Gender Equality in the Labour Market in the Midst of the Covid-19 Pandemic

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Abstract

The COVID-19 pandemic has accelerated the digitalization process in service systems and manufacturing industries in most countries, although at varying speeds. This was triggered by social distancing requirements and other COVID-19-related regulations imposed by governments around the world, including Indonesia. Digital technology is widely regarded as a promising means of promoting gender equality in education, the labor market, access to finance, and health care. This study is aimed at examining whether there are significant differences between female and male workers in the labor market and the digital access they have during the COVID-19 pandemic. The research design used is quantitative. The objects in this study are female and male workers in the province of Bali. In general, the results here confirm indications of increasing gender inequality in Bali. Gender issues are often ignored in gender-related research because technology is believed to be gender-neutral. Male workers have higher productivity than female workers in the labor market. The gender approach argues that technology is not neutral, but dependent on culture. Technology reflects the society that creates it. Access to (and effective use of) technology is affected by a spectrum of exclusions that intersect including gender, ethnicity, age, social class, geography, and disability. The power relations that exist in society determine the enjoyment of the benefits of ICTs, therefore they are not gender-neutral.

Keywords: *ICT, Covid-19, gender equality, labor market*
JEL Classification: J710, J780, J300

INTRODUCTION

Gender equality is not only a fundamental human right but also the key to a prosperous modern economy to delivering sustainable inclusive growth (OECD, 2018). It must be recognized that gender equality is very important to ensure that men and women can fully contribute to the improvement of society and the economy in general. While the world economy has taken several important actions aimed at narrowing the gender gap, much remains to be done given the many worrying signs of a widening digital gender gap and the exacerbated effects that its different components may have in the future. Barriers to access, affordability, lack of education as well as inherent biases and socio-cultural norms limit the ability of women and girls to benefit from the opportunities that digital transformation offers.

In addition, girls' relatively lower educational participation in disciplines that enable them to perform well in the digital world (e.g. science, technology, engineering and mathematics [STEM] and information and communication technology [ICT]), coupled with the limitations of women and girl. The use of digital tools or relatively rarer activities on the platform – e.g. for business purposes – suggest scenarios of potential widening gaps and greater inequality, especially in disadvantaged areas. If one adds to the fact that women receive relatively less financing for their innovative endeavors and are often faced with barriers that limit their professional ambitions (especially in the tech industry), the picture that emerges is far from positive and leads to a vicious cycle that could lead to a widening of the gender digital gap.

The era of digital technology disruption that took place simultaneously with the COVID-19 pandemic resulted in the high use of digital technology in almost all lines of life. When there are restrictions on their space in daily life, people turn to various types of activities by utilizing various digital-based services. Unfortunately, amid the increasing dependence of various elements on information technology and telecommunications (ICT) solutions as they are today, there is a digital inequality that Indonesian women face. Such as the availability of internet access, the degree of digital literacy, and the ability to use technological devices.

Based on data from the National Socio-Economic Survey (Susenas) (2019), internet access for women consistently experienced gaps during the 2016 to 2019 period. In 2016, the difference in female internet users was 7.6% less than men, then shifted to 7.04% in 2017, followed by 6.34% in 2018, and 6.26% in 2019. Inequality also appears in the number of computer users in Indonesia. In 2019, the number of female computer users was only 13.77%, while men reached 15.17% (Prastiwi, 2021).

Women have been severely impacted by the COVID-19 pandemic because they earn less than men and are in jobs that receive little or no social protection. With the decline in economic activity, women are vulnerable to loss of livelihood, especially those who work in micro and small-scale informal enterprises (UN-Women, 2020). The recession associated with the COVID-19 pandemic is often referred to as "shecession", as it has taken a disproportionate toll on women in most countries. Although the pandemic has affected women around the world differently, it has exposed gender bias that was previously ignored (Sorgner, 2021).

Several studies corroborate this argument, including Bertocchi & Dimico (2021) which indicates a higher susceptibility and risk of dying from COVID-19 in black women than in black men or white women. In addition, mothers suffer significantly more job losses than childless men and women (Alon et al., 2021). The working hours of self-employed women decreased more than men in the same profession and this had an impact on their income. This means that self-employed women lose working hours and income at a higher rate. At the same time, they also have to fulfill family responsibilities, including accompanying school children at home, facing gender segregation in industry, and ultimately being more inclined to run a home-based business and work part-time (Reuschke et al., 2021).

The same condition also occurs in Bali. Darmayanti & Budarsa (2021) shows that Balinese women's groups play a very important role in efforts to maintain family economic resilience during the pandemic. They are a solution to the family's economic problems during the pandemic through the activity of

opening food stalls to cover their family's economic needs. Their activities in the public sphere are carried out without leaving their obligations in the domestic sphere.

