

## The Impact of Digital Technology In The Entrepreneur Transition During The Covid-19 Pandemic

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ARTICLE DETAILS	ABSTRACT
<b>Article History</b> Published Online: publisher use only	The Covid-19 pandemic has decreased by 0.41 million people entrepreneurs assisted by permanent workers in Indonesia from 2019 to 2020. Using SAKERNAS Data of August 2019 and 2020, this study uses multinomial logistic regression to estimate the impact of digital technology in the entrepreneurial transition during the Covid-19 pandemic. The results show that digital technology and the internet have a negative and significant effect on the transition from formal to informal entrepreneurship and leaving entrepreneurship. Increasing digital technology and internet for promotional and sales purposes will enable entrepreneurs to survive amid a Covid-19 pandemic. In addition, building information technology infrastructure such as Base Transceiver Station (BTS), especially in rural areas, is necessary to increase internet coverage and encourage business scale-up.
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### 1. Introduction

The Covid-19 pandemic has caused Indonesia's economic growth in 2020 to contract by 0.27 per cent. The pandemic has also increased the number of unemployment by 2.67 million people and the number of poverty to 2.76 million people. Not only had the number increased, but also the depth and severity of poverty as well (BPS, 2020). In addition, the Covid-19 pandemic had a significant impact on entrepreneurs in Indonesia. During the 2020 Covid-19 pandemic, the number of entrepreneurs assisted by permanent workers decreased by 0.41 million people (BPS, 2020). Workers in Indonesia with the status of entrepreneurs/enterprises were 50.29 million people in 2020, with the proportion of own-account worker by 52.04 per cent, entrepreneurs assisted by temporary workers 39.91 per cent, and entrepreneurs assisted by permanent workers 8.05 per cent. The decline in the number of entrepreneurs assisted by permanent workers has also increased the number of informal workers in Indonesia. Entrepreneurs assisted by permanent workers are categorized as formal workers, while own-account worker and entrepreneurs assisted by temporary workers are categorized as informal workers.

Table 1. Entrepreneurs in Indonesia in

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Employer status	2019-2020		
	2019 (million)	2020 (million)	Change (million)
Own-account worker	26.13	26.17	0.04
Employer assisted by temporary worker/unpaid worker	18.94	20.07	1.13
Employer assisted by permanent worker/paid worker	4.46	4.05	-0.41
Total	49.53	50.29	0.76

Source: BPS, 2020

This increase in the informal workforce needs to be anticipated since it could harm workers' rights and sustainable enterprises due to low productivity and limited access to capital (ILO, 2018). Therefore, an increase in the number of formal workers, namely as employee or become entrepreneurs with the assistance of permanent workers is needed. Formal workers have higher wage protection and working conditions (ILO, 2010). An increase in the number of entrepreneurs assisted by permanent workers will increase the formal workforce because these entrepreneurs will absorb employees.

The transition from informal to formal labor is necessary because it will increase welfare (Moeis et al., 2020) and drive economic mobility

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(Dartanto et al., 2020). This means that encouraging the transition of independent entrepreneurs and entrepreneurs assisted by temporary workers to entrepreneurs assisted by permanent workers will increase the number of formal workers, increase the population's welfare, and accelerate economic recovery in Indonesia.

Utilization of the internet and information technology (IT) is one way for business actors to maintain and possibly increase their income. Social restrictions during the Covid-19 pandemic have resulted in limited conventional marketing methods. Online facilities by utilizing digital technology are a promising solution. BPS (2020a) reports on the Impact of Covid-19 on business shows that the number of companies using the internet and IT for marketing has increased by 5,76 per cent during the pandemic. In addition, four of five business actors admit that the use of the internet and IT for online marketing positively affects the sales of their products. The report also stated that companies doing online marketing before the pandemic had 1.14 times higher income than companies that had just started marketing online. Research by Giotopoulos et al. (2017) also mentions that the benefits of ICT in terms of innovation, productivity, internationalization, and growth have been well noted in all companies in general and SMEs in particular.

