 age group in terms of working full-time. Across different education levels, we find that internet availability matters for women with a low level of education but not for those who are highly educated. An increase of one standard deviation in internet availability improves the probability of women with a low level of education working in a full-time job by 7.8 per cent proportionally. Interestingly, our study finds that internet availability may at the same time cause women with a low level of education to be more likely to settle in low-skilled or informal jobs than would have been the case in districts with lower internet availability. An increase of one standard deviation of internet availability lowers the probability of women with a low level of education working in skilled jobs and the formal sector by 27 per cent and 20 per cent, respectively.

Analysis of our qualitative interviews with young and highly educated mothers supports our quantitative findings in the conclusion that the role of the internet is minimal in deciding women's labour force participation or employment status. Decisions on the employment status of recent mothers are mainly crafted based on personal values and family conditions, well established before their pregnancy or marriage. The ability to be prepared and attain flexible working conditions are two important values provided by the internet. A women-friendly working environment and adequate IT infrastructure are crucial elements in maximizing the role of the internet in helping women to achieve more favourable labour market outcomes.

We organize the rest of this paper as follows. The next section discusses the empirical strategy. Section 3 presents the data and sample construction. Section 4 discusses the correlates of internet availability, and Section 5 provides the results and discussion. Section 6 presents robustness checks and Section 7 concludes.

2 Empirical strategy

Our baseline specification is shown in Equation 1. Y_{ijt} is the labour market outcome of woman i living in district j at time t. We will use the following labour market outcomes: (i) labour force participation; (ii) employed or not; (iii) whether the employment is full-time; (iv) whether the job status is formal; and (v) whether the job type is skilled. The second labour market outcome is conditional on being in the labour force. The last three labour market outcomes are conditional on being employed. Section 3 provides the formal definitions of these dependent variables.

$$Y_{ijt} = \beta_0 + \beta_I I_{jt} + \beta_X X_{ijt} + \delta_{pt} + \varepsilon_{ijt} \qquad (1)$$

The main independent variable of interest is I_{jt}, defined as the proportion of villages in district j with internet availability at time t. Confidentiality constraints set by Statistics Indonesia preclude us from observing the village of residence of specific women. Therefore, we use a different data source, the village census, to construct our main variable of interest. We purposely choose internet availability in a district as opposed to, for example, individual or household internet subscription for two main reasons. First, establishing causality is more straightforward because we do not have to consider household- or individual-level decisions to subscribe to internet services. This is a major source of endogeneity. Second, district-level internet availability is a more policy-relevant indicator. Our main proxy for internet availability is the availability of internet kiosks in the village. In Section 6, we conduct several robustness checks.

X_{ijt} is a vector of individual- and district-level control variables. Finally, we include district fixed effects and province-specific time fixed effects to control for secular district- and province-specific trends in female labour market outcomes. To estimate impact heterogeneity, we will estimate Equation 1 on the following subsamples: women with a low level of education, women with a high level of education, young women, and old women.

In addition to analysing secondary data, we also collected qualitative information through in-depth interviews. The qualitative component aims to complement th quantitative study by providing an explanation for the findings. In particular, it attempts to assess the quantitative findings against a specific subsample of women who were identified to be the most vulnerable to leaving the labour force, namely working women who had recently given birth to their first child (Cameron and Contreras Suarez 2018; Lu et al. 2017). Such findings would particularly be relevant in crafting policies which enforce stability in women's participation in the labour force regardless of their life pha ses.

To investigate the role of the internet in mothers' employment, the study adopted the capability approach—hence allowing the identification of the whole process, from utilizing the internet as a resource in their employment up to the perceived importance of women's participation in the labour force. The capability approach has garnered attention due to its unique focus on describing the conversion process of individuals' ability to achieve the intended valuable functioning (Mitchell et al. 2017). In addition, the capability approach enables the qualitative study to capture information missing from the quantitative study, namely the individual and social arrangements in the utilization of the internet as a resource in achieving employment (Alampay 2003). Data gathered from respondents aims to illustrate the working mechanism of the internet, including the decision-making process, factors influencing the decision, the role of family and work culture, and the internet's utility throughout and after the implementation of the decision.

Analysis of qualitative data begins with immersion in field notes and interview recordings. Familiarity with the data is achieved through the identification of units of information throughout the interview. Initial information units are designed based on previous literature and then continuously adjusted throughout the data collection process. Afterwards, recurring themes were categorized based on aspects of the capability approach, as follows: (1) resources—availability of internet; (2) conversion—factors inhibiting the use of the resources in optimizing functioning; (3) capability—opportunities achieved through utilizing the resources; and (4) functioning—achieving employment.

3   Data

The quantitative analysis uses two main datasets collected by Statistics Indonesia.[1] The first is the National Labor Force Survey (Sakernas), which is specifically designed for labour data collection. We use the 2007, 2011, 2014, and 2018 Sakernas.

The second dataset used in this study is the Village Potential Survey (Podes), which has extensive information on village-level characteristics. Podes is a village census conducted three times in every decade, covering more than 70,000 villages in Indonesia. It collects detailed information on village-level characteristics such as size, population, infrastructure, geographic location, and crime statistics. Most of this information is collected from official village documents and interviews with relevant village officials. Starting in 2003, Podes collected information on internet availability. We aggregate Podes into district-level information for the main independent variable and district-level control variables. We match Sakernas with Podes years—2008, 2011, 2014, and 2018—in order to have a district-level longitudinal dataset covering the years just before and during the internet boom period.

For descriptive information and robustness check analysis, we use the National Socioeconomic Survey (Susenas), which collects data on many aspects of social and economic characteristics, such as consumption, education, migration, labour, health, and household variables. Susenas allows us to observe internet use at the household level, including the main purpose of internet use. We do not use Susenas as our main dataset because of its limited labour market variables. For example, it has no information on whether jobs are skilled or unskilled. Additionally, the information on working hours has been collected in Susenas only since 2011. We use Susenas for robustness checks, to analyse the impact of internet availability at the district level on domestic migration. This analysis aims to explain whether those who stay in the labour force are concentrated in better-connected districts.

3.1   Definition of labour market outcomes

There are five dependent variables that we analyse separately to study the impact of district-level internet availability on female labour market outcomes. The formal definition of each of the dependent variables listed in Section 2 is presented below. We follow standard definitions developed by Statistics Indonesia to define each of these dependent variables.

According to Statistics Indonesia, the labour force includes individuals aged 15 or above who are economically active, including employed and unemployed individuals. Thus, FLFP is a binary

---

[1] Access to Sakernas, and the Susenas dataset described below, was obtained by arrangement with Statistics Indonesia.

indicator equal to 1 for women aged 15 or above who are currently working, temporarily unemployed, or unemployed. The following are considered to be part of the labour force according to the Statistics Indonesia definition: members of the workforce who are preparing to start a business, who have a job but have not yet started work, and who are not seeking work because they feel hopeless about the prospects of getting a job. Work is defined as economic activities carried out by someone with the intention of obtaining or helping to generate income or profits for at least one hour in the past week. Individuals aged 15 or above whose main roles are as a student or housewife, or who are engaged in other personal activities which are not aimed at obtaining any income or profits, are excluded from the definition of the labour force.

The second dependent variable is employment status, also a binary indicator defined as 1 if a woman is employed and 0 if she is unemployed. Those who are temporarily unemployed due to sickness, leave, or waiting for harvest or a work order are categorized as employed. Meanwhile, the unemployed consists of women who have no job and are looking for one, those who are preparing a business, those who have not been able to find any job, and thoe who have not started working.

Women's employment in this study is further analysed by looking at working hours, formality of work sectors, and type of skills used in the employment. Sakernas records information on working days and working hours for each day and for all work in the past week. Full-time work is defined as total working hours from all work equal to 35 hours or more. Part-time work is defined as total working hours of less than 35. Formality of work sector is defined based on work status. Formal sectors include (1) those who work as self-employed workers assisted by paid workers; and (2) those who work as employees or labour.

Information related to type of skills used in the job is obtained exclusively from Sakernas. We follow the definition of the Indonesian Occupation Classification Standard (KBJI) to define level of skills required to conduct a job. The classification of occupations in Sakernas evolves over time: KBJI 2002 is applied for Sakernas 2007 and 2011, and KBJI 2014 is applied for Sakernas 2014 and 2018. Officers, managers, professionals, professional assistants, administrative staff, and police are categorized as high-skilled, while low-skilled jobs include business sales and services personnel, agriculture and animal husbandry, processing and craft workers, machine operators and assemblers, cleaning staff, and blue-collar workers.

3.2 Internet availability

Podes contains two questions that can measure the availability of internet in a village: the availability of internet kiosks and BTS (base transceiver stations) in the village. However, the question on availability of BTS has appeared only since Podes 2011. Consequently, we use availability of internet kiosks as our main proxy to determine internet availability in a village. Information on availability of internet kiosks is obtained from yes/no questions answered by the village head. An alternative measure of internet availability is the proportion of the population for whom internet is available. However, we could not construct this variable because Podes 2014 and 2018 do not report village population.

3.3 Sample construction and control variables

Our main dataset is constructed by merging Sakernas with Podes using a district identifier. Table 1 presents detailed information on sample sizes fors women aged 15–64 in each of our study periods. To ensure a balanced panel, we use the district definition in 2007 and merge subsequent new

districts back to their 2007 designation. Therefore, our district panel dataset consists of 435 districts over four periods.

Table 1: Sample size of women aged 15–64

Year	Sample size	Number of districts
2007	368,185	435
2011	242,511	435
2014	226,459	435
2018	234,116	435
Total	1,071,271	435

Source: authors' construction based on Sakernas (2007, 2011, 2014, 2018) and Podes (2008, 2011, 2014, 2018).

To estimate Equation 1, we use the following set of control variables: urban/rural status, educational background, and marital status. We also include district-level variables constructed from Podes that capture relevant economic infrastructure and activities, educational facilities, topography, and availability of health facilities that may affect female labour market outcomes. Summary statistics for the variables used in the estimation are available in Appendix Table A1.

3.4 Qualitative data collection and sample

Qualitative data were obtained through in-depth phone interviews[2] with recent mothers who live in the Greater Jakarta area. We purposively chose Greater Jakarta as our study site given that the focus is internet availability, and internet penetration in Greater Jakarta area is well above the national average (Bachtiar et al. 2020). In-depth phone interviews were conducted with 22 mothers with the following characteristics: (1) gave birth to first child in the last two years; (2) aged 35 or younger; (3) married and living with her spouse; (4) worked full-time before giving birth; and (5) finished high school or college degree. Respondents' characteristics varied in terms of educational background, age group, and type of employment. Based on their current employment status, our respondents consisted of 15 recent mothers who were full-time workers, six part-time workers, and ten who were unemployed.

4 Internet availability and usage in Indonesia

Internet availability in Indonesia has significantly improved over the years. Between 2008 and 2011, access to fixed broadband internet in villages jumped from 13 per cent to 32 per cent, with a higher increase in rural areas than in urban areas (Figure 1). While fixed broadband availability appears to have stagnated in urban areas from 2011 to 2018, wireless broadband internet became increasingly available. Between 2011 and 2018, the proportion of villages with BTS towers that facilitate wireless broadband internet services increased from 36 per cent to 48 per cent (Figure 2). As a result of the improved internet infrastructure and the widespread availability of inexpensive phones, internet access in Indonesia has also increased significantly for all levels of welfare, although it is still urban-biased. Additionally, data from Susenas show that between 2010 and 2018, access to internet in urban areas increased from 33 per cent to 72 per cent for high-income individuals, and from 5 per cent to 31 per cent for low-income individuals. In rural areas, the

---

[2] Due to the Covid-19 situation in Jakarta, the primary data collection method for the qualitative study was shifted from face-to-face interview to phone interview.

increase is more rapid: from 13 per cent to 48 per cent for high-income individuals, and from 2 per cent to 18 per cent for low-income individuals.

Figure 1: Internet availability in Indonesia—fixed broadband, 2008–18
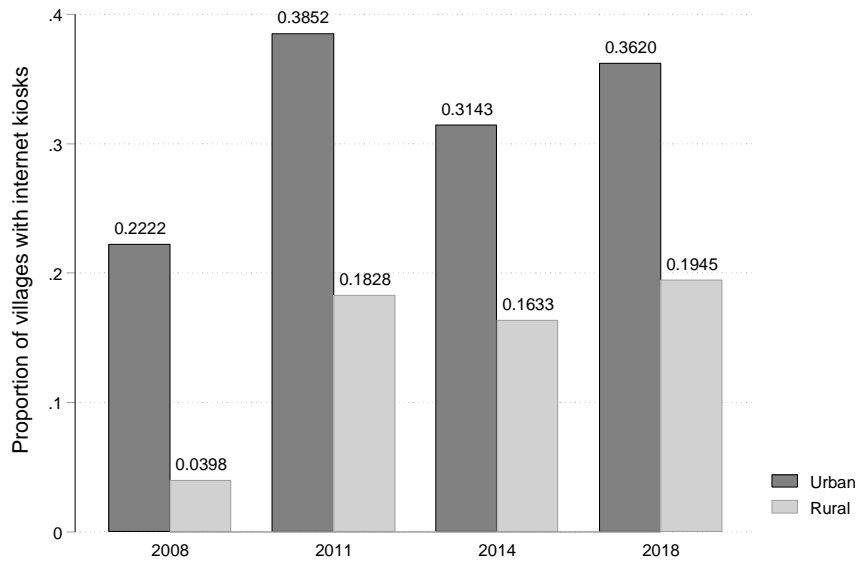
Source: authors' illustration based on Podes (2008, 2011, 2014, 2018).