The role of women in the family economy is undeniable. When women have higher "power" in the family in making decisions, the results in family welfare will be very significant (Setyari, 2013; Setyari et al., 2018). However, culture is often a barrier to the development of women's potential in their role in the family and national economy. From a young age, many women are taught to be submissive and obedient to their male counterparts; and they are less valued than men. This level of awareness that reinforces cultural norms and expectations ensures a continuous cycle of male patriarchy. Cultural processes maintain gender differences that act as barriers that prevent the improvement of girls' and women's education and ultimately reduce the number of women in positions of power, thus leading to small-scale gender equality in male-dominated societies (Joseph, 2012). The study by Yeganeh & May (2011) even shows that after controlling for the influence of socio-economic variables, culture still has important implications for gender inequality. More specifically, it was found that the value dimension of conservatism was associated with a higher level of gender inequality, but that the cultural dimension of autonomy could lead to gender equality. Gender inequalities have been identified in several occupations.

The digital revolution is changing the way humans live, work and relate to one another. The growth and use of information and communication technology (ICT) have the potential to increase access to information and services or enable collective action for social justice. But there is also a risk that this revolution will carve out glaring inequalities in terms of who benefits and whose voice is heard (O'Donnell & Sweetman, 2018). Technology reflects the society that created it. Access to (and effective use of) technology is affected by an intersecting spectrum of exclusions including gender, ethnicity, age, social class, geography, and disability. The power relations that exist in society determine the enjoyment of the benefits of ICT, therefore this technology is not gender-neutral (Gurumurthy, 2004). More recent criticisms point to the dangers of placing technology more important than people and the acceptance of modern technology as a ubiquitous function that provides immediate solutions to development challenges. The gender approach argues that technology is not neutral, but depends on culture. In discussing gender and technology, it should be borne in mind that women have multiple identities – for example class, ethnicity, caste, race, and age – and these influence each other with gender to define women's access to technology. Therefore, strategies for dealing with unequal gender relations need to rely on an understanding of the complex intersections of gender and other social identities.

This research is important because so far there are many opinions stating that the pandemic has become a decreasing gap between female and male workers. This is possible because the ease of digital access makes work more flexible in terms of time and place. Women tend to increase their digital access capabilities. However, no studies are looking at inequality between male and female workers during the COVID-19 pandemic in Bali. This research was conducted to see the level of digital skills equality and conditions in the labor market of male and female workers in Bali.

METHOD

This study is aimed a examine whether there are significant differences between female and male workers in the labor market and the digital access they have during the COVID-19 pandemic. This research was designed using a quantitative approach. The data used is primary data from workers in Bali on. According to BPS data in 2020, the workforce population of Bali from the results of the National Labour Force Survey (SAKERNAS) amounted to 2.43 million households. For this study, samples will be taken using the Slovin formula with a 10% error rate. The results of the calculation obtained the sample number of 99.9 or rounded to 100 respondents minimum. Respondents will be taken purposefully by random sampling according to the proportion of men and women. Based on the Labour Force group recorded working, 1.30 million (or 54%) were men, and the remaining 1.13 million (46%) were women. In the survey, 204 respondents were collected who met with the completeness of answers according to the needs. One hundred and eleven (54%) of them were men and 93 (46%) were women.

To examine the differences in the conditions of female and male workers in the labor market, several indicators are used referring to previous empirical studies (Folbre, 2021; Joseph, 2012; O'Donnell & Sweetman, 2018; Yeganeh & May 2011):

1. Working hours. This indicator refers to the time used to do work, it can be carried out during the day and/or night.
2. Income. This indicator can be in the form of wages/salaries/business income received as a reward for employing job recipients for a job or service that has been and or will be performed, and functions as a guarantee for the continuity of a decent life for humanity and production stated or assessed in the form of money determined according to a job based on an employment agreement.
3. Work productivity. This variable refers to the size of the comparison of the quality and quantity of a workforce in a unit of time to achieve results or work performance effectively and efficiently with the resources used.

The variables used to measure digital access are listed in Table 1.

The analytical tool that will be used is a two-group independent test (Independent sample t-test). The principle of this test is to see the difference in the variation of the two groups of data so that before testing, it must first be known whether the variance is the same (equal variance) or the variance is different (unequal variance).