This study aims to understand the role of digital technology in the entrepreneurial transition during the Covid-19 pandemic. Will digital technology and the internet prevent entrepreneurs assisted by permanent workers from transitioning into entrepreneurs assisted by temporary/unpaid workers or becoming independent entrepreneurs?

### 2. Literature Review

Entrepreneurship is one of the most important forces on shaping change in the economic landscape (Baumol, 1968), whether within the formal economic framework or informally outside the state regulatory system. Entrepreneurship is about involving people in creating new ventures. Verheul et al. (2001) proposed an eclectic theory of entrepreneurship, which provides a broad category of macro and micro factors that determine the level of entrepreneurship. On the demand side, entrepreneurial opportunities are created by industry structure and diversity of demand. Both are determined by economic development, technological development, and international economic integration.

Research on entrepreneurship mostly discusses the transition of informal entrepreneurs to formal entrepreneurs. The explanation for informal enterprises is part of

economic dualism (Lewis, 1954). Firms are informal because they serve different consumers or do not compete with formal firms that are larger, more modern, and unlike other models. In this case, informality may only be a symptom of poverty, and economic growth will increase incomes, demand for formal sector products, and reduce the size of the informal sector. Conventionally, increased outsourcing and subcontracting by large organizations to reduce production costs, coupled with low social protection, has resulted in entrepreneurial ventures as a strategy of survival and last resort (ILO, 2014; Sutter et al., 2019).

On the other hand, informal entrepreneurship can provide several advantages, the most important of which is stimulating the economy and providing employment. By providing employment opportunities, the purchasing power of consumers will increase, both from formal and informal businesses. Therefore, informal entrepreneurship can indirectly boost the economy, even though lower than formal entrepreneurship (Schneider & Enste, 2000). Although informal enterprises dominate businesses in Indonesia and employ a large proportion of the Indonesian workforce, they tend to be less productive than larger formal firms (Berry et al., 2001). Because informal companies are smaller, they tend to be more labor-intensive, use outdated technology, and run less efficiently than large companies.

According to the 15th and 17th International Conferences of Employment Statistics (ICLS) and the definition of the enterprise-based informal sector, informal sector enterprises are defined as small or unregistered private enterprises. Small enterprise refers to the number of workers employed below a certain threshold, determined according to national circumstances. Companies that are not registered under this ICLS definition are the companies that are not registered under national-level laws (e.g., factory or commercial laws, tax or social security laws, professional group regulation laws). Meanwhile, private companies that are not legal entities are defined by ICLS as companies owned by individuals or households who are not legal entities and do not have complete financial records that allow the financial separation of the company's production activities from other activities of the owner (ILO, 2010).

In recommendation No. 204, the ILO guides its members to facilitate the transition of workers and informal economy units into the formal economy and prevent it from becoming informal. The term economic unit in this recommendation refers to units that employ

wage labor, units owned by self-employed individuals or with the assistance of family workers. The informal economy is the main source of livelihood for most of the world's population. However, these workers do not have access to healthcare and a secure income. Many of these workers are locked in a vicious cycle of vulnerability and poverty.

In particular, studies focusing on entrepreneurship in the formal sector (e.g., Kaufmann & Kraay, 2008; Nyström, 2008) found that good institutions, high economic levels, technological development, and progress are positively related to national levels of entrepreneurship. On the other hand, studies focusing on entrepreneurship in countries where the informal sector accounts for a large part of the economy (Naudé, 2009) find a negative relationship. Studies in countries with a higher percentage of formal or informal entrepreneurship show no association at all (Van Stel et al., 2007).