Figure 2: Internet availability in Indonesia—wireless broadband, 2011–18
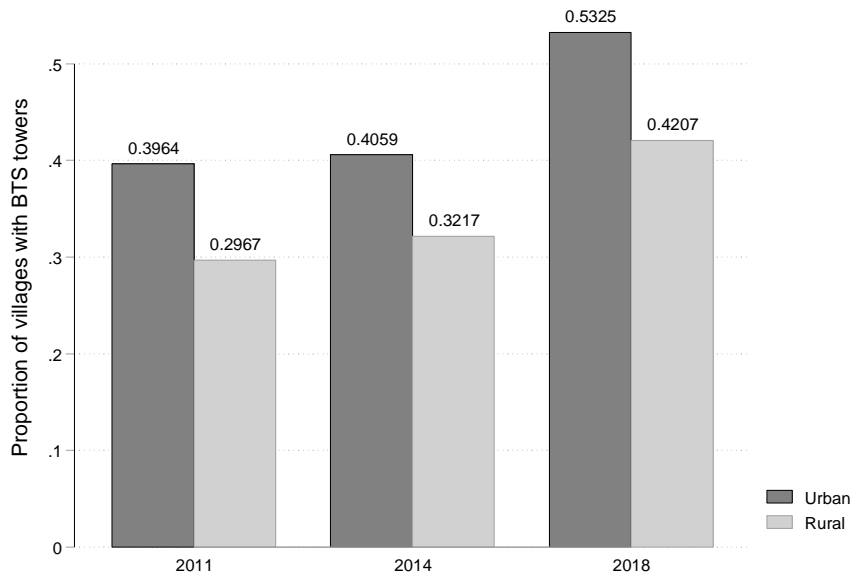
Source: authors' illustration based on Podes (2008, 2011, 2014, 2018).

In Table 2, we estimate correlates of growth of internet availability during 2008–18 using district-level variables constructed from Podes and Susenas. We predict the effect of growth of internet availability during the period, measured by the proportion of villages in a district with internet kiosks, on a set of variables related to population size, terrain, economic activities, infrastructure, and financial institutions in 2008. The main purpose of this analysis is to check if there are any initial conditions that could predict the growth in number of connected villages in a district that is essential for our identification purposes. If growth in internet availability could be estimated, this would imply that the variation in internet connectivity between districts is not random and could be somewhat related to our main outcome variables of interest, namely female labour market outcomes.

Our estimation shows that, in general, the growth of internet availability during 2008–18 could not be predicted using a set of district-level variables in 2008. The only district-level variable in 2008 that could strongly predict the growth of internet availability during 2008–18 is access to electricity. A few variables display weakly significant correlations, e.g. the proportion of urban areas in a district, proportion of villages with a permanent market, and proportion of villages with strong cellular signal. Other variables do not seem to predict the growth of internet availability at the district level.

Figure 3 shows the increase in women's access to internet by age and education level, measured using Susenas. Access to internet for young women and highly educated women increases at a faster rate than for older women and women with low levels of education. A summary of internet usage using the most recent data from Susenas (2017) is provided in Table 3. Across different demographic groups, the majority of internet users in Indonesia enjoy using the internet to access social media and to read news. Indonesia is indeed one of the largest social media markets: the numbers of WhatsApp and Facebook users in the country are among the largest in the world. One possible explanation is that congestion in large cities and the associated waiting times have led Indonesians to enjoy social media and reading online news more often. Additionally, the fact that YouTube enjoys a high penetration rate in Indonesia contributes to the country's considerable share of users using internet for entertainment purposes. The internet is also used especially by younger and less-educated groups to obtain resources needed to complete schoolwork, while the share of older or more highly educated groups performing this activity on the internet is lower. While these data shed some light on activities performed by Indonesian users on the internet, information on activities related to internet-based job search—e.g. contacting potential employers, answering job ads, sending out job applications—is not available.

Table 2: Correlates of growth in internet availability, 2008–18

Independent variables	Estimates
Log population at district level	−50.783
	(57.683)
Proportion of urban areas in a district	551.593*
	(328.672)
Log of mean household expenditure per capita at district level	5.797
	(80.193)
Proportion of villages in coastal areas	100.912
	(80.866)
Proportion of villages located in a valley	−10.987
	(88.968)
Proportion of villages in the district that have passable inter-village roads	−69.335
	(136.697)
Proportion of villages in the district whose main source of livelihood is agriculture	−2.115
	(580.831)
Proportion of villages in the district whose main source of livelihood is industry	−590.711
	(546.456)
Proportion of villages in the district whose main source of livelihood is trade	−550.981
	(575.567)
Proportion of villages in the district whose main source of livelihood is service	−580.946
	(592.985)
Proportion of villages with access to electricity	464.137***
	(118.537)
Proportion of villages with senior secondary school (SMA)	−82.857
	(140.828)
Proportion of villages with vocational school (SMK)	133.168
	(207.807)
Proportion of villages with college	35.790
	(210.995)
Proportion of villages with permanent market	−128.724*
	(71.311)
Proportion of villages with co-operatives	−71.933
	(81.847)
Proportion of villages with small business credit (KUK)	−130.877
	(82.525)
Proportion of villages with access to international TV channels	136.806
	(283.156)
Proportion of villages with strong cellular signal	−181.457*
	(103.646)
District fixed effects	Yes
Province-specific year fixed effects	Yes
Sample size	435
R squared	0.109

Note: *** 1% significance, ** 5% significance, * 10% significance; robust standard errors clustered at district level in parentheses; dependent variable is growth of proportion of villages with internet kiosks at district level during 2008–18; all independent variables are as of 2008.

Source: authors' construction based on Podes (2008, 2011, 2014, 2018) and Susenas (2007, 2011, 2014, 2018).

Figure 3: Women's access to internet by age and education level, 2011–18
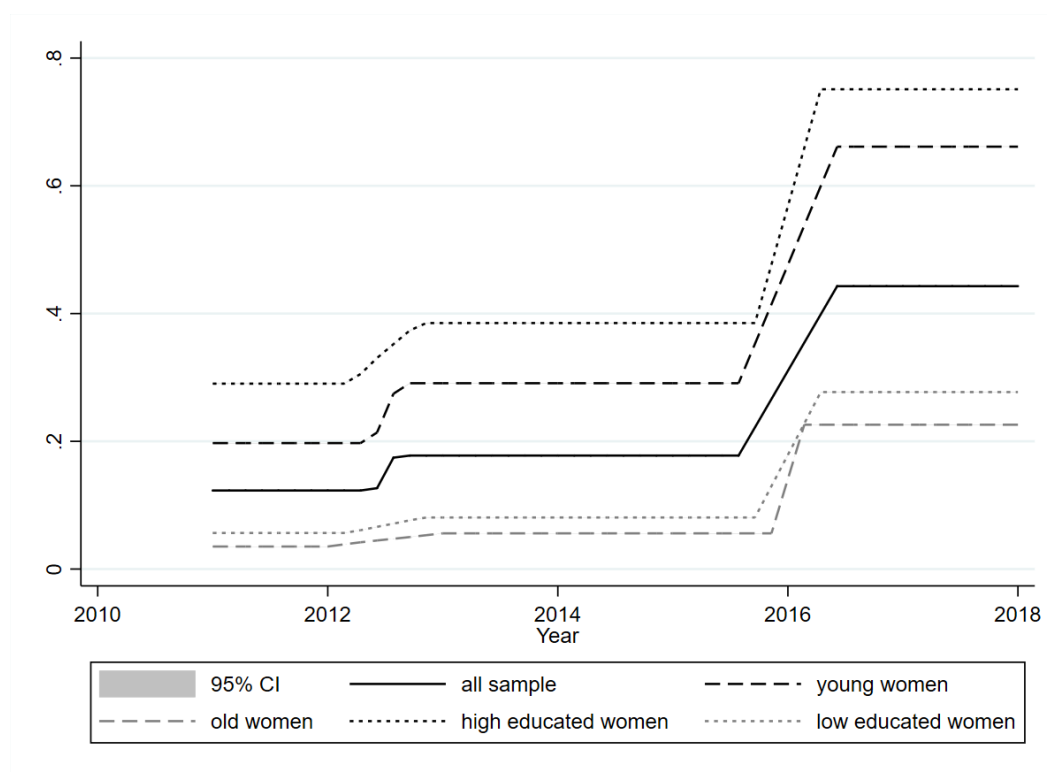
Note: lines are polynomial fit; the differences between all groups are statistically significant at 95% (CI = confidence interval).

Source: authors' illustration based on Susenas (2011, 2014, 2018).

Table 3: Internet usage by different demographic groups

Activity	Younger (15–35 years old)	Older (36–64 years old)	Less-educated (0–9 years of schooling)	Highly educated (10+ years of schooling)
Social media	81.8%	80.2%	78.9%	82.9%
To obtain information or to read news	65.6%	75.7%	55.3%	75.3%
Entertainment purposes	43.5%	29.5%	39.7%	40.6%
To obtain resources for schoolwork	31.6%	5.6%	44.3%	14.7%
To send or receive emails	20.8%	24.4%	14.1%	26.1%
To buy or sell goods or services	13.3%	15.3%	7.5%	17.4%
Other activities	12.1%	15.0%	7.3%	16.0%
E-banking	3.5%	8.6%	1.4%	6.5%

Source: authors' construction based on Susenas (2017).

5 The impact of internet availability on female labour market outcomes

5.1 Full sample results

We first estimate the model for the whole sample. Table 4 shows that internet availability has a positive and statistically significant effect on FLFP. We find no evidence that conditional on being in the labour force, the female employment rate is different in districts with more internet availability. Conditional on employment, however, we find evidence that increasing the proportion of villages in the district with access to internet kiosks also improves the probability of women being employed in a full-time job.

An increase in the proportion of villages in the district with access to internet kiosks—our proxy for internet availability—of one standard deviation, from 25.0 per cent to 52.6 per cent, leads to an increase in the probability of women joining the labour force of 0.84 percentage points, equivalent to 1.54 per cent proportionally. Our estimates rule out a large positive effect of internet availability on labour force participation. This small impact on labour force participation corroborates the body of research on Indonesia that we mention in the introduction.

On the other hand, conditional on employment, an increase in internet availability of one standard deviation improves the probability of women being employed in a full-time job by three percentage points, or 5.6 per cent proportionally. Since on average 53.2 per cent of working women are already working in a full-time job, this increase is relatively small. In addition, once women are employed, we find that internet availability does not play any role in improving women's chance of being in a skilled job or in the formal sector.

Table 4: Impact of internet availability on female labour market outcomes

	LFP (yes = 1)	Employed (yes = 1)	Full-time (yes = 1)	Skilled job (yes = 1)	Formal job (yes = 1)
	(1)	(2)	(3)	(4)	(5)
Proportion of villages in the district with an internet kiosk	0.030**	−0.048	0.107***	−0.051	−0.055
	(0.015)	(0.048)	(0.026)	(0.042)	(0.042)
Sample mean of the dependent variable	0.543	0.927	0.532	0.280	0.298
Individual-level control variables					Yes
Household-level control variables					Yes
District-level control variables					Yes
District fixed effects					Yes
Province-specific year fixed effects					Yes
Sample size	1,071,271	581,898	539,229	539,229	539,229
R squared	0.1167	0.2172	0.0892	0.2652	0.3508

Note: *** 1% significance, ** 5% significance, * 10% significance; estimates are from ordinary least squares (OLS) regressions, with constant; robust standard errors clustered at the district level in parentheses; sample in Column 2 is conditional on labour force participation; sample in Columns 3–5 is conditional on employment; full regression results are available in the Appendix.

Source: authors' construction based on Podes (2008, 2011, 2014, 2018) and Sakernas (2007, 2011, 2014, 2018).

5.2 Impact by subsamples: young vs old; low vs high level of education

We now examine the heterogeneity in the impact of internet availability on female labour market outcomes. The first aspect we consider is age. We divide the sample into women between 15 and 35 years old (younger age group) and between 36 and 64 years old (older age group). Table 5a shows the estimates separately for each group.

For the younger age group, we find evidence that internet availability affects labour force participation and, conditional on employment, the probability of young women working in a full-time job. The point estimates are positive and statistically significant, but they are small. An increase in internet availability of one standard deviation leads to a 1.8-percentage-points higher probability of women joining labour force. Proportionally, the effect size is equivalent to 3.8 per cent. Similarly, an increase in internet availability of one standard deviation leads to a proportionally 7.3 per cent higher probability of women working in a full-time job. Additionally, we find statistically significant but less strong evidence that an increase in internet availability of one standard deviation negatively affects the probability of young women working in a skilled job by 8 per cent proportionally.

For women in the older age group, our estimates show that an increase in internet availability of one standard deviation matters only for the probability of women having a full-time job, once they are employed. We find a positive effect in the form of a 6 per cent increase in the probability of older women working in a full-time job following an increase in internet availability of one standard increase.

To check if there is heterogeneity within the older age group, we further break down the group into smaller groups, namely 36–45, 46–55, and 56–64 (Table 5b). We predict that the oldest group of women will not enjoy the positive impact of internet availability as much as the relatively younger groups, considering the fact that access to internet for young women increases at a faster rate than for older women, as depicted in Figure 3. The positive impact of internet availability appears to be strongly driven by the 36–45 subsample and not by the older groups. An increase in internet availability of one standard deviation positively affects the probability of women in the 36–45 age group working in a full-time job by 9.6 per cent proportionally. Meanwhile, internet availability does not appear to have any impact on the labour market outcomes of women in the 46–64 age group.