Table 1. Digital Access Indicator

Category	Variable
Infrastructure	Fixed telephone subscriber
	Mobile cellular subscriber
Affordability	Cellular tariff cost
	Internet tariff cost
	20 hours/month of internet access
Knowledge	literacy school enrolment
Quality	internet bandwidth
	broadband subscriber
Usage	e-health
	e-learning
	e-commerce
	other internet users

Source: https://digitalaccessindex-sdg.gesi.org/digital-access-index/,
https://www.itu.int/itunews/manager/display.asp?lang=en&year=2003&issue=10&ipage=
digitalAccess

To test the impact of the use of technology on income, this study uses the following model:

$$income_i = \beta_0 + \beta_1 T_i + \beta_2 educ_i + \beta_3 age_i + \beta_4 loc_i + e \qquad (1)$$

where *income$_i$* is the log income, T_i is technology usage, *educ$_i$* is average length of study in successful years; age is in years; *loc$_i$* is the place of residence that in this case is distinguished into urban or rural. Sampson (2023) develop an endogenous growth model where differences in technology determine nominal wage variation. However, report by World Economic Forum found, based on data from more than 40 countries, that even when all people, rich and poor, have equal access to the internet, a "digital divide" remains in how they use technology (WEF, 2016). The group of people who fall into the middle to lower income category use technology more to browse or entertainment applications on the internet or just watch movies. Meanwhile, people in the upper middle income group use internet technology for things that are productive, trade, or study.

This indicates that there is an endogeneity issue in the model above. The difficulties that this endogeneity cause for econometric analysis are identical to those which we have already considered, in two contexts: that of omitted variables, and that of errors-in-variables, or measurement error in the X variables. In each of these three cases, OLS is not capable of delivering consistent parameter estimates (Wooldridge, 2013). The solution that can be offered in this case is to use an instrumental variable estimator in two-stage least squares (2SLS).

First stage is used to determining gender as instrumental variables partially correlated with technology usage using linear regression. The model to test gender correlated with technology usage is:

$$T = \pi_0 + \pi_{IV} + \mu \qquad (2)$$

Where:

T   = technology usage (hours)

Π_{IV} = instrumental variables (gender)

In many ways, technology can be seen as having a gendered effect, such as when the relationship between gender and technology is seen as mutually constitutive: technological change is shaped and structured in accordance with societal norms and relations, which are in turn influenced by technological advancements. On the one hand, this implies that the kinds of technologies utilized in various historical, political, and cultural contexts, as well as their design, are products of gender relations and as a result, reflect pre-existing gender disparities. On the other side, technology itself shapes those gender interactions by providing various tools and approaches for labor, leisure, and care (EIGE, 2020).

RESULTS AND DISCUSSION

The survey was conducted on 204 worker respondents, consisting of 111 male workers and 93 female workers. The results of testing on the digital access of male and female workers showed some results that were in line with initial assumptions. The digital access of male workers from various indicators shows a relatively higher number than female workers, but the results are not significantly different, as shown in Table 2.

Table 2. Digital Access Indicator Different Test Results

Group	Obs	Mean	Std. Err.	Std. Dev.	t-stat	Prob t
Infrastructure						
Male	111	3.072072	0.033157	0.34933		
Female	93	3.032258	0.028405	0.273925		
combined	204	3.053922	0.022199	0.317059		
diff		**0.039814**	0.044593		**0.8928**	**0.3730**
Quality						
Male	111	17.21622	0.647986	6.826959		
Female	93	18.22581	1.010826	9.748053		
combined	204	17.67647	0.579785	8.280979		
diff		**-1.00959**	**1.164823**		**-0.8667**	**0.3871**
Affordability						
Male	111	2707658	1719456	1.81E+07		
Female	93	3428808	1873868	1.81E+07		
combined	204	3036417	1264049	1.81E+07		
diff		**-721150**	**2543766**		**-0.2835**	**0.7771**
Usage						
Male	111	6.27027	0.107801	1.135749		
Female	93	6.11828	0.125937	1.214491		
combined	204	6.20098	0.082045	1.171837		
diff		**0.151991**	**0.164793**		**0.9223**	**0.3575**
Knowledge						
Male	111	1.081081	0.026026	0.274198		
Female	93	1.053763	0.023515	0.226773		
combined	204	1.068627	0.017745	0.253442		
diff		**0.027318**	**0.035664**		**0.7660**	**0.4446**

As shown in Table 2, men's infrastructure, use, and knowledge are higher than women's. Globally, men are 21% more likely to be online than women, rising to 52% in the least developed countries (Alliance for Affordable Internet, 2021). A variety of barriers preventing women and girls from going online, including expensive cell phones and data plans, social norms preventing women and girls from going online, concerns about privacy, security, and lack of money. While digital exclusion limits opportunities for women and girls who cannot socialize, it also has wider social and economic consequences that affect everyone. As hundreds of millions of women lose access to the Internet, the world is missing out on the myriad social, cultural, and economic contributions they could make if they had access to the Internet.

The difference in digital access between female and male workers in Bali then has an impact on the difference in productivity between the two. The productivity of male workers is seen to be higher than that of female workers. However, the difference does not look significant, as shown in Table 3.