When the economy is at a low stage of development, informal entrepreneurship is common. As the economy grows, it puts pressure on the costs of doing business (higher wages, competition, etc.) and informal enterprises will suffer. As the economy reaches an advanced stage, formal entrepreneurship develops and thus drives up the national level of entrepreneurship. When people are well educated, have higher levels of social security, and earn more income, they are less likely to be involved in the informal economy (Thai & Turkina, 2014). Higher education increases formal entrepreneurship due to higher self-confidence, lower perceived risk, and increases human capital. At the same time, higher education also has a negative effect on informal entrepreneurship as it raises awareness and sensitivity to the possible negative impacts of this kind of activity. The impact of secondary education on formal entrepreneurship is also positive, although in this case, the effect on informal entrepreneurship is not significant. Although secondary education also raises awareness of the potential negative impacts of informal entrepreneurship, this effect is countered by the lack of management skills (Jiménez et al., 2015). Older companies are more likely to be formal (Thai & Turkina, 2014; Williams et al., 2016). Research Babbitt et al. (2015) in Indonesia, informal entrepreneurs who are unmarried, highly educated, doing business in the trade sector, and doing business at home have a higher preference to become a formal entrepreneur.

Improving education and training for entrepreneurs can also raise awareness of the

benefits of formality (ILO, 2021). Research on 300 micro-enterprises in Lahore, Pakistan, by Williams et al. (2016) found a significant relationship between the level of informality and the characteristics of entrepreneurs and companies. The results show that in Lahore, higher levels of formality are associated with women, older age groups, those with higher levels of education and income, and older firms with employees and manufacturing.

Research in Sweden on participation in entrepreneurship, education, and training in senior secondary schools through “learning by doing” will increase opportunities to start a business and increase income (Elert et al., 2015). The transition from informal to formal requires increasing educational attainment in the wider community, support schemes to help entrepreneurs increase income from their businesses, and initiatives to provide easier and cheaper access to bank accounts. All of them correlated significantly with a higher level of formality. Therefore, addressing informality is not just about empowering law enforcement authorities to impose fines and detect business risks. Broad social changes are needed to transition from informal to formal, where higher education significantly affects formal entrepreneurship. Meanwhile, gender has no significant effect on business formality. The population aged 25-34 years has a positive and significant impact on becoming a formal entrepreneur in Pakistan (Williams & Shahid, 2016).

In the current industry 4.0 era, new economic industries and businesses are developing and changing rapidly, mainly due to the widespread Information and Communication Technology (ICT) in organizations. New technologies enable and facilitate various business activities related to the storage, processing, distribution, transmission, and reproduction of information (Ongori et al., 2011). The process of adopting new technologies has been studied from many theoretical perspectives (e.g., Grandón et al., 2011). Oliveira & Martins, (2011), reviewed the literature on technology adoption models, considered the diffusion of innovation theory (Rogers, 1965) and the technology, organization, and environmental framework (Tornatzky, Fleischer, & Chakrabarti, 1990) as the most prominent models that are highly relevant to enterprise-level studies. Both models highlight individual and corporate characteristics associated with technology and organizations as drivers of innovation.

The application of digital technology – also known as digitization – has attracted a great deal of research effort, especially in SME

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entrepreneurship (Giotopoulos et al., 2017; Li et al., 2017). Digital technologies are based on ICT systems that standardize information and enable organizations to rapidly code, store, formalize and distribute ever-growing, increasing diverse knowledge. Over the past two decades, studies have examined how ICT and digital technologies can improve overall performance through increased operational efficiency (e.g., better inventory management) and customer orientation (e.g., more accurate matching of market needs).

Digital technology adoption, defined as the use of computer-based solutions such as smartphone applications, can benefit companies in many ways, such as lower costs, increased revenue, competitive advantage, and opportunities to build new business models (Soluk, Kammerlander, & Darwin, 2021). The adoption of digital technology strengthens the positive impact on family and community support, thereby fostering entrepreneurship (Soluk, Kammerlander, & De Massis, 2021).

