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**Submission date:** 26-Apr-2023 09:35PM (UTC+0700)

**Submission ID:** 2076157430

**File name:** Lampiran\_II-20.pdf (354.32K)

**Word count:** 5119

**Character count:** 28593

## **Barriers of digital transformation: The case of small indigenous businesses in Indonesia during COVID-19**

### **Research-in-progress**

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### **Abstract**

An indigenous craft, Batik permeates the lives of Indonesians and represents national pride. Often established as a female-headed family enterprise, small Batik businesses in Indonesia's Madura region are handed down from one generation to another and operate on a traditional brick-and-mortar retail channel, relying heavily on tourism to attract customers. COVID-19 lockdown has crippled that trading chain. E-commerce trading through digital platforms, such as e-marketplaces and social media, seems to be the only viable solution. A study of 12 small Batik businesses in Madura prior to, and after, the COVID-19 lockdown suggests significant barriers exist to digitally transform these businesses. Besides the usual environment, and socio-economic barriers to digital innovation such as illiteracy and lack of digital skills, reliance on younger family members and community support, indigeneity aspects such as ecological condition, socio-culture value and local wisdom, have been found to deter the transformation. We discuss the implications of these findings and suggest avenues for further exploration.

**Keywords** small business, indigenous, digital transformation, e-commerce, IS adoption.

## 1 Introduction

Indonesia has an ambitious plan to become Southeast Asia's leading digital economies through e-commerce, which has an accelerated growth in the past few years. The uptake and increase of e-commerce activity, however, is being driven mostly by large enterprises and e-marketplaces, such as Shopee, Lazada, Bukalapak, and Tokopedia. Small businesses' contribution is still very low; only 9.6 million or 17.1 percent of the total 56 million enterprises are practicing e-commerce, with the majority of them being early adopters (Kominfo 2019; Rahayu and Day 2017). Large businesses often have the advantage of being able to secure the funding for their digital transformation investment. Unfortunately, this is not the case with small indigenous businesses.

Like Micro Small Medium Enterprises (MSMEs), indigenous small businesses also lack resources, knowledge and skills. Unlike MSMEs, small indigenous businesses also operate within a multifaceted indigeneity landscape shaped by their cultural heritage, historical practices and traditional values (Colbourne 2017). Indigenous microenterprises are generally owned and run by family members (Noor and Nordin 2012) and are typically located in remote and isolated regions with very limited exposure to market (Hairuddin et al. 2012). Given such indigeneity aspects, studying small indigenous business is interesting in its own right and likely provides rich insights, especially when it deals with unrevealing the challenges and barriers of digital transformation uptake which might not be apparent for non-indigenous enterprises. For instance, while indigenous business owners are aware that the current digital economy is creating opportunities; they are not willing to adopt a particular digital platform to support their business due to their negative attitude and mental model toward digitalisation influenced by their local values (Ibrahim 2013; Trauntschnig 2020).

This research in progress presents the initial findings of a research project, which investigates how the adoption of digital platforms (e.g. Social media, e-commerce or e-business) among Batik artisans in Madura has resulted in specific business changes (e.g. enhancing customer experience, streamlining operations or creating new business models). It specifically discusses barriers and challenges these businesses face in adopting digital platforms prior to COVID-19, as well as the implications following the adoption. Small Batik artisan business is considered a suitable case of indigenous business because Batik making tasks are highly influenced by cultural values; the management and operations of the companies are also constrained by socio-cultural norms, such as prohibition, sanction, traditional lore, familial obligations and local beliefs. For example Batik *Gentong*, the most artistic, and luxurious Batik fabric, is only made in Madura using ancient jars passed down from generation to generation. It takes about 6 months to a year to produce a Batik *Gentong* sheet and involves ancient mystical cosmology and rituals during the making process.

The other reason which makes Batik artisans in Madura a fruitful case is that their indigeneities could present distinctive barriers to digital technologies uptake which are not apparent for other non-Batik businesses. For instance, the Batik artisans' interest in reaching a wider market by selling their Batik online, especially during COVID-19, is being hampered by their fear that the digital platform could foster piracy causing cultural value erosion as well losing their intellectual property rights. Further, Batik enterprises in Madura are predominantly managed by women who have lower social-cultural status, community standing, and education than their male counterparts, all of which could become significant impediments for embracing digital technologies. All these suggest that the indigeneity aspects of Batik artisans can be a source of barriers to their uptake of digital technology as a new business strategy, especially in response to the COVID-19 Pandemic.