Comparing the estimated effects of internet availability on the labour market outcomes of women from different age groups, we find that conditional on employment, internet availability benefits women aged 15–35 and 36–45 in terms of working full-time. The estimated size of the benefit, shown in Tables 5a and 5b, is similar across age groups with statistically insignificant differences. Additionally, internet availability positively affects the labour force participation of women aged 15–35, although only by a small magnitude.

Table 5a: Heterogeneous impact of internet availability on female labour market outcomes, by age

	15–35 age group					36–64 age group				
	LFP (yes = 1)	Employed (yes = 1)	Full-time (yes = 1)	Skilled job (yes = 1)	Formal job (yes = 1)	LFP (yes = 1)	Employed (yes = 1)	Full-time (yes = 1)	Skilled job (yes = 1)	Formal job (yes = 1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Proportion of villages in the district with an internet kiosk	0.065**	0.020	0.146***	−0.085*	−0.093	0.015	−0.109	0.110***	−0.057	−0.020
	(0.027)	(0.060)	(0.055)	(0.051)	(0.062)	(0.023)	(0.103)	(0.036)	(0.048)	(0.057)
Sample mean of the dependent variable	0.474	0.863	0.559	0.293	0.389	0.615	0.977	0.512	0.270	0.233
Individual-level control variables					Yes					Yes
Household-level control variables					Yes					Yes
District-level control variables					Yes					Yes
District fixed effects					Yes					Yes
Province-specific year fixed effects					Yes					Yes
Sample size	545,976	259,091	223,695	223,695	223,695	525,295	322,661	315,534	315,534	315,534
R squared	0.1359	0.1553	0.1157	0.2590	0.3571	0.0949	0.1150	0.0739	0.2814	0.3270

Note: *** 1% significance, ** 5% significance, * 10% significance; estimates are from OLS regressions, with constant; robust standard errors clustered at the district level in parentheses; sample in Columns 2 and 7 is conditional on labour force participation; sample in Columns 3–5 and 8–10 is conditional on employment; full regression results are available in the Appendix.

Source: authors' construction based on Podes (2008, 2011, 2014, 2018) and Sakernas (2007, 2011, 2014, 2018).

Table 5b: Heterogeneous impact of internet availability on female labour market outcomes, older age group

	36–45 age group					46–55 age group					56–64 age group				
	LFP (yes = 1)	Employed (yes = 1)	Full-time (yes = 1)	Skilled job (yes = 1)	Formal job (yes = 1)	LFP (yes = 1)	Employed (yes = 1)	Full-time (yes = 1)	Skilled job (yes = 1)	Formal job (yes = 1)	LFP (yes = 1)	Employed (yes = 1)	Full-time (yes = 1)	Skilled job (yes = 1)	Formal job (yes = 1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Proportion of villages in the district with an internet kiosk	−0.043	−0.100	0.186***	−0.089	0.004	0.039	−0.235	−0.035	−0.062	−0.010	0.086	−0.193	0.210*	0.021	−0.117
	(0.039)	(0.127)	(0.054)	(0.062)	(0.070)	(0.050)	(0.194)	(0.063)	(0.080)	(0.089)	(0.072)	(0.317)	(0.116)	(0.145)	(0.145)
Sample mean of the dependent variable	0.632	0.970	0.540	0.283	0.272	0.640	0.984	0.511	0.271	0.227	0.524	0.986	0.428	0.234	0.127
Individual-level control variables					Yes					Yes					Yes
Household-level control variables					Yes					Yes					Yes
District-level control variables					Yes					Yes					Yes
District fixed effects					Yes					Yes					Yes
Province-specific year fixed effects					Yes					Yes					Yes
Sample size	244,956	153,688	150,079	150,079	150,079	182,377	105,672	114,828	114,828	114,828	97,962	34,269	50,627	50,627	50,569
R squared	0.0987	0.1219	0.0756	0.2662	0.3095	0.0986	0.1064	0.0715	0.2863	0.3520	0.0924	0.1841	0.0709	0.3755	0.2917

Note: *** 1% significance, ** 5% significance, * 10% significance; estimates are from OLS regressions, with constant; robust standard errors clustered at the district level in parentheses; sample in Columns 2, 7, and 12 is conditional on labour force participation; sample in Columns 3–5, 8–10, and 13–15 is conditional on employment; full regression results are available in the Appendix.

Source: authors' construction based on Podes (2008, 2011, 2014, 2018) and Sakernas (2007, 2011, 2014, 2018).

Table 6: Heterogeneous impact of internet availability on female labour market outcomes, by education

	Low education level (0–9 years of schooling)					High education level (10+ years of schooling)				
	LFP (yes = 1)	Employed (yes = 1)	Full-time (yes = 1)	Skilled job (yes = 1)	Formal job (yes = 1)	LFP (yes = 1)	Employed (yes = 1)	Full-time (yes = 1)	Skilled job (yes = 1)	Formal job (yes = 1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Proportion of villages in the district with an internet kiosk	−0.013	−0.157	0.130***	−0.188**	−0.101**	0.070*	−0.008	0.024	0.017	-0.029
	(0.019)	(0.120)	(0.034)	(0.092)	(0.045)	(0.042)	(0.064)	(0.055)	(0.035)	(0.065)
Sample mean of the dependent variable	0.493	0.846	0.468	0.195	0.140	0.593	0.874	0.647	0.464	0.632
Individual-level control variables					Yes					Yes
Household-level control variables					Yes					Yes
District-level control variables					Yes					Yes
District fixed effects					Yes					Yes
Province-specific year fixed effects					Yes					Yes
Sample size	749,828	389,355	370,974	370,974	370,974	321,442	192,541	168,253	168,253	168,253
R squared	0.1280	0.2010	0.0796	0.4537	0.2055	0.1050	0.2005	0.0691	0.2331	0.2238

Note: *** 1% significance, ** 5% significance, * 10% significance; estimates are from OLS regressions, with constant; robust standard errors clustered at the district level in parentheses; sample in Columns 2 and 7 is conditional on labour force participation; sample in Columns 3–5 and 8–10 is conditional on employment; full regression results are available in the Appendix.

Source: authors' construction based on Podes (2008, 2011, 2014, 2018) and Sakernas (2007, 2011, 2014, 2018).

The second aspect of impact heterogeneity that we estimate is by education level. We divide the sample into low education level (up to nine years of schooling) and high education level (10 or more years of schooling). Table 6 shows the estimated results for the two groups separately.

We find no evidence that higher internet availability affects the labour force participation or employment of women with a low level of education. However, we find that higher internet availability does lead to a higher probability of women in this group working full-time. The effect of an increase in internet availability of one standard deviation is a 3.6-percentage-points higher probability of working full-time. This effect is equivalent to 7.8 per cent proportionally. Interestingly, internet availability lowers the probability of women with a low level of education having high-skilled jobs or working in the formal sector. We find that an increase in internet availability of one standard deviation leads to 27 per cent lower probability of women with a low level of education working in skilled jobs. Additionally, an increase in internet availability of a similar magnitude lowers the probability of women in this group working in the formal sector by 2.8 percentage points, or 20 per cent proportionally. These negative impacts are bigger in magnitude than the positive impacts of internet availability on the probability of women working full-time.

We now turn to highly educated women. We find that an increase in internet availability of one standard deviation will increase the probability of being in the labour force by two percentage points. The effect is only weakly significant and relatively small at 3.3 per cent proportionally. An increase in internet availability does not play any significant role in four other labour market outcomes of highly educated women.

Comparing how internet availability affects women with different education levels, we find that although the impacts are not always positive, internet availability matters more for women with a low level of education than those with a high level. These findings imply that while higher internet availability may not help women with a low level of education an the extensive margin, they significantly change the intensive margins. However, there is evidence that in areas of increased internet availability, women with a low level of education may be more likely to settle in low-skilled or informal jobs than they are in districts with lower internet availability. Some of this could be due to a switch from working in the industry sector, such as in factories, to working in the services sector. The explanation put forward by Das et al. (2017) may also be the case: that these women are now engaged in online commerce full-time. Supporting the latter, Fabritz (2013) finds that internet availability increases the market for firms in rural areas in Germany. Before the onset of the internet, these firms only catered to local customers.

Our findings contradict the findings from high-income countries. Billari et al. (2019) find that broadband availability in Germany increases home- or part-time working among highly educated women, but not among less-educated women. In the United States, Dettling (2016) finds a positive impact of high-speed internet on married women's labour force participation, especially those who are college educated and who have children. We believe that these differences may be driven by the type of work that uses internet in high-income and low- and middle-income countries. We support our point by comparing the trend of women working in the services and industry sectors and its relationship with an increase in access to the internet (Figure 4). The upper panel of Figure 4 shows that access to the internet seems to display a strong positive linear relationship with the proportion of women joining the services sector, whereas the lower panel displays a rather flat trend for women working in the industry sector. We observe the trend similarly in all six groups of islands.

Figure 4: Proportion of women working by sector and access to internet
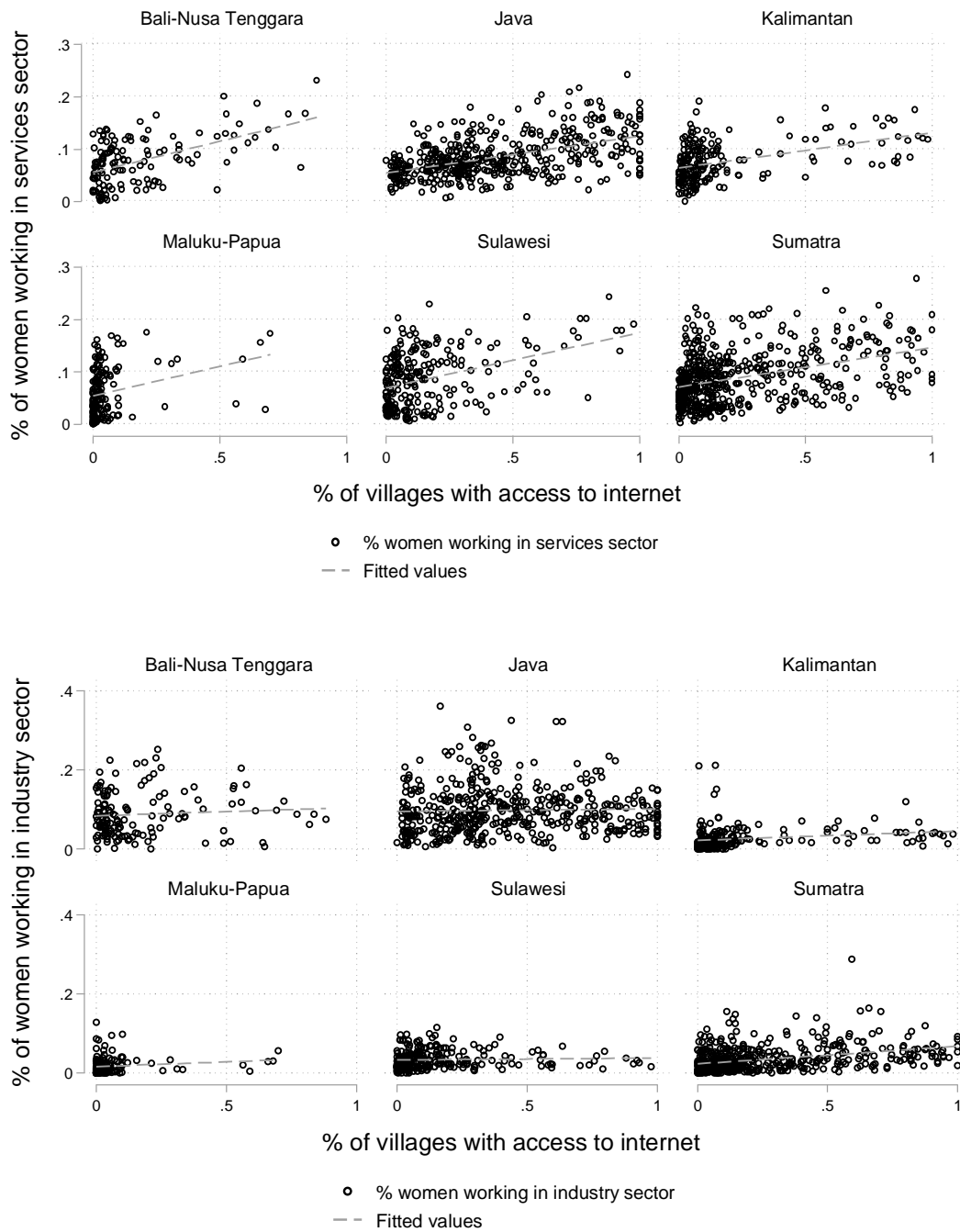
Source: authors' construction based on Sakernas (2007, 2011, 2014, 2018) and Podes (2008, 2011, 2014, 2018).