The classification of formal and informal entrepreneurs refers to the main job status combined with the company's financial books and the type of work/business institution. In this study, due to the limitations of variables in the National Labor Force Survey (Sakernas, August 2020), formal and informal entrepreneurs were approached with status in the main job. Working residents who are self-employed and trying to be assisted by permanent workers are classified as informal workers. In contrast, residents whose business status is assisted by permanent workers are classified as formal workers. Therefore, formal entrepreneurs in this study are working residents with the main job status trying to be assisted by permanent workers. In contrast, informal entrepreneurs are self-employed and trying to be assisted by non-permanent/unpaid workers.

### 3. Research Methods

The data used in this study is sourced from the August 2019 and 2020 National Labor Force Survey (*Survei Angkatan Kerja Nasional/Sakernas*). The Central Statistics Agency (*Badan Pusat Statistik/BPS*) organizes Sakernas with a coverage of 514 districts/cities in Indonesia. The number of observations for this study was 9,530 individual panels with entrepreneurial status assisted by permanent workers in 2019.

The dependent variable in this study is to remain a formal entrepreneur (reference category), transitioning to being an informal entrepreneur, and leaving entrepreneurship. The determination of this category follows the criteria set by BPS based on the main employment

status. This transition is based on the change in entrepreneurial status from 2019 and 2020 in the same individual. Out of entrepreneurship, if in 2020 the individual is no longer in business status, the individual could turn into an employee/labor, casual worker, family worker, or unemployed. The main variables used in this study are the use of digital technology and the internet. The other independent variables include: 1) age 2) gender 3) education level 4) regional category 5) business field 6) job training 7) job skills.

The variable of using digital technology is based on the use of less human labor and is expressed in a form that can be read and used by a computer or other electronic device. Digital technology in this concept includes computers and other digital technologies which conditions can still be used for work purposes. The category of this variable is using digital technology and not using digital technology (reference category). The variable of internet use is when someone takes the time to access the internet to use or enjoy internet facilities, such as searching for literature/references, searching/sending information/news, communication, e-mail, chatting, or social media for work purposes. The category of this variable is using internet and not using internet (reference category).

The age variable is the last birthday of the respondent. Gender variables are divided into male and female (reference category). The variable level of education based on the highest diploma completed by the respondent is categorized into Low education (junior high school graduates and below) as the reference category, secondary education (high school graduates/vocational high school graduates/equivalent), and higher education (college graduates). The area category where the respondent lives are divided into rural (reference category) and urban. The business field categories are agriculture (reference category), manufacturing (processing industry, construction/building, mining/excavation, electricity, and gas), and services.

The job training variable is an activity that can provide special skills to obtain a certificate. This training variable is categorized into having attended training and not (reference category). The work skill variable is based on the type of worker based on the 2014 KBJI, which adopted ISCO 1988. The unskilled labor category is workers with the type of work in the 1-digit KBJI coded 4, 5, 8, and 9. Unskilled workforces consist of workers with the following types of work: administrative staff, service and sales personnel in shops and markets, machine operators and assemblers, and manual labor and cleaning personnel.

Meanwhile, the skilled workforces category is workers with the type of work in the 1-digit KBJI coded 1, 2, 3, 6, and 7. Skilled workforces consist of jobs with the type of work as legislative officials, high officials and managers, professional staff, technicians and professional assistants, agricultural and livestock business personnel, and processing and craft workers. Skills are categorized into skilled and unskilled workers (reference category).

The inferential analysis used in this study are binomial and multinomial logistic regression analysis. The general form of the multinomial logistic regression model is as follows:

$$\ln\left(\frac{P_j}{P_0}\right) = \beta_j + \sum_k^K \beta_{jk}x_k \dots\dots\dots(1)$$

Where

$j = 1, 2, 3, \dots, j$ ;  $j$  is the number of dependent variable categories

$k = 1, 2, 3, \dots, k$ ;  $k$  is the number of independent variables

general equations in this study are:

$$\ln\left(\frac{P_i}{P_0}\right) = \beta_{j0} + \beta_{j1}digital + \beta_{j2}internet + \beta_{j3}male + \beta_{j4}age + \beta_{j5}secondary\_education + \beta_{j6}high\_education + \beta_{j7}urban + \beta_{j8}manufactur + \beta_{j9}services + \beta_{j10}training + \beta_{j11}skills + \varepsilon_i \dots\dots\dots(2)$$