## 2 Relevant Literature

As digital transformation can bring long-term efficiency and productivity gains (Chuang et al. 2019), it is not surprising that this topic has been extensively investigated in the context of both mid and large-sized businesses (Chanias et al. 2019) and SMEs to understand the complexity involved (Jeansson and Bredmar 2019), determining factors (Ulas 2019), and practical approaches to foster successful process change (Garzoni et al. 2020). Research on digital transformation of small business has also delved into barriers and challenges encountered, including taking different approaches to classify barriers to digital transformation among SMEs, such as ecosystem (Ebert and Duarte 2018), external or internal (Kane et al. 2015), organisation and consumer (Peillon and Dubruc 2019) related factors. In the context of indigenous business, a significant link between the indigeneity aspects and barriers to digital transformation has also been reported: managerial negative attitude toward digitalisation (Ibrahim 2013); top management's reluctance to change (Trauntschnig 2020); fear of cultural erosion (Noor and Nordin 2012); and preserving tradition approaches in operation, production and marketing

management (Ismail et al. 2019). Some studies also suggest that digital transformation can be possibly delayed in indigenous small businesses due to impediments arising from their indigeneity, such as socio-cultural issues, ideology, clashes of local belief or cultural norms, language, lack of education and financial support (Li et al. 2018; Loosemore and Denny-Smith 2016).

Despite the plethora of study in this area, few have been directed to examining small indigenous businesses. A notable exception is Winarsih et al. (2021), who provided a digital transformation framework for sustainability but offer limited insights on the barriers encountered during the digital transformation process, especially by small indigenous businesses surviving during the pandemic. The occurrence of COVID-19 has given rise to the necessity of understanding the challenges small indigenous businesses face in their attempt to adopt digital platforms due to lack of promotional alternatives (Rutashoby and Jaensson 2004), and absence of market intelligence (Shah and Patel 2017). The urgency to trade online is even more critical for seasonal businesses, like Batik retailing, that rely heavily on tourists visits (Makyao 2013), and have a variable demand over a short period due to change in taste, interest and regulation (Shah and Patel 2017). This paper documents the initial findings of a research project on the uptake of digital technology and e-commerce among small Batik artisans in Madura, Indonesia. It reports the barriers and challenges these indigenous small businesses encountered in their adoption of digital platforms as a part of the digital transformation processes. As this research started prior to COVID-19, we also examined the implications of this unprecedented event.

### 3 Research Approach

We commenced our overall study in January, 2020, prior to the pandemic lockdown in Indonesia. While the overall study has a much bigger scope, as illustrated in Figure 1, this paper only reports the preliminary findings on the use of digital platforms along with the key barriers and challenges encountered in incorporating digital platforms in Batik artisans' businesses.

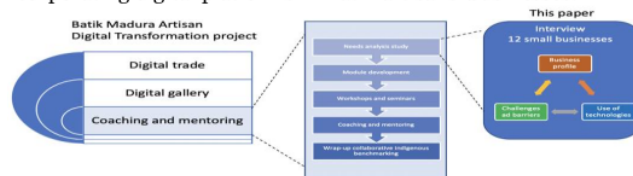


Figure 1: Overview of Digital Transformation project

The lack of information relating to the plights of Batik artisans in participating in the digital ecosystem led us to adopting a qualitative inductive approach to collect in-depth information (Yin 2009; 2013). Two rounds of data collection were undertaken: the first took place at several Batik artisans' workshops in February 2020 prior to the COVID-19 pandemic and the second in July 2020 over telephone after COVID-19 pandemic emerged. Twelve small Batik artisans businesses from Madura Island were identified and invited to take part in the study. We used a semi-structured interview protocol comprising 26 questions for the first interview, prior to COVID-19 pandemic and 15 questions for the second interview, after COVID-19 pandemic.

In analysing the interview transcripts, we focused on the digital platforms used, the challenges and barriers faced during adoption, including those due to the COVID-19 pandemic. We adopted Chuang et al. (2019) conception as a framework to understand the challenges and barriers, including environmental and organisational related issues that affected digital platform adoption. Environmental barriers refer to external constraints, such as current system, institution and network, which suppress the innovation process; and organisation barriers are issues that affect their innovation performance. A qualitative data analysis was conducted involving multiple stages of iterative readings of the interview transcripts and related documents, thematic coding and interpreting the emerging key issues. A spreadsheet was created to record these key emerging issues, which were subsequently grouped into common themes.

