



Potential and Challenges for Private Sector to Lead *Warung* Digitalization in Indonesia

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ABSTRACT

The purpose of this study is to understand the potential and challenges for the private sector to lead the process of warung digitalization to improve their business. MSMEs such as warung in Indonesia have been a tool for income generation for many people. Though the number of warungs that have leveled up is still minimum—most of their business are stagnant. This has resulted in their constant welfare situation. The approach used in this study is qualitative with the literature review method. This study finds that there is potential for the private sector to be the trailblazer in the digitalization process because of their characteristics and traits, the other actors' situation, and the profit to be gained. Though, there are some challenges to be addressed, such as the lack of supporting infrastructure, minimal regulatory framework, and the need to train the warung owner.

Keywords: Digitalization; warung; private sector; potential; challenges; empowerment

ABSTRAK

Tujuan dari studi ini adalah untuk memahami potensi dan tantangan bagi sektor swasta untuk memelopori proses dari digitalisasi warung untuk meningkatkan bisnis mereka. UMKM seperti warung di Indonesia telah menjadi alat untuk menghasilkan pendapatan bagi banyak orang. Pun demikian, jumlah warung yang bisa berkembang jumlahnya masih minimal—kebanyakan bisnis mereka stagnan. Hal ini menyebabkan tidak terjadi perubahan terhadap tingkat kesejahteraan mereka. Pendekatan yang dilakukan dalam studi ini adalah secara kualitatif dengan metode kajian literatur. Studi ini menemukan bahwa ada beberapa potensi bagi sektor swasta untuk menjadi inisiator atas proses digitalisasi terhadap warung di Indonesia. Hal ini didukung oleh karakteristik dan sifat dari sektor swasta, situasi dari pihak-pihak lainnya, dan keuntungan yang dapat diraih oleh sektor swasta. Walaupun begitu, ada beberapa tantangan yang perlu diselesaikan seperti kurangnya infrastruktur

pendukung, kerangka kerja peraturan yang masih minimal, serta kebutuhan untuk melatih para pemilik warung terlebih dahulu.

Kata kunci: *Digitalisasi; warung; sektor swasta; potensi; tantangan; pemberdayaan*

1. INTRODUCTION

Medium, Small, and Micro Enterprises (MSMEs) have been a major backbone of the Indonesian economy (Ali et al., 2018; Bouwman et al., 2019; Kumarasinghe & Haleem, 2020). According to the Indonesian Central Bureau of Statistics (BPS) the number of MSMEs in Indonesia in 2020 had reached 64,2 million. These MSMEs have contributed to the creation of 97% of jobs and made up 99% of the total business sector in Indonesia (Weda, 2019). Many Indonesians are devoting their livelihood to MSMEs, and their welfare depends on the income from the MSME's venture. If the MSMEs in Indonesia are growing well, then the welfare of the people will also increase. Vice versa, if the MSMEs could not compete within the market, it would be hard for the people to increase their standard of living and welfare.

On another note, one form of MSMEs that is quite popular in Indonesia is '*warung*' or a retail kiosk. According to the Ministry of Cooperation and Micro and Small Enterprises, Teten Masduki, the number of *warung* in Indonesia had reached 3,5 million in 2020 (Humas Kementerian Koperasi dan UKM Republik Indonesia, 2020). Thus, *warung* made up a total of 5,45% of Indonesia's total number of MSMEs. Though the portion is small in making up the total of MSMEs in Indonesia, based on the data from Nielsen in 2018, 72% of the Indonesian people are transacting and buying their daily needs through *warung* (Burhan, 2019). Not only that people depend on their income from *warung*, but also to fulfill their needs. Hence, *warung* has a major place in Indonesian people's life, especially so for the middle-to-lower income people.