The parameters in the model can be estimated using the maximum likelihood method. To ensure that the logistical model formed is meaningful, it is necessary to examine the significance of the model, both in its entirety and partially (Gujarati & Porter, 2013). In the entrepreneurial transition, an analysis of the marginal effects will be carried out by presenting information on the effect or effect on each independent variable when other variables are constant on the probability of each category in the logit model. Greene (2000) explains that the marginal effect is different from the coefficient in the logit model, where the influence value of the estimated coefficient is relatively insignificant (minor) compared to the impact of the estimated marginal effect, which tends to be more significant (large).

**4. Results And Discussion**

The characteristics of entrepreneurs assisted by permanent workers in 2019 are shown in Table. 2. Most formal entrepreneurs or those assisted by permanent workers had used digital technology with a percentage of 52.90 per cent. However, the percentage using internet technology is less, which is only 33.99 per cent. Entrepreneurs whom permanent workers assist

in Indonesia are mostly male, live in urban areas, have basic education, work in the agricultural sector, are not skilled workers, and have never received training.

The most widely used digital devices are computers/PCs/laptops with 87.31 users. Entrepreneurs who use smartphones are 24.96 per cent, and those who use other digital tools are 47.43 per cent. The use of digital technology is most widely used by entrepreneurs assisted by permanent workers in the manufacturing business field with a percentage of reaching 47.01 per cent, then in the agricultural sector 41.20 per cent, and the service sector at 11.78 per cent. Likewise, the internet is most widely used in the manufacturing sector, reaching 48.10 per cent. Of the 33.99 per cent of entrepreneurs who use the internet, the majority (97.99 per cent) use it for communication. Entrepreneurs who use the internet for promotional purposes are only 48.75 per cent, for sales through social media as much as 48.13 per cent, and sales through marketplaces as much as 10.62 per cent.

**Table 2. Characteristics of Formal Entrepreneurs in 2019**

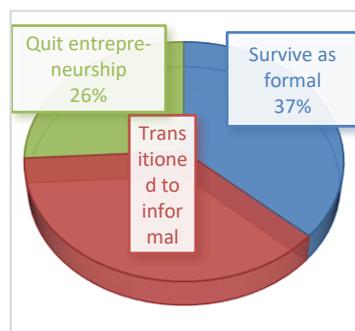
Characteristics		Percentage
Digital	No	47.10
	Yes	52.90
Internet	No	66.01
	Yes	33.99
Gender	Female	20.81
	Male	79.19
Area	Rural	47.16
	Urban	52.84
Education	Low	51.69
	Secondary	34.95
	High	13.36
Industry	Agriculture	55.25
	Manufacture	36.88
	Services	7.87
Training	No	87.73
	Yes	12.27
Skills	No	36.41
	Yes	63.59

Source: Sakernas 2019, processed

In 2020, 37.39 per cent of formal entrepreneurs had transitioned into informal entrepreneurs (self-employed or assisted by temporary/unpaid workers). While entrepreneurs who can survive with formal status are 36.71 per cent, and those who turn into non-entrepreneurs are 25.91 per cent.

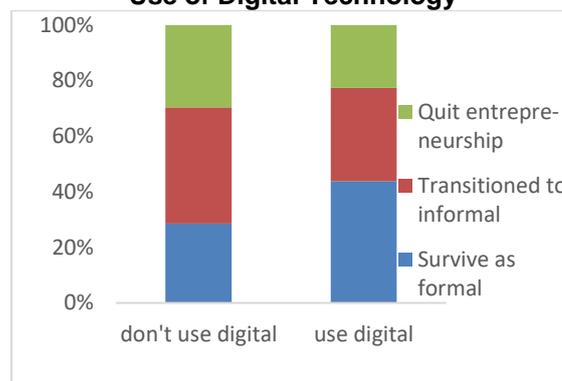
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**Picture 1. Entrepreneurial Transition 2019-2020**