Figure 5: The working mechanism of internet among recent mothers
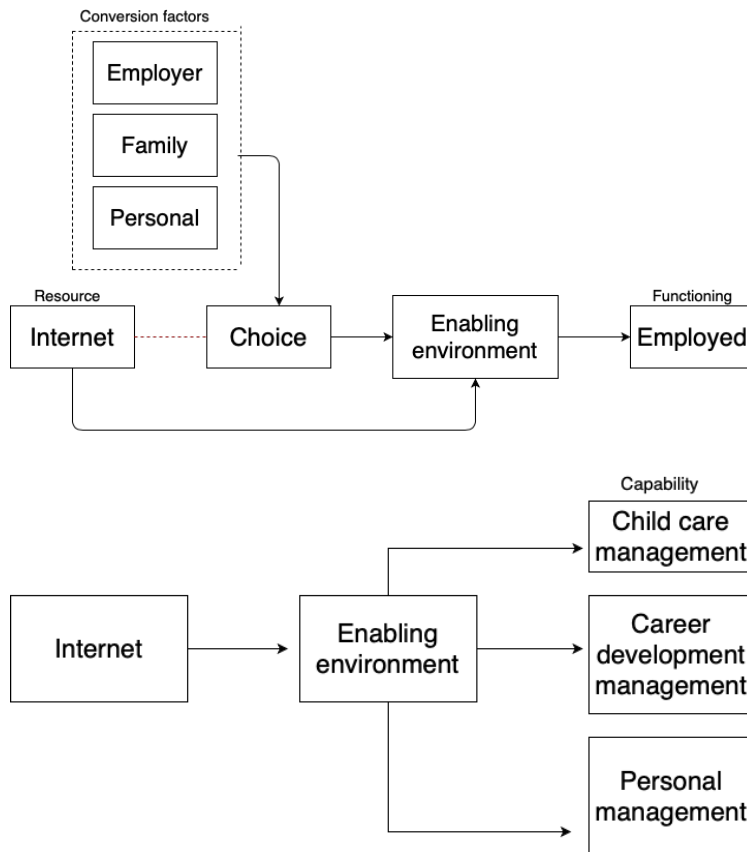
Source: authors' illustration based on qualitative interviews.

Our qualitative interviews with recent mothers exploring their decision-making process with regard to returning to the labour market noted that the prioritized conditions which determined their decisions were personal and employer conditions. The availability of the internet may not play a large role within the decision-making process; however, it is still an important aspect of the capital of returning mothers, as depicted in Figure 5.

Personal and employer conditions were identified to have more importance than the availability of the internet, as recent mothers reported staying firm in their decision after weighing their personal and employer conditions regardless of internet availability. Personal conditions encompass both individual and familial conditions. Individual conditions refers to individual education attainment and internalized values. Familial conditions are the family's financial and human resources. Meanwhile, employer conditions encompasses the employer's physical space and institutional norms.

The importance of each of the personal and employer conditions differs across different groups of recent mothers. In general, we find that less-educated mothers tend to have a pragmatic decision-making approach—reflected in the fact that their consideration rests solely on familial conditions. More highly educated mothers, on the other hand, were found to incorporate a self-efficacious decision-making approach, with their consideration encompassing not only their financial need but also their beliefs about their competence (UCAS 2012).

Our qualitative analysis finds that personal internalized values regarding motherhood and employment have considerable weigh in women's chosen trajectory, similarly to the process by which other personal internalized values can shape individual decision-making processes (Chacko

20

et al. 2016; Fritzsche and Oz 2007; Ladge and Greenberg 2015; Ravlin and Meglino 1987). These values are strongly relevant particularly for the group of highly educated mothers. Their years of schooling are viewed as a human capital investment which allows them functioning productivity in the future, be it contributing to their familial environment or more broadly. With the belief that they possessed the necessary skills and knowledge to effectively contribute to the community, they are driven to join the labour force—hence the self-efficacious decision-making approach.

> Well, in my family everyone is working. My mom was working when I was growing up. My grandmother too. Seeing that, I would like to work as well. Even now I have a mother in-law who is working. I enjoy the independence of having my own money.

> When I was a kid, I was taken care by my mom only. I admired that, really. That is why since the very beginning I have always been committed that I will take care of my child, fully. It was a hard decision to resign since I was working for a big company, but I have made a promise to myself that I will be like my mom, I will care for my child on my own.

Additionally, the family's financial state and living arrangements were common push factors for recent mothers to return to work, particularly among those with a lower level of education. Living in proximity to their extended family was also a prominent push factor for mothers to return to work, due to common distrust of third-party childcare. Interviewed mothers cited various reasons, ranging from fear of mishandling and perceiving the carer as a disruption to their bonding with their child and the difficulty in finding someone they could trust. With parents residing in proximity, recent mothers are much more comfortable in going back to work and being employed full-time. When they live quite far from their parents, they opt either to take a hiatus from being employed or to be employed part-time.

Our study confirms that recent mothers make decisions about their return to the labour force based on their employment conditions. For recent mothers, remote working becomes essential for them to balance two roles. Those who had opted to return work reported as a supporting factor in that return the adequacy of their office in implementing remote working when needed to deal with specific child-rearing issues such as sickness. But the adequacy of physical space alone is insufficient: formal and informal norms play a crucial role in encouraging mothers to utilize the existing resources when needed to optimally perform their two roles.

> I negotiated with my office to allow me to come to work at ten and leave office by four sharp. If my work is not done by then I will just continue [it] later once my child is asleep. Thankfully, my boss was very understanding. I was actually on the verge of resigning.

Through the capability approach, we find that while internet availability may not influence the decision-making process of recent mothers, it is nevertheless an important aspect of capital for mothers in creating the necessary enabling environment for their re-entry to the labour force. Recent mothers rely heavily on the internet to manage their necessary enabling environment to return to the labour force, in the form of childcare management, career development management, and personal management (Figure 5). Comparison across different age groups yields no distinctive pattern, but we find that more highly educated mothers tend to utilize the specific mechanism of the internet in order to achieve their full functioning in the labour market.

Childcare management

Recent mothers in our study, especially the more highly educated ones, rely on the use of the internet to search for information that will help them perform better in designing their child-rearing plan upon employment. As they tend to leave their child at length, they place great importance in being comprehensively prepared about child development before they return to their work. Preparation and planning are integral to the experience of mothers who are planning to return to work, as returning mothers tend to perceive the journey of returning to work as one in which they needed to be able to 'weather the storm' (Spiteri and Xuereb 2012).

Highly educated mothers in our study use the internet to search information and identify preferences, through WhatsApp groups, Instagram, apps regarding children's development developed by World Health Organization or any national or international paediatric association, and telemedicine apps. WhatsApp groups and Instagram are particularly favoured over books or articles largely due to their two-way interaction, concise delivery, and visual appeal.

> Before my child's birth I followed a lot of physicians on Instagram, communicated with my physicians intensely, and downloaded a lot of apps so that I am familiar with my child's development. Most importantly, I prepare everything I need to so when I am at work my daughter has everything that she needed.

The importance of being informed of the child's daily development through the internet also extends to mothers being aware of the child's condition while they are at work. This was achieved through installing CCTV around the house and in the daycare centre which could be accessed through an app on their phone. Also, they stayed in communication with the child's carer through instant messaging.

Career development management

Recent mothers utilize the internet as a crucial tool in maintaining their network for future employment references and to be updated with current developments in their sector as part of their career development management. Networking was particularly important among mothers who were currently not employed, as they considered their current state to be temporary and planned to return to being employed after their child's 'golden period'.[3] Recent mothers who are in an employment hiatus use their existing network for job search and application. Based on our interviews, all mothers who worked part-time had received their job offer through their personal network. While some part-time mothers reported being satisfied as a part-time employee, as the nature of the work aligned with their passion or the institution was reputable, some part-time mothers perceived that part-time employment was not sustainable in terms of career trajectory and hence they planned to search for full-time employment once their child was two or older.

> I have been looking around on the internet what available jobs there are in the development sector. I know it is hard for someone who takes time off for couple of years, but it is okay, it is a consequence I am aware of. Although I am not going back within this year, I would like to be updated with the condition of employment within the sector

---

[3] 'Golden period' refers to the rapid cognitive growth until the age of two: this has been dubbed a critical developmental period for children (IDAI 2017).

However, for mothers with a lower level of education, we find they are subject to more disadvantage in terms of the accessibility of job-seeking through the internet. While the availability of internet provides them with access to wider job opportunities, these are mostly in low-wage, short-term, and informal employment. Additionally, with the access to those job opportunities expanded, they were pitted against wider competition, putting them at an even greater disadvantage.

> Like sometimes in Facebook there would be information about someone looking for a cleaner. And then there is also this app for cleaners. It is so easy—you just turn on the application and it will find for you the person looking for a cleaner. [Interviewer: 'How about looking for another type of work?'] Like working at a store? ['Sure'] That's difficult. There are a lot of those but jobs but like [those] at the mall require high school certificate. I am only a middle school graduate. To be a cleaner, even primary school graduate can do.

> Sure! I have tried using those employment websites several times. But I always fail. It is actually harder because you have bigger competition since everyone can apply, right? Even those outside Jakarta can also apply. They may be even smarter than me. I am just a junior high school graduate.

Additionally, our study noted that being flexible is an important value of the internet for working mothers—both for part-time and full-time workers. This is aligned with quantitative findings whereby for employed women, internet access increases their probability of working full-time. 'Flexible' here means that mothers are able to meet the demands of them both as an employee and as a mother. For full-time mothers, flexibility means that they can 'clock in' for full-time working hours without having to be physically present at the office. The internet provides a platform through which they can connect to the office's intranet and communicate with colleagues easily. For mothers who are working part-time, flexibility refers to the ability to work regardless of location and time. The value of flexible working among mothers is congruent with findings from both developed and developing countries (Dettling 2016; Subramaniam et al. 2015).

There is evidence that the internet has also been used to acquire new skills, advance existing skills, and obtain new knowledge, contributing to the development of their expertise. Commonly used internet platforms were YouTube, news portals, and online journal databases. Some of the mothers who were working in a more established institution were even provided with online modules or classes for skills development.

> In my office's intranet I could access like classes and modules to improve my skills. Like for example, since my job revolves around tax, I have to be updated with all the regulations and how that would influence how I do my job. The intranet makes it easier for me—I could do the classes in accordance with my schedule.

> Of course [the internet] is useful. For example, if I have to analyse the data and I am not familiar about the methodology I could just open YouTube and then I could also search for related journals on the matter to have a better understanding.

Personal management

With respect to personal management, our study found a consistent pattern regarding the internet's pivotal role in the management of the personal matters of mothers, especially emotional support and leisure. Previous studies have noted that the loneliness, anxiety, exhaustion, and sense of inadequacy experienced by mothers during a return to work post-childbirth can have a lasting

negative effect on mothers' health and productivity (NCT 2008; Spiteri and Xuereb 2012). The availability of the internet provides mothers with ease of accessibility as well as the flexibility to access the variety of support they need at their convenience.

> I realized that once I am back at work, I need to create a support system not only for the child but for me too. I saw on Instagram that there are WhatsApp groups catering specifically for first-time working mothers.

> Knowing someone is going through the same experience as you. Oh wow! That is very empowering for me. That WhatsApp group is an especially important source of support system for me since I am here only with my husband, being far away from my parents. It helps me ease in going back to work.

Working mothers described that joining a WhatsApp group of mothers with similar characteristics and experiencing a shared reality was an important part of their well-being. Not only could they share experiences, but they could also obtain solutions applicable to their situation. However, consistent with the findings on the use of the internet for information search, the use of the internet to obtain social support was found only among more highly educated mothers. Mothers with a lower level of education were unaware of the existence of virtual social support. Hence, the use of the internet for social support was limited to instant messaging, which allowed mothers to access their support system at any time regardless of physical distance.

Lastly, given the uncertainty in their schedule in performing two roles—as a mother and as an employee—on-demand entertainment such as audio or video streaming that can be tailored to their schedule was considered to be a consistent value of the internet.

> [Interviewer: 'Why is the internet important for you?'] Netflix! When everyone is asleep, I could just enjoy my me time however I like. Mainly by watching Netflix. It is very important, you know, with the hustle for me to laugh at the end of the day. A good stress reliever.

6   Robustness checks

We conduct two robustness checks. First, we check the correlation between district-level migration rate and district-level internet connectivity to find out whether migration rate across districts is driven by internet connectivity, which could lead to an important concern in our analysis. If women who aspire to have better labour market outcomes tend to migrate to districts with better internet connectivity, for example to have easier access to the labour market, our main result (Table 4) is biased upwards. To check this, we regress the migration rate across districts on a set of district-level variables constructed from Podes (Table 7). We do not find evidence that districts with a higher proportion of migrants are concentrated in areas with better internet connectivity. The point of the estimate is not statistically significant, implying that better internet connectivity is not a pull factor for individuals to migrate across districts.

Table 7: Migration rate across districts

Independent variables	Estimates
Proportion of villages in the district with an internet kiosk	−0.002
	(0.020)
Proportion of villages in the district that send workers overseas	−0.041
	(0.030)
Proportion of villages in the district that have passable inter-village roads	0.060
	(0.081)
Proportion of villages in the district whose main source of livelihood is mining	−0.011
	(0.109)
Proportion of villages in the district whose main source of livelihood is industry	−0.017
	(0.021)
Proportion of villages in the district whose main source of livelihood is trade	−0.034
	(0.029)
Proportion of villages with senior secondary school (SMA)	−0.007
	(0.019)
Proportion of villages with college	0.010
	(0.041)
Proportion of villages in the district with small industry in food and beverages	−0.008
	(0.018)
Proportion of villages in the district with small industry in metal	0.029
	(0.040)
Proportion of villages in the district with small industry in wood	0.003
	(0.020)
Proportion of villages in the district with a marketplace	−0.005
	(0.020)
Proportion of villages in the district with banks	−0.011
	(0.027)
Proportion of villages in the district with credit for small enterprises	0.029
	(0.023)
Proportion of villages in the district with electricity	−0.033
	(0.038)
Proportion of villages in the district located on the coast	−0.007
	(0.021)
Proportion of villages in the district located in a valley	0.075
	(0.060)
Proportion of villages in the district located on hilly terrain	−0.006
	(0.015)
Proportion of villages in the district with natural disasters	0.026
	(0.026)
Proportion of villages in the district with easy access to police office	−0.006
	(0.056)
Proportion of villages in the district with easy access to hospital	−0.034
	(0.045)
Constant	-0.022
	(0.060)
District fixed effects	Yes
Year fixed effects	Yes
Number of observations	1,395
R squared	0.762

Note: *** 1% significance, ** 5% significance, * 10% significance; robust standard errors clustered at district level in parentheses; dependent variable is migration rate of individuals aged 15–64; individuals are considered migrants if they have moved across districts in the last five years; this information is obtained by comparing the district where the individual lived five years ago and where they live now.