Along with the advancement of technology, there has been a shift in people's buying patterns and methods of exchanging goods from doing it directly face-to-face to doing it through the internet (Bollweg et al., 2020). This is also the case in Indonesia, where people are adopting this method of transacting through online channels more so than ever. All the goods that could be purchased at *warung* before are now available online, even with much better assortments and variations. *Warung* market share is declining because of this shift (Handarkho et al., 2017). Because of this, *warung* could not use the same method as before. Some changes have to be done in order for *warung* to survive within this business climate. *Warung* should and could use the technology to enhance its business strategy so that they are not left behind and able to compete with other businesses that have entered the digital world (Eller et al., 2020; Handarkho et al., 2017; Kumarasinghe & Haleem, 2020).

By using technology, *warung* could change its business scheme into something more relevant and adaptable to today's situation (Bouwman et al., 2019). *Warung* could use the advanced technology that is available today to connect, communicate, and collaborate to create a platform that can bring together all the relevant stakeholders within the market to gain bigger access and share via the digital network (Eller et al., 2020; Hervé et al., 2020; Kumarasinghe & Haleem, 2020).

The market share of *warung* within the market will then increase because of the rise in visibility among their consumer.

Though, even with the existence of technology, it will not suddenly make all *warung* adopt it immediately. That is happening because not all *warung* owners came from the same background, ability, and capability to implement and adopt those new technologies. It is all the more so for the owner who came from low to middle-income families in which their familiarity with advanced technology might be very low. Not only that, but also because most *warung* could not afford to invest their earnings in new technology adoption (Bollweg et al., 2020; Isensee et al., 2020). Most of the time, they use their earnings to fulfill their daily needs. Moreover, the margin that came from selling goods in *warung* is modest. This will make it difficult for *warung* to invest in technology independently. Even so, *warung* owners already know the importance and the benefit that came from integrating technology into their business (Bollweg et al., 2020). However, it is proven to be very difficult for them to do just that.

Seeing that situation, many private companies and big businesses see that there are many opportunities arising from that situation that not only could help *warung* solve their problem, but also profitable for them. There are several companies that try to tackle these issues in Indonesia, such as Bukalapak, Tokopedia, *Warung Pintar*, Grab, etc. Broadly speaking, what this company does to help improve the capacity of *warung* to compete with other businesses in the market is by shorting the long supply chain or distribution process through the method of digitally procuring goods (Adiwibowo et al., 2019; Burhan, 2019; Septina et al., 2019, p. 171; Suliswanto & Rofik, 2019, p. 39; Wiliandri, 2020, p. 73). In general, they are trying to digitalize *warung* (Adiwibowo et al., 2019).

In general, digitalization will help connect *warung* to the producer or principal so they can buy the goods directly (Bukalapak, 2019), making the supply chain process much simpler. Cutting the supply chain process will make the price of goods cheaper. It will then help *warung* compete with other big or more modern retailers with the advantage of cheap prices. With this, it will level the competition between *warung* and those other big or modern retailers. This program is one of the examples of how the private sector could empower the people—in this case, *warung*. The *warung* owner will have more capacity and power to compete with the other actors in the market (Soegoto et al., 2020, p. 5). They will no longer be subject to harsh market competition. This digitalization will level the competition. In the end, the outcome hoped to occur through this program is the increase in *warung* owner income because of the increase in sales (Eller et al., 2020). When their income is increased, they can fulfill their other needs that have not been realized. This, in turn, will increase their welfare and standard of living.

This study is necessary because this could be used as a case of how the private sector could help the development process. Those companies stated before are profit-oriented businesses, yet they are also trying to help *warung* through digitalization. If they do accomplish its digitalization pursuit, it could be a success story that might be implemented elsewhere and maybe for some other development project. This study could then contribute to the advancement of community development theory. Jim Ife (2012), one of the prominent scholars in welfare study, defined *empowerment* as a social work designed to help the powerless people have more power and control over their life. In the past, the common practice for the role of community

empowerment was laid to rest on the government or the civil society organization. Ife (2012, p. 92-93) argued that the private sector might bear some responsibility in the realization of human rights—in this context is to have more power over their life—but not in its entirety. This digitalization process is similar to what Ife (2012) argued. Though the private sector does not entirely have an obligation to empower the people, because of the progression of society, they might inadvertently take the role of empowering the community and people.