Source: Sakernas 2019, processed

**Picture 2. Entrepreneurial Transition and Use of Digital Technology**



Source: Sakernas 2019, processed

**Table 3. Descriptive of Entrepreneurial Transition in 2020**

Characteristics		Survive as formal	Transitioned to informal	Quit entrepreneurship
Digital	No	36.74	52.62	53.83
	Yes	63.26	47.38	46.17
Internet	No	57	71.65	70.64
	Yes	43	28.35	29.36
Gender	Female	17.44	19.84	26.97
	Male	82.56	80.16	73.03
Area	Rural	39.77	53.05	49.13
	Urban	60.23	46.95	50.87
Education	Low	44.48	57.34	53.75
	Secondary	38.42	33.01	32.85
	High	17.1	9.65	13.41
Industry	Agriculture	48.54	57.42	61.6
	Manufacture	42.82	36.01	29.73
	Services	8.63	6.57	8.67
Training	No	85.85	89.14	88.38
	Yes	14.15	10.86	11.62
Skills	No	37.42	36.77	34.47
	Yes	62.58	63.23	65.53

Source: Sakernas 2019-2020, BPS (processed)

Formal entrepreneurs who transitioned to informal ones have the following characteristics: those who do not use digital technology and the internet, are male, live in rural areas, have low education, work in the agricultural sector, and have never receive training. The entrepreneurs who can survive as formal entrepreneurs mostly use digital technology and live in urban areas. Based on Picture 2, it is shown that the proportion of entrepreneurs who can survive with the help of permanent workers is increasing by using digital technology. Likewise, those who do not use digital technology makes the proportion of who experience the transition to become informal entrepreneurs or turn into non-entrepreneurs greater.

The proportion of entrepreneurs who use digital technology and the internet in urban areas is the highest. Based on the results of the 2018 Village Potential (*Potensi Desa/Podes*) data collection conducted by BPS (2018), not all villages/wards in Indonesia are covered by the internet network. There are 6,759 villages/wards with no internet signal and 9,711 villages/wards with 2G internet signal. As for the telephone network, there are still 21,597 villages/wards with weak signals and 6,759 villages/wards with no telephone signal. There are still gaps in information technology infrastructure between regions in Indonesia.

Based on the multinomial logistic regression analysis results, the variables of digital technology use and internet use have a negative and significant effect on the transition of formal entrepreneurs to informal entrepreneurs and non-entrepreneurs. This means that the use of digital technology and the internet will reduce the chances of formal entrepreneurs transitioning into informal entrepreneurs or leaving entrepreneurship. The use of digital technology and internet will increase the chances of surviving as a formal entrepreneur amid economic shocks during the Covid-19 pandemic.

The control variables that have a significant effect on the entrepreneurial transition assisted by permanent workers during the Covid-19 pandemic are the variables of gender, education, place of residence, and manufacturing business fields. The variables of age, service business field, training, and skills do not affect the entrepreneurial transition during the Covid-19 pandemic. Male entrepreneurs affect the transition from entrepreneurs to informal and non-entrepreneurial transitions. Men are more likely to survive as formal entrepreneurs compared to women.

**Table 4. Marginal Effect of Entrepreneurial Transition in 2020**

Characteristics	Survive as formal	Transitioned to informal	Quit entrepreneurship
Digital	0.083	-0.032***	-0.052***
Internet	0.043	-0.030***	-0.013**
Male	0.101	0.012***	-0.113***
Age	0.001	0.000	-0.002***
Urban	0.055	-0.062***	0.006**
Secondary education	0.037	-0.035***	-0.002
High education	0.068	-0.098***	0.03
Manufactur	0.066	0.023**	-0.089***
Services	0.015	0.001	-0.165
Training	0.016	0.008	-0.023
Skills	0.002	-0.012	0.011
Number of observations	: 9.530		
Chi <sup>2</sup>	: 568.89		
Prob	: 0.000		