Secondly, we conduct additional analysis using inverse probability weighting (IPW). The main challenge in implementing IPW is that our main independent variable is continuous. According to Naimi et al. (2014), the best strategy is to separate the data into several bins. We pick five bins. At the first stage, the district level of internet availability is divided into quintiles based on the proportion of villages with access to internet kiosks within a district, sorted in ascending order. Consequently, districts with the highest proportion of villages with internet kiosks belong in the fifth quintile. IPW is predicted using multinomial logit based on a set of district-level variables displayed in Appendix Table 5. We then regress female labour market outcomes using multilevel 'treatment' of internet connectivity as our main variable of interest, weighted by IPW obtained from the previous step.

Table 8 shows the results. The positive impact of internet availability on labour force participation remains, with stronger effects in higher quintiles. The lack of impact on employment, skilled jobs, and formal jobs also remains. Table 8 shows that conditional on employment, there is no evidence that higher internet availability impacts the chance of women working full-time. Overall, our results in Table 4 appear robust to using a different estimation method.

Table 8: Impact of internet availability on female labour market outcomes using IPW

	LFP (yes = 1)	Employed (yes = 1)	Full-time (yes = 1)	Skilled job (yes = 1)	Formal job (yes = 1)
	(1)	(2)	(3)	(4)	(5)
Internet availability (base outcome: 1st quintile)					
Districts with internet availability in 2nd quintile (yes = 1)	0.021	−0.014	−0.032	−0.058	0.005
	(0.022)	(0.049)	(0.028)	(0.098)	(0.022)
Districts with internet availability in 3rd quintile (yes = 1)	0.043*	0.022	−0.027	−0.060	0.029
	(0.024)	(0.076)	(0.044)	(0.164)	(0.031)
Districts with internet availability in 4th quintile (yes = 1)	0.059*	0.044	0.003	0.169	−0.005
	(0.034)	(0.089)	(0.054)	(0.206)	(0.038)
Districts with internet availability in 5th quintile (yes = 1)	0.107**	0.117	−0.001	0.226	0.045
	(0.047)	(0.126)	(0.066)	(0.301)	(0.050)
Sample mean of the dependent variable	0.543	0.927	0.532	0.280	0.298
Individual-level control variables					Yes
Household-level control variables					Yes
District-level control variables					Yes
District fixed effects					Yes
Province-specific year fixed effects					Yes
Sample size	1,071,271	581,898	539,229	539,229	539,229
R squared	0.1563	0.3920	0.1535	0.6220	0.2444

Note: *** 1% significance, ** 5% significance, * 10% significance; estimates are from OLS regressions, with constant; robust standard errors clustered at the district level in parentheses; sample in Column 2 is conditional on labour force participation; sample in Columns 3–5 is conditional on employment; full regression results are available in the Appendix.

7   Conclusion

In this paper, we examine the impact of internet availability on female labour market outcomes in Indonesia. We find that higher internet availability has only a small positive impact on FLFP. We do not find any evidence that internet availability helps women in terms of improving their chances of being employed. Once women are employed, however, the positive impact of internet availability on having a full-time job is evident. Our study also finds that the impact of internet availability on female labour market outcomes is not always positive, as shown by the results from the group of women with a low level of education.

Central to our study is the potential heterogeneity in the impact of the internet depending on age and education level. Internet availability benefits women aged 15–45 in terms of working full-time. Our analysis reveals that there are no statistically significant differences in how much the 15–35 and 36–45 groups benefit in terms of working full-time. Additionally, internet availability offers no benefit to the labour market outcomes of women older than 45.

Across different education levels, we find that internet availability matters for women with a low level of education but not for those with a high level. An increase in internet availability of one standard deviation improves the probability of women with a low level of education working in a full-time job by 7.8 per cent proportionally. Interestingly, our study finds that internet availability may cause more women with a low level of education to settle in low-skilled or informal jobs than would have been the case with lower internet availability. We find that internet availability lowers the probability of women with a low level of education working in skilled jobs and in the formal sector by 27 per cent and 20 per cent, proportionally. This result contradicts the findings in high-income countries, where internet matters more for highly educated women than those with lower levels of education. In a developing-country context, however, some stylized facts support our findings.

Our qualitative analysis finds that internet availability has the potential to be an important complementary factor in improving female labour market outcomes. The ability to be prepared and to attain flexible working conditions were found to be important for working mothers, and both can be facilitated by the availability of the internet. To achieve such conditions, however, the availability of the internet alone is not sufficient. Aspects of the working environment, including both formal and informal norms along with adequate IT infrastructure are a crucial element in maximizing the role of the internet in contributing positively to women's workforce participation.

Our policy recommendations cover three areas. These should be addressed to maximize the internet's potential to improve women's labour force participation and labour market outcomes. First, support flexible working conditions. Second, construct adequate IT infrastructure that can fully support these flexible working conditions. Third, improve digital literacy and equal access to the internet to enable women from all groups to harness the internet to mediate their adversity when facing employment shock. As found in other studies, motherhood and marriage appear to be a major cause for Indonesian women to leave the labour market. The internet has the potential to stop women from having to do so.

References

Alampay, E.A. (2003). 'Using the Capabilities Approach to Analyse Access to Information and Communication Technologies (ICTs) by the Poor'. Working paper to be presented at the National Academy of Science and Technology (NAST) conference 'Addressing the Demographic Crisis in the Philippines', Manila, Philippines, 9–10 July 2003.

Bachtiar, P., A.Z. Kusuma, R.A. Diningrat, and D. Abella (2020). 'Menuju Ekonomi Digital yang Inklusif'. Presentation to The SMERU Research Institute, 1 June.

Billari, F.C., O. Giuntella, and L. Stella (2019). 'Does Broadband Internet Affect Fertility?' *A Journal of Demography*, 73(3): 297–316. https://doi.org/10.1080/00324728.2019.1584327

Cameron, L., and D. Contreras Suarez (2019). 'Why Do Millions of Indonesian Women Still Quit Work after Marriage and Kids?' Melbourne: Indonesia at Melbourne, University of Melbourne. Available at: https://indonesiaatmelbourne.unimelb.edu.au/why-do-millions-of-indonesian-women-still-quit-work-after-marriage-and-kids (accessed 21 August 2019).

Cameron, L., D. Contreras Suarez, and W. Rowell (2018). 'Female Labour Force Participation in Indonesia: Why Has it Stalled?' Melbourne Institute Working Paper 11/18. Melbourne: University of Melbourne. http://dx.doi.org/10.2139/ssrn.3296072

Cepeda, L. (2013). 'Gender Wage Inequality in Indonesia'. Presentation, quoted in Cameron et al. (2018).

Chacko, N., A. Mathur, and S. Sheikh (2016). 'A Study on the Impact of Values on Career Decision Making of Adolescents.' *International Journal for Research in Applied Science & Engineering Technology*, 4(10): 395–98.

Czernich, N., O. Falck, T. Kretschmer, and L. Woessmann (2011). 'Broadband Infrastructure and Economic Growth'. *Economic Journal*, 121: 505–53. https://doi.org/10.1111/j.1468-0297.2011.02420.x

Das, K., T. Tamhane, B. Vatterott, P. Wibowo, and S. Wintels (2017). *The Digital Archipelago: How Online Commerce Is Driving Indonesia's Economic Development*. Jakarta: McKinsey & Company. Available at: https://www.mckinsey.com/~/media/McKinsey/Featured%20Insights/Asia%20Pacific/The%20digital%20archipelago%20How%20online%20commerce%20is%20driving%20Indonesias%20economic%20development/FINAL_The-digital-archipelago-How-online-commerce-is-driving-Indonesias-economic-development.pdf (accessed 26 August 2019).

Dettling, L.J. (2016). 'Broadband in the Labor Market: The Impact of Residential High Speed Internet on Married Women's Labor Force Participation'. *ILR Review*, 70(2): 451–82. https://doi.org/10.1177/0019793916644721

Falck, O., A. Heimisch, and S. Wiederhold (2016). 'Returns to ICR Skills'. OECD Education Working Paper. Paris: OECD. https://doi.org/10.2139/ssrn.2744714

Falck, O., A. Mazat, and B. Stockinger (2015). 'Broadband Infrastructure and Entrepreneurship'. Munich: Ifo Institute.

Fritszche, D., and E. Oz (2007). 'Personal Values' Influence on the Ethical Dimension of Decision Making'. *Journal of Business Ethics*, 75: 335–43. https://doi.org/10.1007/s10551-006-9256-5

Halim, D., H. Johnson, and E. Perova (2019). 'Does Access to Preschool Increase Women's Employment?' Policy Brief 3. Washington, DC: World Bank. Available at: https://openknowledge.worldbank.org/bitstream/handle/10986/31486/129308.pdf?sequence=4&isAllowed=y (accessed 28 May 2020).

IDAI (Ikatan Dokter Anak Indonesia/Indonesian Pediatric Society) (2017). 'Pentingnya Pemantauan Tumbuh Kembang 1000 Hari Pertama Kehidupan Anak'. Available at: https://www.idai.or.id/artikel/klinik/pengasuhan-anak/pentingnya-pemantauan-tumbuh-kembang-1000-hari-pertama-kehidupan-anak (accessed 3 November 2020).

Kenny, C. (2003). 'The Internet and Economic Growth in Less-Developed Countries: A Case of Managing Expectation'. *Oxford Development Studies*, 31(1): 99–113. https://doi.org/10.1080/1360081032000047212

Kolko, J. (2012). 'Broadband and Local Growth'. *Journal of Urban Economics*, 71: 100–13. https://doi.org/10.1016/j.jue.2011.07.004

Kretschmer, T. (2012). 'Information and Communication Technologies and Productivity Growth: A Survey of the Literature'. OECD Digital Economy Paper 195. Paris: OECD.

Krueger, A.B. (2000). 'The Internet Is Lowering the Cost of Advertising and Searching for Jobs'. *New York Times*, 20 July: C2.

Ladge, J., and D. Greendberg (2015). 'Becoming a Working Mother: Managing Identity and Efficacy Uncertainties during Resocialization'. *Human Resource Management*, 54(6): 977–98. https://doi.org/10.1002/hrm.21651

Lu, Y., J. S.-H. Wang, and W.-J. Han (2017). 'Women's Short-Term Employment Trajectories Following Birth: Patterns, Determinants and Variations by Race/Ethnicity and Nativity'. *Demography*, 54(1): 93–118. https://doi.org/10.1007/s13524-016-0541-3

Ma, L. (2016). 'Female Labour Force Participation and Second Birth Rates in South Korea'. *Journal of Population Research*, 33: 173–95. https://doi.org/10.1007/s12546-016-9166-z

Mitchell, P.M., T.E. Roberts, P.M. Barton, and J. Coast (2017). 'Application of the Capability Approach in the Health Field: A Literature Review'. *Social Indicators Research*, 133: 345–71. https://doi.org/10.1007/s11205-016-1356-8

Naimi A.I., E.E. Moodie, N. Auger, and J.S. Kaufman (2014). 'Constructing Inverse Probability Weights for Continuous Exposures: A Comparison of Methods. *Epidemiology*, 25(2): 292–99. https://doi.org/10.1097/EDE.0000000000000053

NCT (National Childbirth Trust) (2008). *The Experiences of Women Returning to Work After Maternity Leave in the UK: A Summary of Survey Results*. London: NCT . Available at: https://www.nct.org.uk/sites/default/files/related_documents/ReturningToWork-Survey.pdf (accessed 1 June 2020).

Priebe, J. (2010). 'Child Costs and the Causal Effect of Fertility on Female Labor Supply: An Investigation for Indonesia 1993–2008'. CRC-PEG (Courant Research Centre-Poverty, Equality and Growth) Discussion Paper 45. Germany: University of Göttingen.

Ravlin, E., and B. Meglino (1987). 'Effect of Values on Perception and Decision Making: A Study of Alternative Work Values Measures'. *Journal of Applied Psychology*, 72(4): 666–73. https://doi.org/10.1037/0021-9010.72.4.666

Spiteri, G., and R.B. Xuereb (2012). 'Going Back to Work After Childbirth: Women's Lived Experience'. *Journal of Reproductive and Infant Psychology*, 30(2): 201–16. https://doi.org/10.1080/02646838.2012.693153

Stanley, T.D., H. Doucouliagos, and P. Steel (2018). 'Does ICT Generate Economic Growth? A Meta-Regression Analysis'. Journal of Economic Survey, 32(3): 705–26. https://doi.org/10.1111/joes.12211

Subramaniam, G., P.-L. Tan, R. Baah, N.A.A. Atory (2015). 'Do Flexible Working Arrangements Impact Women's Participation in the Labour Market? A Multiple Regression Analysis'. *Malaysian Journal of Consumer and Family Economics*: 130–40.

Suseno, Y. (2018). 'Disruptive Innovation and the Creation of Social Capital in Indonesia's Urban Communities'. *Asia Pacific Business Review*, 24(2): 174–95. https://doi.org/10.1080/13602381.2018.1431251

UCAS (Universities and Colleges Admissions Service) (2012). *Tracking Decision-Making of High Achieving Higher Education Applicants*. London: Department for Business Innovation and Skills.