2. METHOD

The design of this study uses a qualitative approach. The purpose of this study is not to test a hypothesis or find causation. Rather, this study would like to gather information regarding the digitalization process through the private sector's help. By having that information, it could be then used to help give the private sector the perspective to engage in this matter. The private sector then could make a conclusion based on this information, whether the potential to digitalize *warung* outweighs the challenge that needs to be managed. Thus, through this study, hopefully, there could be an understanding of the prospect for the private sector in leading the digitalization process for *warung* in Indonesia.

The method that will be used in this study is the literature review. According to Baumeister & Leary (1997, p.311), a literature review could bridge the scattered information regarding one concept or theory and compile them to form knowledge or understanding. By using this method, this study would like to collect all the relevant information and try to understand the potential of digitalization by the private sector for *warung* in Indonesia. Baumeister & Leary (1997, p.312) also stated that one of the goals of a literature review is to derive some conclusions based on the existing conceptualizations. In line with that, this study also set its goal towards the same direction of getting a conclusion about the private sector's potential in digitalization.

This study uses relevant documents such as articles, textbooks, journals, and reports with information and knowledge regarding the digitalization process of *warung* in Indonesia. After collecting the data needed, this study uses the 'between-study literature analysis' framework coined by Onwuegbuzie et al. (2012, p.5). This framework of analysis is done by involving comparison and finding contrast from two or more sources. This is done by comparing the multiple components from one works to the multiple components from other works (Onwuegbuzie et al., 2012).

3. RESULTS AND DISCUSSION

The discussion and analysis in this study will focus on the potential, challenges, and strategy for the private sector to lead the digitalization process. However, the debate on private sector participation in technological advancement has been long examined (Batley et al., 2015; Cankar, 2013; Gatautis, 2008; Ward, 2006; West & Lu, 2009). Thus, the object of focus in this study is the context of Indonesia's technological climate and situation, especially the context related to the *warung* digitalization process. It would be erroneous to assume that the discourse of private sector participation in technological advancement could be directly applied to the Indonesian context.

Potential

Several factors can lead to the private sector's potential to lead the process of *warung* digitalization in Indonesia, which are: (1) the characteristics and traits of the private sector; (2) other actors' positions and conditions; and (3) profit to be gained from *warung* digitalization.

Private Sector Characteristic and Trait

There have been many saying that the private sector characteristic and trait is more suitable for the pursuit of growth. Compared to the public sector, the private sector has been dubbed more entrepreneurial and innovative (West & Lu, 2009, p. 1). This trait is related to the situation in which the private sector is inside, wherein they are pressured to stay competitive by continuously incorporating new technology to improve productivity and efficiency (Bonina & Cordella, 2010, p. 12; West & Lu, 2009, p. 1). Besides, in order to make sure that the profit is obtained, the private sector often uses methods such as cost reduction, checking on return of investment, and managerial goal investment through accountability and transparency (Bonina & Cordella, 2010, p. 15). To boost productivity, the private sector often employs technology innovation. In many aspects of technology innovation, the private sector outperformed the public sector (West & Lu, 2009, p. 18).

In terms of efficiency, there has been no one size fits all solution in which model of ownership (private, public, or mixed) could give the most efficiency (Batley et al., 2015, p. 4). However, there are differences in efficiency for particular services and specific contexts (Batley et al., 2015, p. 4). Batley et al. (2015) argue that the efficiency of service delivery depends on factors such as competition, regulation, autonomy in staffing, remuneration, and financial and legal institutions. When it comes to technology, the private sector often precedes the government side. The competition is sterner in the market, passing the regulation about technology has been lengthy (Marchant, 2011), the remuneration in the private sector is much loftier and thus leads to better recruits (Boyne et al., 1999, p. 413), and many private sector's institutional frameworks are designed to be more agile for new development and big shifts in operation (Mergel et al., 2018, p. 2).