Table 3. Worker productivity difference test results

Group	Obs	Mean	t-stat	Prob t
Male	111	69.85586		
Female	93	51.04301		
combined	204	61.27941		
diff		**18.81285**	**1.1467**	**0.2529**

This insignificant difference implies the existence of distinctive values in the family. During the Covid-19 pandemic, the instincts of a mother and wife protect and look after family members, so they often take on the role of family manager to ensure that all family members are well and healthy. Not only that, women also have 3 (three) strategic roles while at home, there are: meeting family needs, accompanying their children to study at home, and for women workers they must complete their office work. For Balinese women, they also play an active role in religious and traditional activities. Balinese women are still able to ensure that all their family members are in good condition and healthy during the Covid-19 pandemic. Like women in other regions, they often play a role in assisting their children to study at home, as breadwinners in helping the family's economy, and play an important role in a series of religious activities. Even so, one thing has not changed from the past until now, Balinese women are tough fighters. Balinese women are able to face the Covid-19 pandemic because they are identical with their hardworking nature and don't give up easily. These results are in line with several studies related to gender roles in Bali (Darmayanti & Budarsa, 2021; Saskara & Marhaeni, 2017).

The results for testing the difference in working hours and earnings are shown in Table 4.

Table 4. Worker income and working hours difference test results

Group	Obs	Mean	t-stat	Prob t
Income				
Male	111	3037387		
Female	93	2391105		
combined	204	2742759		
diff		3037387	3.6	0.0593
Working hours				
Male	111	25.46847		
Female	93	19.52688		
combined	204	22.7598		
diff		5.94159	0.5	0.4811

These results show that although the working hours spent by female workers are not significantly different from that of male workers, their income is significantly different. Many women workers in Bali have turned to the informal sector which is vulnerable to changes in income. Test results on instrumental variables, gender indicators have a significant influence on the use of technology. Gender can be used as a variable instrument. First structure shown in Table 5, second structure shown in Table 6.

Table 5. First Stage Least Square Regression Results

Technology Usage	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Gender	6.11828	0.115219	53.1	0.000	5.891093	6.345466
_cons	1.78E-15	0.077795	0	1	-0.15339	0.153394

Previous research also demonstrates that gender can be used to instrument technology use to observe gender disparities in technology utilization (Ono & Zavodny, 2005; Ragasa et al., 2013; Viollaz & Winkler, 2022). The significance of the effect of gender on the use of technology, indicates the difference that defines the usage of technology between men and women. Women tend to use technology for longer hours than men.

Table 6. Second Stage Least Squares Regression Results

Income	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
Technology usage (gender)	-0.28648	0.11491	-2.49	0.01	-0.51171	-0.06125
Education	0.08815	0.02221	3.97	0.00	0.044623	0.131687
Age	0.00976	0.00478	2.04	0.04	0.000397	0.019136
Location	-0.0401	0.11488	-0.35	0.72	-0.26534	0.185006
_cons	13.2355	0.40118	32.9	0.00	12.44918	14.02181

Table 6 strengthen the technology usage (instrumented by gender) effect to the female's workers income. The gender coefficient result as instrumental variable to technology usage is negative, that means female workers earn less than male workers because female workers use less technology than male workers. This result proving us that technology is not gender-neutral also technology usage effects the worker's income and relevant with former studies for technology and gender gap (Goldin et al., 2017). Supported with gender and technology usage differences

former studies, there is a significant effect in gender caused by different usage pattern between female and male workers. Female workers tend to use internet only to communicate, while male workers use the internet mainly for communications, working, and transaction activities. This issue happens because female workers had smaller chance to learn technology usage, affecting their lower skills to maximizing technology. (Akman & Mishra, 2010; Ono & Zavodny, 2005)

Other variables such as Age shows positive coefficient to the income shows that age still matters for a higher income, age often correlated with experiences. The older someone, means higher experiences for them. Supported with years of school positive coefficient, knowledge gained from more higher and advanced school grade is matters to utilizing the internet usage for productivity(Bakker et al., 2002; Bertschek & Niebel, 2016).

CONCLUSION

In general, the results of the research here confirm the indications of increasing gender inequality in Bali. Gender issues are often overlooked in gender-related research because technology is believed to be gender-neutral. Male workers have a higher productivity than female workers in the labor market. The gender approach argues that technology is not neutral, but depends on culture. Technology reflects the society that created it. Access to (and effective use of) technology is affected by an intersecting spectrum of exclusions including gender, ethnicity, age, social class, geography, and disability. The power relations that exist in society determine the enjoyment of the benefits of ICT, therefore this technology is not gender-neutral.

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