Vidgor, J.L., H.F. Ladd, and E. Martinez (2014). 'Scaling the Digital Divide: Home Computer Technology and Student Achievement'. *Economic Inquiry*, 52(3): 1103–19. https://doi.org/10.1111/ecin.12089

Viollaz, M., and H. Winkler (2020). 'Does the Internet Reduce Gender Gaps? The Case of Jordan'. Policy Research Working Paper 9183. Washington, DC: World Bank. https://doi.org/10.1596/1813-9450-9183

World Bank (2016). *World Development Report 2016: Digital Dividends*. Washington, DC: World Bank. Available at: https://www.worldbank.org/en/publication/wdr2016 (accessed 5 June 2020).

Appendix

Table A1: Summary statistics

	Mean	Std dev.
Labour market outcomes		
LFP (yes = 1)	0.54	0.50
Employed (yes = 1)	0.93	0.26
Full-time (yes = 1)	0.53	0.50
Skilled job (yes = 1)	0.28	0.45
Formal job (yes = 1)	0.29	0.46
Main Independent variables		
Proportion of villages in the district with an internet kiosk	0.25	0.28
Proportion of villages in the district with a BTS	0.41	0.23
Age (years)	36.00	13.26
Education (omitted category: did not finish primary)		
Finished primary school (yes = 1)	0.29	0.45
Finished junior secondary school (yes = 1)	0.22	0.42
Finished senior secondary school (yes = 1)	0.22	0.42
Finished tertiary degree (yes = 1)	0.08	0.27
Household status		
Household head (yes = 1)	0.07	0.26
Married (yes = 1)	0.69	0.46
Divorced (yes = 1)	0.02	0.15
Widowed (yes = 1)	0.06	0.25
Live in urban areas (yes = 1)	0.44	0.50
District characteristics		
Log (mean household per capita spending in district)	13.47	0.50
Proportion of villages in the district that send workers overseas	0.46	0.37
Proportion of villages in the district that have passable inter-village roads	0.86	0.18
Main source of livelihoods in district		
Proportion of villages in the district whose main source of livelihood is agriculture	0.56	0.40
Proportion of villages in the district whose main source of livelihood is trade	0.06	0.12
Proportion of villages in the district whose main source of livelihood is services	0.06	0.13
Proportion of villages in the district whose main source of livelihood is others	0.01	0.02
District education facilities		
Proportion of villages in the district with early childhood education centre	0.31	0.30
Proportion of villages in the district with kindergarten	0.57	0.38
District economic infrastructure		
Proportion of villages in the district with small industry in food and beverages	0.42	0.33
Proportion of villages in the district with credit for small enterprises	0.20	0.19
Proportion of villages in the district with electricity	0.95	0.11
District topography		
Proportion of villages in the district located on the coast	0.13	0.20
Proportion of villages in the district located in a valley	0.03	0.08
Proportion of villages in the district located on hilly terrain	0.12	0.17

District health facilities					
Proportion of villages in the district with easy access to a hospital				0.52	0.35

Table A2: Full estimated coefficients, whole sample

	LFP (yes = 1)	Employed (yes = 1)	Full-time (yes = 1)	Skilled job (yes = 1)	Formal job (yes = 1)
Proportion of villages in the district with an internet kiosk	0.030**	−0.048	0.107***	−0.051	−0.055
	(0.015)	(0.048)	(0.026)	(0.042)	(0.042)
Age	0.151***	0.080***	0.042***	0.011***	0.004*
	(0.002)	(0.003)	(0.002)	(0.001)	(0.002)
Age squared	−0.002***	−0.001***	−0.001***	−0.000***	−0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Education (omitted category: did not finish primary)					
Finished primary school (yes = 1)	−0.037***	0.086***	0.082***	0.028***	0.119***
	(0.008)	(0.014)	(0.009)	(0.008)	(0.011)
Finished junior secondary school (yes = 1)	−0.223***	−0.061***	0.167***	0.123***	0.275***
	(0.011)	(0.015)	(0.012)	(0.010)	(0.016)
Finished senior secondary school (yes = 1)	0.017	−0.344***	0.337***	0.633***	0.868***
	(0.013)	(0.018)	(0.012)	(0.013)	(0.023)
Finished tertiary degree (yes = 1)	0.768***	−0.273**	0.304***	1.517***	2.350***
	(0.021)	(0.023)	(0.017)	(0.017)	(0.037)
Household status					
Household head (yes = 1)	0.296***	0.305***	0.065***	0.191***	0.016
	(0.012)	(0.020)	(0.011)	(0.024)	(0.011)
Married (yes = 1)	−0.444***	0.387***	−0.214***	−0.029***	−0.495***
	(0.018)	(0.015)	(0.013)	(0.009)	(0.012)
Divorced (yes = 1)	0.066***	0.042**	−0.039***	−0.187***	−0.131***
	(0.015)	(0.020)	(0.015)	(0.017)	(0.016)
Widowed (yes = 1)	−0.318***	0.146***	−0.140***	−0.159***	−0.238***
	(0.016)	(0.023)	(0.015)	(0.017)	(0.016)
Live in urban areas (yes = 1)	−0.149***	−0.072***	0.341***	−0.070***	0.331***
	(0.011)	(0.015)	(0.011)	(0.009)	(0.013)
District characteristics					
Log (mean household per capita spending in district)	0.018	0.148***	−0.019	−0.107***	−0.022
	(0.015)	(0.044)	(0.023)	(0.029)	(0.032)
Proportion of villages in the district that send workers overseas	0.033**	0.126**	0.001	0.109***	0.044
	(0.016)	(0.053)	(0.024)	(0.041)	(0.046)

Proportion of villages in the district that have passable inter-village roads	−0.047	−0.042	0.012	0.253***	0.052
	(0.036)	(0.115)	(0.048)	(0.071)	(0.090)
Proportion of villages in the district whose main source of livelihood is agriculture	0.011	−0.006	−0.032	0.074*	0.058
	(0.023)	(0.068)	(0.033)	(0.043)	(0.045)
Proportion of villages in the district whose main source of livelihood is trade	−0.016	0.018	−0.034	0.241***	−0.065
	(0.031)	(0.090)	(0.049)	(0.064)	(0.065)
Proportion of villages in the district whose main source of livelihood is services	0.008	0.051	−0.085**	0.222***	−0.078
	(0.029)	(0.081)	(0.039)	(0.058)	(0.061)
Proportion of villages in the district whose main source of livelihood is others	0.001	−0.244	−0.006	0.250**	−0.240*
	(0.050)	(0.171)	(0.090)	(0.114)	(0.135)
Proportion of villages in the district with early childhood education centre	−0.020**	−0.005	0.020	−0.001	−0.053**
	(0.009)	(0.033)	(0.013)	(0.019)	(0.024)
Proportion of villages in the district with kindergarten	0.028**	0.055	0.003	0.058***	0.079***
	(0.011)	(0.037)	(0.014)	(0.022)	(0.028)
Proportion of villages in the district with small industry in food and beverages	0.016*	−0.009	−0.015	0.020	0.016
	(0.009)	(0.033)	(0.014)	(0.019)	(0.024)
Proportion of villages in the district with credit for small enterprises	−0.032***	0.028	−0.015	0.025	−0.012
	(0.011)	(0.040)	(0.019)	(0.031)	(0.032)
Proportion of villages in the district with electricity	−0.010	−0.066	−0.090*	0.186**	0.133*
	(0.045)	(0.105)	(0.048)	(0.078)	(0.075)
Proportion of villages in the district located on the coast	−0.021	−0.027	0.025	0.017	0.020
	(0.015)	(0.054)	(0.023)	(0.027)	(0.037)
Proportion of villages in the district located in a valley	0.037	0.148**	0.046	0.030	−0.109*
	(0.026)	(0.075)	(0.029)	(0.042)	(0.063)
Proportion of villages in the district located on hilly terrain	−0.004	0.023	−0.002	−0.023	−0.018
	(0.020)	(0.052)	(0.025)	(0.030)	(0.033)
Proportion of villages in the district with easy access to a hospital	0.000	0.067	0.004	0.012	0.023
	(0.013)	(0.045)	(0.021)	(0.029)	(0.040)
Proportion of women aged 15–64 who belong to the labour force	2.162***				
	(0.047)				
Proportion of women aged 15–64 who are employed		3.029***			
		(0.138)			
Proportion of women aged 15–64 who work full-time			1.878***		
			(0.050)		
Proportion of women aged 15–64 who have high-skilled job				3.003***	
				(0.034)	
Proportion of women aged 15–64 who work in formal sector					1.533***
					(0.074)
Constant	−3.820***	−5.498***	−1.404***	−1.237***	−1.154**

	(0.234)	(0.625)	(0.318)	(0.399)	(0.454)
Number of observations	1,071,271	581,898	539,229	539,229	539,229
R squared	0.1167	0.2172	0.0892	0.2652	0.3508

Note: *** 1% significance, ** 5% significance, * 10% significance; estimates are from OLS regressions; robust standard errors clustered at the district level in parentheses.

Source: authors' construction based on Podes (2008, 2011, 2014, 2018) and Sakernas (2007, 2011, 2014, 2018).

Table A3a: Full estimated coefficients, heterogeneous impact by age

	Older female group (36–64 years old)				
	LFP (yes = 1)	Employed (yes = 1)	Full-time (yes = 1)	Skilled job (yes = 1)	Formal job (yes = 1)
Proportion of villages in the district with an internet kiosk	0.015	−0.109	0.110***	−0.057	−0.020
	(0.023)	(0.103)	(0.036)	(0.048)	(0.057)
Age	0.175***	0.143***	0.052***	0.002	0.061***
	(0.004)	(0.011)	(0.004)	(0.005)	(0.006)
Age squared	−0.002***	−0.001***	−0.001***	0.000	−0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Education (omitted category: did not finish primary)					
Finished primary school (yes = 1)	−0.025***	0.081***	0.101***	0.038***	0.115***
	(0.007)	(0.017)	(0.008)	(0.008)	(0.011)
Finished junior secondary school (yes = 1)	−0.130***	−0.088***	0.213***	0.106***	0.239***
	(0.010)	(0.019)	(0.011)	(0.012)	(0.015)
Finished senior secondary school (yes = 1)	−0.078***	−0.200***	0.308***	0.658***	0.874***
	(0.012)	(0.022)	(0.013)	(0.014)	(0.024)
Finished tertiary degree (yes = 1)	0.755***	−0.051*	0.337***	1.548***	2.488***
	(0.024)	(0.029)	(0.018)	(0.018)	(0.039)
Household status					
Household head (yes = 1)	0.367***	0.278***	0.049***	0.225***	−0.009
	(0.010)	(0.026)	(0.011)	(0.022)	(0.013)
Married (yes = 1)	−0.151***	0.504***	−0.119***	0.051***	−0.305***
	(0.022)	(0.027)	(0.018)	(0.019)	(0.022)
Divorced (yes = 1)	0.215***	0.161***	0.044**	−0.137***	0.036
	(0.020)	(0.036)	(0.021)	(0.026)	(0.025)
Widowed (yes = 1)	−0.120***	0.264***	−0.049**	−0.100***	−0.042*
	(0.020)	(0.033)	(0.019)	(0.022)	(0.024)
Live in urban areas (yes = 1)	−0.182***	−0.172***	0.327***	−0.087***	0.316***
	(0.013)	(0.020)	(0.012)	(0.010)	(0.014)
District characteristics					
Log (mean household per capita spending in district)	0.033*	0.112	−0.006	−0.111***	0.005
	(0.018)	(0.082)	(0.027)	(0.032)	(0.045)
Proportion of villages in the district that send workers overseas	0.021	0.121	−0.006	0.160***	0.046
	(0.023)	(0.109)	(0.036)	(0.049)	(0.065)
Proportion of villages in the district that have passable inter−village roads	−0.070	−0.153	−0.059	0.305***	0.059
	(0.060)	(0.235)	(0.073)	(0.080)	(0.125)
Proportion of villages in the district whose main source of livelihood is agriculture	0.023	−0.005	−0.057	0.082	0.032
	(0.031)	(0.112)	(0.042)	(0.055)	(0.064)
Proportion of villages in the district whose main source of livelihood is trade	−0.004	0.138	−0.080	0.296***	−0.166*

	(0.040)	(0.150)	(0.063)	(0.080)	(0.094)
Proportion of villages in the district whose main source of livelihood is services	−0.020	0.001	−0.121**	0.225***	−0.100
	(0.038)	(0.140)	(0.053)	(0.073)	(0.094)
Proportion of villages in the district whose main source of livelihood is others	0.022	−0.739**	0.069	0.294**	−0.205
	(0.067)	(0.321)	(0.134)	(0.149)	(0.197)
Proportion of villages in the district with early childhood education centre	−0.020	−0.022	0.033*	−0.004	−0.082**
	(0.013)	(0.071)	(0.019)	(0.022)	(0.033)
Proportion of villages in the district with kindergarten	0.024	−0.047	−0.012	0.010	0.064
	(0.018)	(0.072)	(0.023)	(0.026)	(0.039)
Proportion of villages in the district with small industry in food and beverages	0.027*	0.072	−0.026	0.011	0.016
	(0.014)	(0.069)	(0.019)	(0.022)	(0.033)
Proportion of villages in the district with credit for small enterprises	−0.018	−0.026	−0.008	0.041	0.015
	(0.018)	(0.080)	(0.028)	(0.035)	(0.047)
Proportion of villages in the district with electricity	0.028	−0.103	−0.128**	0.173**	0.118
	(0.046)	(0.192)	(0.063)	(0.074)	(0.106)
Proportion of villages in the district located on the coast	−0.017	0.022	0.038	0.028	0.030
	(0.020)	(0.095)	(0.036)	(0.029)	(0.056)
Proportion of villages in the district located in a valley	0.024	0.209	0.063	0.038	−0.150*
	(0.048)	(0.175)	(0.044)	(0.043)	(0.083)
Proportion of villages in the district located on hilly terrain	0.021	−0.078	−0.027	−0.015	−0.033
	(0.026)	(0.080)	(0.031)	(0.032)	(0.053)
Proportion of villages in the district with easy access to a hospital	−0.013	0.144*	0.035	0.048	0.064
	(0.020)	(0.082)	(0.030)	(0.033)	(0.052)
Proportion of women aged 36–64 who belong to the labour force	1.814***				
	(0.056)				
Proportion of women aged 36–64 who are employed		2.470***			
		(0.441)			
Proportion of women aged 36–64 who work full-time			1.516***		
			(0.057)		
Proportion of women aged 36–64 who have high-skill job				2.912***	
				(0.038)	
Proportion of women aged 36–64 who work in formal sector					0.963***
					(0.106)
Constant	−5.069***	−6.459***	−1.608***	−1.125**	−2.825***
	(0.280)	(1.182)	(0.411)	(0.457)	(0.626)
Number of observations	525,295	322,661	315,534	315,534	315,534
R squared	0.0949	0.1150	0.0739	0.2814	0.3270

Note: *** 1% significance, ** 5% significance, * 10% significance; estimates are from OLS regressions; robust standard errors clustered at the district level in parentheses.