On another note, the private sector has been proven to be impacting many sectors of development, such as economic growth, job creation, poverty reduction and inclusive growth, and service delivery (International Finance Corporation, 2011, p. 7). In terms of economic growth, the private sector helps boost this through its capabilities to increase higher productivity and knowledge transfer International Finance Corporation (2011). By boosting productivity, it will improve the number of output and will, in turn, rotate the economic gear faster. It is making the economy grow faster. As it has been explained before, in terms of knowledge, the private sector maintains a cutting-edge technology to keep productivity raising. Regarding job creation, the private sector contributes a major portion of jobs—which in Indonesia contributes up to 97% of all jobs (Kementerian Ketenagakerjaan RI, 2021). Through the jobs that are created by the private sector, in turn, it will lead to a decreasing amount of poverty since people's income is raised (International Finance Corporation, 2011, p.10). Another important role of the private sector in development is its capability to deliver services that are also essential for people when the government cannot (International Finance Corporation, 2011, p.11).

If we bring this situation to the context of the digitalization of *warung* in Indonesia, the circumstances are similar. The private sector is leading in digital technology acquisition in Indonesia. The private company has a share in Research & Development (R&D) expenditures in Indonesia, reaching to the number total of 26 percent (Asian Development Bank, 2020, p. xxi). Though it might seem that R&D expenditures in Indonesia are led by the public sector, the public adoption rate nationwide is very low (Asian Development Bank, 2020, p. xxi). Within the private sector, the number of companies that adopt advanced technology and digitally-enabled tools is only 6 percent, 30 percent of them adopt an intermediate level of technology, and the rest (64 percent) are still using basic tools for their operation (Asian Development Bank, 2020, p. xxiii). The number depicted is caused by the knowledge transfer from the government—through their R&D expenditure—is not spread evenly to all the regions in Indonesia. Only a handful of the companies had already used the advanced technology. Because of that, that handful of companies has become the front-runner of technology adoption in Indonesia, and it is all the more so in the case of *warung* digitalization.

Other Actors' Position and Condition

The potential for the private sector is exacerbated by other actors' positions and conditions within the innovation area—especially in the process *warung* digitalization—which is less favorable compared to theirs. Several actors could be engaged to realize *warung* digitalization. Those actors include the government or the public sector and also the civil society organization.

a) Government

The government cares about creating public value more than cutting costs (Bonina & Cordella, 2010, p. 16). More often than not, the government sees terms based on its cost-effectiveness analysis rather than cost-benefit analysis (Bonina & Cordella, 2010, p. 16). As long as it reaches the goal, sometimes the government pays a much heftier price. Meanwhile, the private sector has been basing its operation on cutting costs for more profit while also trying to achieve its goal. There is less pressure on the government to cut costs. So, in terms of efficiency, the private sector might lead in this aspect.

One of the other major constraints hindering innovation and technology adoption in Indonesia is the politics of social policy (Dickens, 2016, p. 155). Politician takes a major part in the process of policy formulation. Social policy is by and large influenced by the political decisions on whether the policy is accepted and budgeted or not (Dickens, 2016). The reason that is happening is that the politicians represent the people that vote for them, and the people have their own needs to be met (Dickens, 2016). Those politicians are obligated to fulfill their needs—so they can be voted for again later (Dickens, 2016). If the political situation does not favor technological progress, then the technological process would not be carried out by the current administration. However, if it were favorable to the current public, then the politician would swing their decision into making technological progress as their agenda for development.