Source: Sakernas 2019-2020, BPS (processed)

\*\*\* significant at alpha 1%

\*\* significant at alpha 5%

Moreover, a higher level of entrepreneurship education will increase the chance to survive as a formal entrepreneur amid the Covid-19 pandemic. The results of this study are in line with Williams (2014) dan Babbitt et al. (2015), that the level of education has a positive effect and gives a higher preference to become a higher formal entrepreneur. This is a concern because most of entrepreneurs in Indonesia (51.69 per cent) have low education (junior high school graduates/equivalent and below). The average length of education of each province in Indonesia ranges from 6.69 years to 11.13 years. There is still a wide gap in the average length of education across Indonesia's population. Increasing the average length of education will increase the chances of increasing number of formal entrepreneurs. In addition, educated and skilled workers also increase the likelihood of adopting new technologies in SMEs or entrepreneurs (Giotopoulos et al., 2017).

Entrepreneurs who live in urban areas have less chance of transitioning into informal entrepreneurs. Overall, the majority of entrepreneurs who have transitioned to informal ones live in rural areas. Entrepreneurs working in the manufacturing sector have a lower chance of transitioning into informal entrepreneurs amid a pandemic than entrepreneurs engaged in agricultural sector. That is supported by the fact that digital technology and the internet are most

widely used by entrepreneurs engaged in manufacturing.

Entrepreneurs who have transitioned into informal or out of entrepreneurship are mostly engaged in the agricultural sector. These entrepreneurs in the agricultural sector initially attempted to be assisted by permanent/paid workers. Still, during the pandemic, they were no longer assisted by permanent workers but by unpaid/family workers. This is inseparable from the increasing number of family workers losing their jobs during the Covid-19 pandemic. Workers who lost their jobs due to layoffs, turned into family/unpaid workers who helped in the agricultural sector. In August 2020, there was a decrease in the number of workers/employees by 5.62 million people and an increase in the number of family workers by 3.56 million people.

## 5. Conclusions And Suggestions

This paper examines the role of digital technology in the entrepreneurial transition in Indonesia. Entrepreneurs in Indonesia are dominated by independent entrepreneurs and entrepreneurs assisted by temporary workers, while the proportion of entrepreneurs assisted by permanent workers is only 8.01 per cent. In the 2020 Covid-19 pandemic, 37.39 per cent of formal entrepreneurs experienced the transition to informal entrepreneurs, and there were as many as 25.91 per cent left entrepreneurship.

The main finding of this study is that the use of digital technology and the internet has a significant effect in reducing the opportunity for entrepreneurs to experience a transition during the Covid-19 pandemic. The use of digital technology and the internet will prevent formal entrepreneurs from transitioning into informal entrepreneurs or leaving entrepreneurship. The control variables that have a negative effect on the entrepreneurial transition are male gender, urban residence, education level, and manufacturing business field.

One way to prevent the transition or decline of formal entrepreneurs into informal entrepreneurs is by increasing the use of digital technology and the internet in business activities. With most entrepreneurs having low education, training on digital and internet for entrepreneurs is essential, especially for production, promotion, and transaction purposes, considering the internet use by entrepreneurs in Indonesia is mainly used as a means of communication only. In addition, because most entrepreneurs in Indonesia are located in rural areas, and internet usage is still very low, increasing the internet network coverage in Indonesia is necessary.

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Development of technology infrastructure such as Base Transceiver Stations (BTS) is also needed to expand the internet network, especially in rural areas. In addition, increasing education (average length of schooling/RLS), especially in provinces with RLS below the national average is important to encourage the transition of entrepreneurs to be assisted by permanent workers. Increasing the school participation rate, especially at the upper education level, can be done by implementing a free education program or increasing social assistance coverage in the education sector from 40 per cent to the bottom 60 per cent of the population expenditure group.

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