Source: authors' construction based on Podes (2008, 2011, 2014, 2018) and Sakernas (2007, 2011, 2014, 2018).

Table A3b: Full estimated coefficients, heterogeneous impact by age

	Younger female group (15–35 years old)				
	LFP (yes = 1)	Employed (yes = 1)	Full-time (yes = 1)	Skilled job (yes = 1)	Formal job (yes = 1)
Proportion of villages in the district with an internet kiosk	0.065**	0.020	0.146***	−0.085*	−0.093
	(0.027)	(0.060)	(0.055)	(0.051)	(0.062)
Age	0.410***	0.079***	0.148***	0.070***	0.129***
	(0.007)	(0.010)	(0.009)	(0.007)	(0.008)
Age squared	−0.007***	−0.001***	−0.003***	−0.001***	−0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Education (omitted category: did not finish primary)					
Finished primary school (yes = 1)	−0.025	0.059***	0.037**	0.035*	0.118***
	(0.016)	(0.019)	(0.018)	(0.018)	(0.020)
Finished junior secondary school (yes = 1)	−0.221***	−0.093***	0.104***	0.164***	0.280***
	(0.018)	(0.020)	(0.021)	(0.020)	(0.025)
Finished senior secondary school (yes = 1)	0.009	−0.431***	0.308***	0.618***	0.815***
	(0.020)	(0.023)	(0.021)	(0.021)	(0.029)
Finished tertiary degree (yes = 1)	0.708***	−0.393***	0.212***	1.489***	2.161***
	(0.024)	(0.029)	(0.025)	(0.026)	(0.042)
Household status					
Household head (yes = 1)	0.170***	0.390***	0.150***	0.291***	0.118***
	(0.036)	(0.031)	(0.022)	(0.040)	(0.022)
Married (yes = 1)	−0.609***	0.372***	−0.263***	−0.057***	−0.570***
	(0.019)	(0.016)	(0.013)	(0.011)	(0.013)
Divorced (yes = 1)	0.101***	0.011	−0.056***	−0.209***	−0.153***
	(0.020)	(0.024)	(0.020)	(0.024)	(0.023)
Widowed (yes = 1)	0.188***	0.227***	−0.132***	−0.239***	−0.313***
	(0.031)	(0.046)	(0.031)	(0.035)	(0.038)
Live in urban areas (yes = 1)	−0.111***	−0.036**	0.367***	−0.043***	0.355***
	(0.012)	(0.016)	(0.014)	(0.012)	(0.016)
District characteristics					
Log (mean household per capita spending in district)	0.029	0.188***	−0.046	−0.144***	−0.041
	(0.025)	(0.052)	(0.056)	(0.039)	(0.045)
Proportion of villages in the district that send workers overseas	0.022	0.080	0.029	0.152***	0.025
	(0.028)	(0.062)	(0.047)	(0.055)	(0.068)
Proportion of villages in the district that have passable inter-village roads	−0.064	−0.033	0.100	0.452***	0.046
	(0.062)	(0.130)	(0.089)	(0.107)	(0.127)
Proportion of villages in the district whose main source of livelihood is agriculture	−0.021	−0.066	0.022	0.189***	0.105
	(0.038)	(0.069)	(0.066)	(0.056)	(0.069)
Proportion of villages in the district whose main source of livelihood is trade	−0.062	−0.137	0.081	0.215**	0.063
	(0.051)	(0.104)	(0.094)	(0.090)	(0.103)
Proportion of villages in the district whose main source of livelihood is services	−0.065	−0.024	−0.043	0.232***	−0.075
	(0.047)	(0.092)	(0.077)	(0.073)	(0.088)
Proportion of villages in the district whose main source of livelihood is others	0.053	−0.068	−0.055	0.224	−0.471**
	(0.087)	(0.195)	(0.159)	(0.156)	(0.216)
Proportion of villages in the district with early childhood education centre	−0.029*	0.005	0.022	0.005	−0.038

	(0.016)	(0.038)	(0.025)	(0.024)	(0.037)
Proportion of villages in the district with kindergarten	0.035*	0.051	0.029	0.046	0.114***
	(0.019)	(0.045)	(0.027)	(0.030)	(0.040)
Proportion of villages in the district with small industry in food and beverages	0.039***	−0.017	−0.024	0.009	0.009
	(0.014)	(0.036)	(0.025)	(0.027)	(0.035)
Proportion of villages in the district with credit for small enterprises	−0.062***	0.046	−0.040	0.023	−0.038
	(0.020)	(0.049)	(0.035)	(0.042)	(0.047)
Proportion of villages in the district with electricity	−0.063	−0.195*	−0.113	0.295***	0.192*
	(0.069)	(0.115)	(0.092)	(0.109)	(0.099)
Proportion of villages in the district located on the coast	−0.050**	−0.045	0.052	−0.014	0.012
	(0.025)	(0.068)	(0.040)	(0.035)	(0.049)
Proportion of villages in the district located in a valley	0.025	0.142	0.037	−0.019	−0.159
	(0.041)	(0.090)	(0.055)	(0.062)	(0.097)
Proportion of villages in the district located on hilly terrain	−0.011	0.051	0.036	0.041	−0.013
	(0.029)	(0.065)	(0.048)	(0.036)	(0.048)
Proportion of villages in the district with easy access to a hospital	−0.026	0.021	−0.015	−0.018	0.039
	(0.022)	(0.052)	(0.037)	(0.037)	(0.053)
Proportion of women aged 15–35 who belong to the labour force	1.780***				
	(0.063)				
Proportion of women aged 15–35 who are employed		1.670***			
		(0.117)			
Proportion of women aged 15–35 who work full-time			1.338***		
			(0.087)		
Proportion of women aged 15–35 who have high-skill job				2.714***	
				(0.045)	
Proportion of women aged 15–35 who work in formal sector					1.059***
					(0.071)
Constant	−6.688***	−4.377***	−2.295***	−1.770***	−2.385***
	(0.375)	(0.748)	(0.727)	(0.537)	(0.636)
Number of observations	545,976	259,091	223,695	223,695	223,695
R squared	0.1359	0.1553	0.1157	0.2590	0.3571

Note: *** 1% significance, ** 5% significance, * 10% significance; estimates are from OLS regressions; robust standard errors clustered at the district level in parentheses.

Source: authors' construction based on Podes (2008, 2011, 2014, 2018) and Sakernas (2007, 2011, 2014, 2018).

Table A4a: Full estimated coefficients, heterogeneous impact by education level

	Lower education group (0–9 years of schooling)				
	LFP (yes = 1)	Employed (yes = 1)	Full-time (yes = 1)	Skilled job (yes = 1)	Formal job (yes = 1)
Proportion of villages in the district with an internet kiosk	−0.013	−0.157	0.130***	−0.188**	−0.101**
	(0.019)	(0.120)	(0.034)	(0.092)	(0.045)
Age	0.147***	0.058***	0.047***	0.006***	0.013***
	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)
Age squared	−0.002***	−0.000***	−0.001***	−0.000*	−0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Education (omitted category: did not finish primary)

Finished primary school (yes = 1)	−0.019***	0.083***	0.088***	0.079***	0.072***
	(0.007)	(0.013)	(0.008)	(0.008)	(0.010)
Finished junior secondary school (yes = 1)	−0.163***	−0.067***	0.185***	0.210***	0.177***
	(0.010)	(0.014)	(0.011)	(0.012)	(0.016)

Household status

Household head (yes = 1)	0.344***	0.290***	0.068***	0.327***	−0.005
	(0.011)	(0.027)	(0.013)	(0.018)	(0.014)
Married (yes = 1)	−0.239***	0.416***	−0.168***	0.050***	−0.576***
	(0.018)	(0.024)	(0.020)	(0.017)	(0.016)
Divorced (yes = 1)	0.222***	0.050*	0.026	−0.131***	−0.081***
	(0.016)	(0.027)	(0.020)	(0.024)	(0.019)
Widowed (yes = 1)	−0.175***	0.192***	−0.089***	−0.090***	−0.202***
	(0.017)	(0.030)	(0.021)	(0.020)	(0.020)
Live in urban areas (yes = 1)	−0.168***	−0.159***	0.343***	−0.056***	0.394***
	(0.013)	(0.020)	(0.013)	(0.012)	(0.017)

District characteristics

Log (mean household per capita spending in district)	0.019	0.264***	−0.025	−0.155**	0.042
	(0.019)	(0.085)	(0.032)	(0.068)	(0.041)
Proportion of villages in the district that send workers overseas	0.032	0.325***	0.044	0.100	0.030
	(0.022)	(0.124)	(0.031)	(0.089)	(0.055)
Proportion of villages in the district that have passable inter-village roads	−0.050	−0.034	0.069	0.323**	0.143
	(0.045)	(0.233)	(0.060)	(0.140)	(0.119)
Proportion of villages in the district whose main source of livelihood is agriculture	0.005	−0.033	−0.015	0.146*	0.041
	(0.027)	(0.115)	(0.042)	(0.088)	(0.049)
Proportion of villages in the district whose main source of livelihood is trade	0.041	0.007	−0.028	0.596***	0.039
	(0.039)	(0.177)	(0.061)	(0.155)	(0.067)
Proportion of villages in the district whose main source of livelihood is services	−0.018	0.058	−0.065	0.443***	−0.023
	(0.033)	(0.156)	(0.051)	(0.130)	(0.062)
Proportion of villages in the district whose main source of livelihood is others	0.013	0.033	0.082	0.448	−0.232
	(0.083)	(0.398)	(0.112)	(0.320)	(0.153)
Proportion of villages in the district with early childhood education centre	0.006	0.081	0.028*	−0.074	−0.030
	(0.011)	(0.063)	(0.016)	(0.046)	(0.029)
Proportion of villages in the district with kindergarten	0.006	0.101	−0.005	−0.063	0.052
	(0.014)	(0.075)	(0.022)	(0.057)	(0.040)
Proportion of villages in the district with small industry in food and beverages	0.007	−0.056	−0.013	0.015	−0.011
	(0.012)	(0.067)	(0.018)	(0.049)	(0.031)
Proportion of villages in the district with credit for small enterprises	−0.039**	0.067	−0.001	0.046	0.008
	(0.016)	(0.080)	(0.025)	(0.059)	(0.034)
Proportion of villages in the district with electricity	−0.060	−0.314	−0.116*	0.300	0.063
	(0.054)	(0.222)	(0.063)	(0.207)	(0.109)
Proportion of villages in the district located on the coast	−0.015	−0.108	0.022	0.089	0.075
	(0.019)	(0.116)	(0.028)	(0.056)	(0.058)
Proportion of villages in the district located in a valley	0.032	0.175	0.020	0.058	−0.134
	(0.034)	(0.146)	(0.038)	(0.129)	(0.083)

Proportion of villages in the district located on hilly terrain	0.007	−0.138	−0.004	0.083	−0.002
	(0.026)	(0.100)	(0.029)	(0.068)	(0.049)
Proportion of villages in the district with easy access to a hospital	−0.002	0.013	0.017	−0.041	−0.004
	(0.018)	(0.088)	(0.027)	(0.061)	(0.052)
Proportion of women aged 15–64 and with 0–9 years of schooling who belong to the labour force	2.224***				
	(0.052)				
Proportion of women aged 15–64 and with 0–9 years of schooling who are employed		1.599***			
		(0.195)			
Proportion of women aged 15–64 and with 0–9 years of schooling who work full-time			1.865***		
			(0.060)		
Proportion of women aged 15–64 and with 0–9 years of schooling who have high-skill job				2.961***	
				(0.053)	
Proportion of women aged 15–64 and with 0–9 years of schooling who work in formal sector					1.884***
					(0.108)
Constant	−3.925***	−4.757***	−1.513***	−1.307	−2.020***
	(0.290)	(1.137)	(0.429)	(1.012)	(0.566)
Number of observations	749,828	389,355	370,974	370,974	370,974
R squared	0.1280	0.2010	0.0796	0.4537	0.2055

Note: *** 1% significance, ** 5% significance, * 10% significance; estimates are from OLS regressions; robust standard errors clustered at the district level in parentheses.

Source: authors' construction based on Podes (2008, 2011, 2014, 2018) and Sakernas (2007, 2011, 2014, 2018).