Also, another reason why the adoption rate within the public sector is slower compared to the private sector is because of the staffing and the remuneration for the human resources that will handle the technology. The government is hindered by its policy to absorb as many workers as possible with the current budget to reduce the number of unemployment—at least that is the case in Indonesia (Allen, 2016, p. 30; Dariyanto, 2017). This led to the problem of skillful human resources in the public sector (Cribb et al., 2017, p. 12). The majority of people with a degree

related to technology opt-out out and pick the private sector as their workplace because, most often, they offer wages multiple times what the public sector can offer. This situation has caused more and more skillful human resources away from the public sector (Cribb et al., 2017). Moreover, Choi et al. (2020) find that better employment could cause a higher innovative performance in a company—especially in a technological start-up company. Consequently, this is one of the reasons why technological companies outperformed their public sector counterparts.

b) Civil Society Organization (CSO)

CSO could be one of the front-runners in the process of *warung* digitalization. Alas, they should have several requirements, such as motivation, funding, and skills. In terms of motivation, CSO motivation has always been to give social impact to the people. The *warung* digitalization process could align with their goals because it helps the *warung* adapt to the current situation and grow. So, there is no problem regarding their motivation to do the *warung* digitalization.

Next, in terms of funding for digitalization, there might be some issues in this aspect (Nugroho, 2007, p. 129). The source of funding for CSO often dictates their program and objective. Ideally, the CSO could match their own objective with the funding available, or better yet, fund their own operation through fund-raising (Nugroho, 2007). Nevertheless, those CSO who could not afford their own operation is tied down by the donor or funder goal. So, the independence of the CSO is hindered (Nugroho, 2007, p. 126). Moreover, the current trends of the donor and funder objectives nowadays are very similar. They are mostly giving their fund to handle the issues of global warming and climate change (Huebner & Milne, 2012, p. 174). Therefore, there will be very limited funding to tackle the issue of *warung* digitalization.

Though, the CSO has one strength that is beneficial for the process of *warung* digitalization, which is experience. Many CSO focuses their operation on capacity building or community development (Nugroho, 2007, p. 132). So, CSO is relatively more experienced in dealing with training and empowering people to be more skillful. However, the problem arises when the subject for the training needs specific or certain competencies such as technology adoption and digitalization. This training would require extensive knowledge of advanced technology. Except, many CSO are not equipped with technological expertise. Most of the CSOs are more an expert on social issues.

If we look again, the potential for the CSO to lead the digitalization process might be a challenge. The trends for donors right now are focusing on climate change issues, so securing funding for this goal might be tough. Also, the number of CSOs with the skill set for doing digitalization of *warung* is very limited. Because of those reasons, it would be very hard for this task to be done by the CSO.

Profit to be gained

Overall, if Indonesia were to fully embrace digitalization, it could reap an estimated amount of USD 150 billion or 10 percent of the total GDP by 2025 (Das et al., 2016). Through digitalization, it would increase participation that would lead to increased productivity across the sector (Das et al., 2016, p. 4). As it was mentioned before, *warung* has been using the conventional method. By integrating *warung* with digital tools, it would boost their productivity. For so long, *warung* has been a source of income for many people in Indonesia, but they could not grow, and their size is rarely leveled up (Ascarya & Rahmawati, 2018; Maksum et al., 2020).

Warung's existence in Indonesia is ubiquitous. It could even reach the deepest part of the region in Indonesia. At the same time, this has been a challenge for modern retailers to do. There is an untapped market for digitalization that could benefit not only the warung owner but also the digitalization. There are 2 (two) services that the private sector could provide in order to help warung but also get a profit while doing it. Those are by cutting the middlemen in the supply chain process, and the second is by selling a virtual product that is unavailable in the deepest part of the region.

The current business model of supply-chain process in *warung* is similar to the figure 1. below.

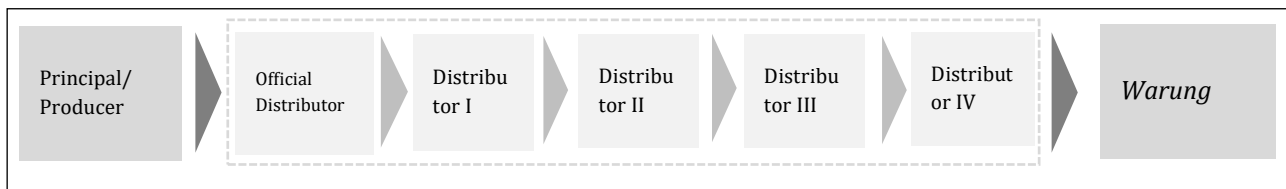


Figure 1: Conventional Supply Chain Process for *Warung*

Source: Kodong et al. (2015), edited.

But, with digitalization, it could cut the supply-chain to be shorter so that *warung* could directly connected to the principal. The process is illustrated similar to the figure 2.



Figure 2: Conventional Supply Chain Process for *Warung*

Source: Kodong et al. (2015), edited.

With the help of a private company as the digitalization, warung could get their goods directly from the principal. At the same time, they could also profit by participating as the only mediator between the principal and warung. Before, warung would get the goods from the distributor, which it might have been the fourth hand that the goods have been exchanged Kodong et al. (2015). This will, in turn, make the goods more expensive because every intermediary also tries to get a profit by making some margin Kodong et al. (2015). Nevertheless, with the help of digitalization, warung could get a better deal and cheaper price Kodong et al. (2015). Moreover, if the private company could strike a deal with the principal, they could even lower the prices so that they could sell at the same prices as the principal Kodong et al. (2015). It is possible because the untapped opportunity from networks of warung all around Indonesia is plenty. So, through this method, the private company could reap benefits while also helping warung grow. The growth of warung could also be beneficial for the private company because the more they grow, the more businesses it would bring to the private company. Hence, it would become a spiral of growth where both parties could gain benefits.

Lastly, the private company could also profit by selling virtual and digital financial products. The virtual and digital financial product market in some Indonesian regions is still vacant. There are many opportunities in this market because the market is still vacant. One of the problems in Indonesia is that the number of unbanked people reached 51.1 percent, mostly living in rural areas (World Bank, 2017 in Batunanggar, 2019; Wiradji, 2021). This led those people to have yet to

become part of the financial inclusion (Wiradji, 2021). One of the reasons why those people are unbanked is because the bank building or infrastructure is not supported to reach the deepest part of the rural. So that people might have to go to the city to access the bank. However, with the network of warung that has been built, it could reach the unbanked people. To access the financial services, the unbanked people do not have to register. They could go to the nearest warung. By selling those services and products, the private company could also gain profit from it.

Those are the 3 (three) potential for the private sector to lead in the process of warung digitalization, which are: (1) private sector advantageous characteristics and traits; (2) the problem with other actors' conditions, especially regarding the technological adoption; and (3) profit to be gained from doing the digitalization. Though, there is potential for this. Several problems might need to be addressed so that the digitalization effort could run well.

Challenges

Though there are several challenges that private companies must tackle to succeed in the *warung* digitalization process. Those challenges include: (1) the supporting infrastructure (Eller et al., 2020; Fauzi & Sheng, 2020); (2) regulation and policy ; (3) training the *warung* owner (Eller et al., 2020; Fauzi & Sheng, 2020); (4) weak financing mechanism(Fauzi & Sheng, 2020); and (5) motivation to keep making a social impact.

The Supporting Infrastructure

In order to begin the digitalization process, several technologies are expected. The first one is the platform to connect the *warung* with the digital world (Bukalapak, 2019). After that, *warung* will need a tool for them to go on the platform (Bukalapak, 2019). The last is the internet connection for *warung* to access the digital platform (Bukalapak, 2019). It would be impossible for the private company to provide all of them altogether. The first one might be plausible to provide. Nevertheless, the second and the third will require extensive investment. That is why the market might need to mature enough before penetrating them with the digitalization process.