Table A4b: Full estimated coefficients, heterogeneous impact by education level

	Higher education group (10+ years of schooling)				
	LFP (yes = 1)	Employed (yes = 1)	Full-time (yes = 1)	Skilled job (yes = 1)	Formal job (yes = 1)
Proportion of villages in the district with an internet kiosk	0.070*	−0.008	0.024	0.017	−0.029
	(0.042)	(0.064)	(0.055)	(0.035)	(0.065)
Age	0.145***	0.129***	0.023***	0.011***	−0.032***
	(0.002)	(0.004)	(0.003)	(0.003)	(0.003)
Age squared	−0.002***	−0.001***	−0.000***	−0.000	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Education (omitted category: did not finish primary)					
Finished tertiary degree (yes = 1)	0.794***	0.020	−0.023*	1.030***	1.448***
	(0.013)	(0.014)	(0.012)	(0.012)	(0.023)
Household status					
Household head (yes = 1)	0.103***	0.345***	0.062***	−0.001	0.070***
	(0.029)	(0.030)	(0.019)	(0.020)	(0.019)
Married (yes = 1)	−0.655***	0.333***	−0.230***	−0.065***	−0.438***
	(0.018)	(0.014)	(0.013)	(0.012)	(0.014)
Divorced (yes = 1)	−0.003	0.016	−0.116***	−0.203***	−0.331***
	(0.024)	(0.027)	(0.024)	(0.026)	(0.024)
Widowed (yes = 1)	−0.320***	0.085**	−0.226***	−0.171***	−0.467***
	(0.029)	(0.036)	(0.024)	(0.029)	(0.027)
Live in urban areas (yes = 1)	−0.087***	0.015	0.331***	−0.031***	0.191***

District characteristics					
	(0.011)	(0.016)	(0.013)	(0.010)	(0.014)
Log (mean household per capita spending in district)	0.073**	0.114*	−0.016	0.002	−0.099*
	(0.033)	(0.063)	(0.047)	(0.039)	(0.055)
Proportion of villages in the district that send workers overseas	0.040	0.039	−0.040	0.062	0.031
	(0.042)	(0.073)	(0.057)	(0.049)	(0.072)
Proportion of villages in the district that have passable inter-village roads	0.047	−0.028	−0.026	0.462***	−0.097
	(0.097)	(0.165)	(0.136)	(0.120)	(0.149)
Proportion of villages in the district whose main source of livelihood is agriculture	0.029	0.027	0.108	0.004	−0.045
	(0.058)	(0.117)	(0.071)	(0.060)	(0.075)
Proportion of villages in the district whose main source of livelihood is trade	0.037	−0.003	0.076	−0.056	−0.147
	(0.080)	(0.153)	(0.099)	(0.073)	(0.103)
Proportion of villages in the district whose main source of livelihood is services	0.049	0.169	0.016	−0.121*	−0.161*
	(0.070)	(0.136)	(0.088)	(0.062)	(0.096)
Proportion of villages in the district whose main source of livelihood is others	0.044	−0.333	−0.072	−0.106	−0.422**
	(0.101)	(0.271)	(0.215)	(0.154)	(0.211)
Proportion of villages in the district with early childhood education centre	−0.079***	−0.106**	0.038	−0.050*	−0.042
	(0.027)	(0.049)	(0.033)	(0.029)	(0.038)
Proportion of villages in the district with kindergarten	0.049*	−0.030	0.005	−0.072**	0.050
	(0.029)	(0.052)	(0.037)	(0.036)	(0.044)
Proportion of villages in the district with small industry in food and beverages	0.031	0.045	−0.059*	−0.012	−0.016
	(0.024)	(0.047)	(0.034)	(0.026)	(0.040)
Proportion of villages in the district with credit for small enterprises	−0.026	0.049	0.007	0.033	−0.018
	(0.031)	(0.063)	(0.043)	(0.040)	(0.053)
Proportion of villages in the district with electricity	0.018	−0.129	0.031	−0.009	0.037
	(0.081)	(0.150)	(0.099)	(0.070)	(0.120)
Proportion of villages in the district located on the coast	−0.038	0.022	0.067	−0.072	−0.010
	(0.041)	(0.069)	(0.056)	(0.047)	(0.061)
Proportion of villages in the district located in a valley	0.099**	0.093	0.066	−0.008	−0.143
	(0.049)	(0.101)	(0.066)	(0.082)	(0.091)
Proportion of villages in the district located on hilly terrain	0.027	0.132*	0.031	0.077*	−0.025
	(0.034)	(0.073)	(0.052)	(0.040)	(0.054)
Proportion of villages in the district with easy access to a hospital	−0.041	0.028	0.019	−0.017	0.170***
	(0.038)	(0.069)	(0.048)	(0.038)	(0.063)
Proportion of women aged 15–64 and with 10+ years of schooling who belong to the labour force	0.828***				
	(0.092)				
Proportion of women aged 15–64 and with 10+ years of schooling who are employed		1.002***			
		(0.155)			
Proportion of women aged 15–64 and with 10+ years of schooling who work full-time			0.792***		
			(0.080)		
Proportion of women aged 15–64 and with 10+ years of schooling who have high-skill job				2.206***	

			(0.063)	
Proportion of women aged 15–64 and with 10+ years of schooling who work in formal sector				0.191*
				(0.101)
Constant	−3.836***	−4.209***	−0.415 −1.981***	2.343***
	(0.469)	(0.942)	(0.654) (0.539)	(0.775)
Number of observations	321,442	192,541	168,253 168,253	168,253
R squared	0.1050	0.2005	0.0691 0.2331	0.2238

Note: *** 1% significance, ** 5% significance, * 10% significance; estimates are from OLS regressions; robust standard errors clustered at the district level in parentheses.

Source: authors' construction based on Podes (2008, 2011, 2014, 2018) and Sakernas (2007, 2011, 2014, 2018).

Table A5: Full estimated coefficients, determinants of multilevel internet connectivity

Dependent variable: quintiles of internet connectivity (base outcome: quintile 1)	Quintile 2 (yes = 1)	Quintile 3 (yes = 1)	Quintile 4 (yes = 1)	Quintile 5 (yes = 1)
Log population at district level	0.718*	1.391***	1.956***	1.261*
	(0.372)	(0.512)	(0.619)	(0.721)
Log of mean household expenditure per capita at district level	0.364	−0.047	0.318	1.264*
	(0.303)	(0.399)	(0.477)	(0.682)
Proportion of villages in coastal areas	−1.281**	−1.661*	−3.083**	−5.614***
	(0.617)	(0.888)	(1.233)	(1.554)
Proportion of villages located in a valley	−1.058	−0.298	0.045	−0.608
	(0.648)	(0.872)	(1.171)	(1.808)
Proportion of villages in the district that have passable inter-village roads	0.411	3.220***	3.425**	3.895**
	(0.640)	(1.185)	(1.483)	(1.894)
Proportion of villages in the district whose main source of livelihood is agriculture	−0.064	−2.108**	−3.516***	−6.005***
	(0.618)	(0.896)	(1.059)	(1.371)
Proportion of villages in the district whose main source of livelihood is industry	−13.427	4.144	9.567	12.894
	(10.245)	(9.444)	(9.751)	(9.836)
Proportion of villages in the district whose main source of livelihood is trade	5.112	25.869**	38.889***	40.243***
	(10.465)	(12.550)	(14.005)	(14.111)
Proportion of villages in the district whose main source of livelihood is service	12.695	13.842	18.472	16.737
	(14.740)	(16.930)	(18.200)	(18.312)
Proportion of villages with access to electricity	−1.948*	−7.038***	−14.221***	−24.022***
	(1.084)	(1.538)	(1.772)	(2.480)
Proportion of villages with senior secondary school (SMA)	6.043***	5.505**	3.482	4.637
	(2.058)	(2.609)	(3.272)	(3.619)
Proportion of villages with vocational school (SMK)	7.402*	19.856***	29.709***	36.406***
	(4.298)	(5.151)	(5.750)	(6.217)
Proportion of villages with college	−10.075	−10.764	−7.290	−0.738
	(6.557)	(9.482)	(11.783)	(12.937)
Proportion of villages with permanent market	1.472	2.278*	2.770*	4.483**
	(1.155)	(1.379)	(1.561)	(1.890)
Proportion of villages with co-operatives	1.101	2.910***	5.016***	6.822***
	(0.774)	(0.943)	(1.047)	(1.380)

Proportion of villages with small business credit (KUK)	−0.408	4.778***	5.239***	3.131*
	(1.374)	(1.532)	(1.717)	(1.878)
Proportion of villages with access to international TV channels	1.320**	3.019***	4.320***	4.339***
	(0.651)	(0.847)	(1.048)	(1.151)
Proportion of villages with strong cellular signal	3.650***	6.426***	9.482***	15.193***
	(0.777)	(1.107)	(1.443)	(2.448)
Constant	−12.286***	−13.875**	−21.383***	−28.022***
	(4.522)	(6.212)	(7.149)	(9.492)
Number of observations		2,426,262		
Pseudo R squared		0.5184		

Note: *** 1% significance, ** 5% significance, * 10% significance; robust standard errors clustered at district level in parentheses; estimated using multinomial logit.

Source: authors' construction based on Podes (2008, 2011, 2014, 2018) and Sakernas (2007, 2011, 2014, 2018).

Table A6: Robustness check—impact of internet availability on female labour market outcomes using IPW

	LFP (yes = 1)	Employed (yes = 1)	Full-time (yes = 1)	Skilled job yes = 1)	Formal job (yes = 1)
	(1)	(2)	(3)	(4)	(5)
Internet connectivity (omitted category: 1st quintile)					
Districts with internet connectivity in 2nd quintile (yes = 1)	0.021	−0.014	−0.032	−0.058	0.005
	(0.022)	(0.049)	(0.028)	(0.098)	(0.022)
Districts with internet connectivity in 3rd quintile (yes = 1)	0.043*	0.022	−0.027	−0.060	0.029
	(0.024)	(0.076)	(0.044)	(0.164)	(0.031)
Districts with internet connectivity in 4th quintile (yes = 1)	0.059*	0.044	0.003	0.169	−0.005
	(0.034)	(0.089)	(0.054)	(0.206)	(0.038)
Districts with internet connectivity in 5th quintile (yes = 1)	0.107**	0.117	−0.001	0.226	0.045
	(0.047)	(0.126)	(0.066)	(0.301)	(0.050)
Age	0.132***	0.178***	0.133***	0.479**	−0.127**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age squared	−0.002***	−0.002***	−0.002**	−0.006***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Household status					
Household head (yes = 1)	1.497***	0.295***	0.529***	0.947***	−0.144***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married (yes = 1)	−0.397***	0.482***	−0.230***	0.031***	0.709**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Divorced (yes = 1)	0.567**	4.576***	6.399**	−1.277***	0.139**
	(0.000)	(0.192)	(0.276)	(0.000)	(0.000)
Widowed (yes = 1)	0.020***	4.570**	−0.601***	−3.937***	0.074**
	(0.000)	(0.210)	(0.000)	(0.271)	(0.000)
Education (omitted category: did not finish primary)					
Finished primary school (yes = 1)	0.258***	−0.651***	0.045**	−0.350	−0.260***

	(1)	(2)	(3)	(4)	(5)
	(0.000)	(0.055)	(0.000)	(0.229)	(0.000)
Finished junior secondary school (yes = 1)	0.322***	−4.845***	0.397***	4.615***	−0.094***
	(0.000)	(0.222)	(0.000)	(0.271)	(0.000)
Finished senior secondary school (yes = 1)	0.352***	−5.419***	0.822***	5.500***	1.047**
	(0.000)	(0.222)	(0.000)	(0.271)	(0.000)
Finished tertiary degree (yes = 1)	0.769***	−5.215***	−0.104***	6.898***	2.354**
	(0.000)	(0.222)	(0.000)	(0.271)	(0.000)
Other variables					
Live in urban areas (yes = 1)	−0.850***	−0.818***	−0.589***	0.591***	0.481**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Proportion of villages in the district that send workers overseas	0.048	0.544***	−0.051	1.352**	0.020
	(0.068)	(0.183)	(0.111)	(0.557)	(0.090)
Proportion of villages in the district whose main source of livelihood is trade	0.132	0.122	−0.051	−1.333*	−0.133
	(0.134)	(0.195)	(0.150)	(0.769)	(0.108)
Proportion of villages in the district whose main source of livelihood is services	−0.077	0.447***	−0.179	−1.939***	−0.204**
	(0.051)	(0.168)	(0.115)	(0.609)	(0.085)
Proportion of villages in the district whose main source of livelihood is others	−0.074	−1.074*	−0.032	−2.888	−0.251
	(0.189)	(0.611)	(0.338)	(2.362)	(0.277)
Proportion of villages in the district located on the coast	−0.097	0.294	0.235**	−1.063**	0.037
	(0.102)	(0.204)	(0.096)	(0.496)	(0.072)
Proportion of villages in the district with easy access to a hospital	0.028	0.240	0.260***	0.695**	0.134**
	(0.057)	(0.150)	(0.093)	(0.343)	(0.067)
Proportion of villages with small business credit (KUK)			0.022	−0.209	0.007
			(0.078)	(0.429)	(0.061)
Constant	−1.981***	1.732**	−2.206***	−13.759**	0.159
	(0.505)	(0.237)	(0.076)	(0.779)	(0.312)
Sample size	1,071,271	581,898	539,229	539,229	539,229
R squared	0.1563	0.3920	0.1535	0.6220	0.2444

Note: *** 1% significance, ** 5% significance, * 10% significance; estimates are from OLS regressions, with constant; robust standard errors clustered at the district level in parentheses; sample in Column 2 is conditional on labour force participation; sample in Columns 3–5 is conditional on employment.