Seeing the condition right now, it might seem already mature enough. Most people already have internet access, and most already own a smartphone. According to DataReportal (2021, in Kemp, 2021), the number of internet users in Indonesia in January 2021 had reached 202,6 million users, or 73,7 percent of the total population. Of those 202,6 million users, 98,2 percent use a smartphone to connect to the internet (DataReportal, 2021 in Kemp, 2021), which means that almost 30 percent of the population does not have access to the internet nor access to a smartphone. However, this might not be the case in rural and village areas (Capri, 2017). Further intervention is needed in those special cases. It could be through government partnership to provide the infrastructure needed or by partnering with the financial institution so that the *warung* owner could loan some capital for technological investment.

Regulatory Environment

One of the challenges for the realization of the digital ecosystem in MSMEs—especially warung—is the lack of information on the relevant rule within the regulatory and legal framework that deals with digital technology (Capri, 2017, p. 20). Several regulations are needed to ensure a conducive environment for the digital economy that is still progressing to be passed, including consumer protection, data privacy, cybersecurity, and e-payments (Aprilianti & Dina, 2021). The current legal framework could not accommodate the need of today's digital situation.

In the case of privacy, data breaches have been common practices in Indonesia, and the law has not been fully regulated yet (Aprilianti & Dina, 2021). Consumer protection in case of scams or fraud is also underregulated. There have been many cases of scams, and they are still pervasive in Indonesia's digital environment because of the lack of measures to prevent their operation or punish the offender accordingly. Although, the financial regulation for e-payment has seen a better light in which the legal framework has been clearly established and regulated (Aprilianti & Dina, 2021).

Training the *warung* owner

Not only that the success of *warung* digitalization needs the technological resources as its foundation, but it also requires the human capital that will operate the technology (Eller et al., 2020). Without the human that operates the machine, the digitalization process would not sustain in the longer term. That is why, after the technology is available for use, the human capital must also be prepared (Eller et al., 2020). That way, when the tools are ready, the process could begin without having to be assisted continuously.

Many *warung* owners have limited knowledge about finance, strategy, or any business acumen that is essential for being an entrepreneur (Maksum et al., 2020, p. 6). The Financial Services Authority (OJK) reported that only 30 percent of the total population in Indonesia is financially literate (Batunanggar, 2019, p. 4). Thus, most of them are running their business with instinct. Moreover, they might not have much experience in handling technology. Because of that, most *warung* owners would require assistance and training during the digitalization process (Batunanggar, 2019, p. 2). This might require the private company that would invest in this sector to be committed. Meaning, the private company will need to prepare the trainer and also the means to support the training process. This part is one of the keys to successful digital integration.

4. CONCLUSION

Based on the discussion, it could be concluded that in the case of *warung* digitalization, the private sector is leading in terms of its potential to be the front-runner. Its characteristics and trait fit really well with the condition of the digital technology ecosystem in Indonesia. The other actor does not have the same capacity and capability to succeed in this process as much as the private sector. Moreover, not only that but there is an opportunity and profit to be gained from being the front-runner of the digitalization process. However, there are several challenges on the road ahead, such as the lack of supporting infrastructure, especially in rural and village areas, minimum regulatory framework, and also the need to train *warung* owners. Nevertheless, to tackle all of those issues, the private sector could team up with the other actor, such as the government or the CSO, who have some capacity to help the process.

Furthermore, the *warung* owner could feel the impact of *warung* digitalization. *Warung* that has been digitalized got an additional income of up to 40% compared to those that are not digitalized (Warung Pintar, 2022). The average increase of *warung* owner income whose *warung* has been digitalized reached Rp 4 million per month (Warung Pintar, 2022). The increase has been caused by the efficiency of the inventory and distribution processes, which in turn helped the business grow up to 500% after the digitalization took place (Warung Pintar, 2022).

There are several limitations of this paper. Although it gives some information regarding the potential and challenges of warung digitalization, this paper could not give an accurate cost and benefit analysis. As a result, this paper would recommend conducting a quantitative study to analyze the cost and benefit of the warung digitalization for the private sector. This paper could then be used as a foundation for the cost that should be considered and the potential that could be reaped as a profit.

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