## 4 Results

### 4.1 Overview of the small Batik businesses

Batik making businesses in Madura are predominantly an ancestral business, handed down from generation to generation with all family members contributing jointly to the making and trading

process. As can be seen from Table 1, only three out of twelve Batik business owners are male. Our investigation also revealed the owners are often talented artisans, but most are illiterate and have little formal education. The lack of education often is closely related to the socio-cultural condition and gender inequality facing women, who make up the majority of family Batik business owners and are shouldering domestic household and childcare roles.

Batik Owner	Age	Sex	Education*)	Internet (hr/day)	E-mail	E-banking	Soc. Med	Sales in 2020 (pcs)		
								Jan	Apr	July
1	42	F	J	5	Yes	Yes	Yes	500	22	70
2	55	F	N/A	0	N/A	N/A	N/A	200	30	30
3	56	F	N/A	0	N/A	N/A	N/A	250	50	30
4	56	F	N/A	1	N/A	N/A	N/A	250	0	20
5	44	F	P	2	N/A	N/A	N/A	250	25	25
6	30	M	U	15	Yes	Yes	Yes	250	50	50
7	35	M	S	10	Yes	Yes	Yes	600	25	15
8	50	F	N/A	0	N/A	N/A	N/A	300	50	30
9	56	F	N/A	0	N/A	N/A	N/A	250	15	25
10	54	M	N/A	0	N/A	N/A	N/A	250	50	25
11	60	F	N/A	0	N/A	N/A	N/A	300	25	50
12	41	F	J	8	Yes	Yes	Yes	200	50	50

\*Education: P= Primary School J= Junior high School S=Senior high school U=Univ.

Table 1. Profile of small businesses owner interviewed

#### 4.2 Use of Digital Platforms (DPs) - before and after the pandemic

Seven Business Owners (BOs), who did not use DPs, explained that, they were more comfortable selling their products on the physical stores as they had regular customers. These were often the type of BOs who supplied Batik for bulk customers, such as schools, offices and sub-agencies. They also had relatives working as migrant workers who were keen to help promote and sell Batik outside Madura or even to overseas markets. A concern raised in regard to not using DPs was the fear that their Batik creation would be illegally copied. Table 2 shows DPs used for businesses prior to and after the COVID-19 pandemic. Only five BOs used DPs to support their business and marketing activities. This finding poses no surprise and could be attributed to the education level of the seven BOs who had little formal education. Five BOs who adopted DPs, used Whatsapp as their primary applications, followed by Facebook, and two prominent Indonesian-based marketplaces: Bukalapak and Tokopedia. Whatsapp was a choice due to its user-friendly features as the following explanation testifies:

*"It is simple and easy to use and not complicated. Unlike others, they have too many features and make me confused" [BO12]*

DPs	Prior Covid-19 pandemic	After COVID-19 pandemic
Whatsapp	BO1; BO5; BO6; BO7; BO12	BO1; BO2; BO3; BO4; BO5; BO6; BO7; BO8; BO9; BO10; BO12
Facebook	BO1; BO6; BO7	BO1; BO3; BO6; BO7;
Bukalapak	BO1; BO5; BO6; BO7; BO12	BO1; BO4; BO5; BO6; BO7; BO8; B10; B12
Tokopedia	BO6	BO6
eBay	-	BO6
N/A	BO2; BO3; BO4; BO8; BO9; BO10; BO11	BO11

Table 2. DP applications used by Businesses Owner (BO) before and during pandemic

As can be seen in Table 2, almost all (11 out of 12) BOs used DPs to market and sell their product. Only one, BO11, did not make any attempt to use DP. When queried, the BO said that she wasn't aware of such technology. Further, she claimed that lack of support as a reason for not using the technology:

*"I have no idea how to sell my Batik online, I'd prefer selling Batik directly and get cash, as I do not have a bank account. Besides, I have no one to help manage online selling. One of my sons who has the skill and could help with online stuffs choose his career in military" [BO11]*

One (BO6) attempted to use an international marketplace, eBay, to expand his business to a global market as he was also not satisfied with current sales in Indonesia that has decreased during the pandemic. BO6 is relatively young and well educated compared to the others. Another important finding emerging from the analysis is how the BO-adopters used the DPs. In the first round of data collection or before the pandemic, the BO-adopters generally used DPs in promoting and selling their Batik and most of the processes (taking photos, upload and reply comments) were undertaken by their children who were digital native. Some BOs did this a little more seriously by asking their neighbours to promote the product using various DPs with profit-sharing agreements. It was surprising to note that among five BO-adopters, only two seriously used DP to expand their market and gained more sales. In contrast, most of the BO-adopters used DP in addition to their conventional strategy as the main channel, including agent-based distribution system, personal selling, physical store and word-of-mouth. According to these BOs, their aim was just to have online presence and they still relied heavily on conventional channels:

*"Yes we have used [DPs], but we feel more comfortable promoting and selling our Batik directly because our customers can see and try it directly. Also the Batik photos taken using phone camera were less artistic than the real one" [BO12]*

#### 4.3 Barriers and challenges - before and after pandemic

The BOs were also asked about the difficulties or anything that had prevented them from using any DPs for their business prior and after COVID-19 pandemic. By using Chuang et al. (2019), we grouped the findings into seven related barrier dimensions to DPs use. Since the Batik artisans were considered as indigenous businesses, we identified distinctive barriers rooted in their indigeneity which might be not apparent for non-indigenous enterprises as summarised in Table 3.

Dimension	Pre COVID-19 Pandemic	During Pandemic COVID-19
System	Limited bank account and e-banking ownership; low level of education and IT literacy; reluctant to access IT-based training; age-related reason.	Low level of education and IT literacy; concern about piracy and fraud security; additional DP cost; distrust DP and limited online activities.
Institution	Limited understanding on DP and its benefits; some BOs view DPs not user friendly; limited support from experts.	absence of government supports to foster digital transformation due to shifting focus on COVID-19 relief program; lack of skills on digital marketing;
Network	Conventional marketing e.g. word of mouth through neighbours and relatives and reliance on sub-agencies to sell batik outside Madura.	Lack of capability to form alliances and network in the digital environment.
Structure	Run Batik as Family or ancestral business.	Run Batik as Family or ancestral business.
Culture	Cash payment culture; traditional batik making methods and fear that modern technology could erode cultural value, quality and originality; production based on order and only keeps a few for samples; unfavourable socio-cultural norms that disadvantage women	Similar with barriers found pre-COVID-19.
Leadership	Lack motivation to learn new technology including DPs	Distrusting DP for selling Batik

Dimension	Pre COVID-19 Pandemic	During Pandemic COVID-19
Resource	limited staffs with IT skills; IT investment is not a priority	Declining sales revenue; IT investment is not a priority
Indegeneity	Adherence to guidelines of respected public figures i.e. Kyai (Cleric) and Klebun (village leader); restriction to produce particular Batik outside Madura; conservative accounting practices based on family ties and high mutual trust; consider physical market or store as a place for connectivity and socialisation; strong migration tradition that can be a channel for selling Batik outside Madura or overseas; reliance on selling Batik in their village as cultural tourism region; psychological trait; social structure which places women status lower than men.	Similar to barriers found pre-COVID-19; the polarisation of views on the prohibition of online payment as part of online business

*Table 3. Key barriers and challenges to DPs adoption before and during pandemic*

Table 3 reveals that, the key barrier for BOs to adopt DP was lack of digital knowledge and skills due to their low literacy level (see also Table 1). Another reason frequently mentioned during interviews included not knowing how to use or difficult to use DP; not urgently needed; added operational cost. Our analysis also indicated that the BOs had limited access to the internet and e-marketplaces, and was not conversant with e-commerce operations. All these conditions seem to discourage and prevent them from using DPs for supporting their business. Compared with the BO-adopters, most of them have a higher education background and some had adopted the DPs before the pandemic. The other key barrier and challenge was that most businesses encountered difficulties and technical problems in using the existing DPs. The possible sources of this difficulty was the absence of technical support and assistance from experts or other parties on how to use, adopt or harness DPs for supporting their business. The other source of technical problems is the design of some DPs which may not be user-friendly. Our investigation indicated that most of non BO-adopters mentioned that they had difficulties in using DPs and gave up out frustration:

*"I gave up after trying [DP x] several times using my mobile phone." [BO10]*

Table 3 also shows issues identified in the first round of data collection (e.g. low level of education and IT literacy, unfavourable socio-cultural values, and fear of merchandise being pirated), were also present in the second round. This implies that, although most of the BOs have taken efforts to adopt DPs in response to the COVID-19, they still encountered difficulties in using and optimising the DPs as new marketing and selling channels. As a result, there was no significant increase in sales after using the DPs during the pandemic; some even experienced sales decline (see Table 1). The analysis also found new concerns raised by the BOs after they started using the DPs following the closure of their physical stores. For example, some BOs who still had no e-bank account on their own felt that they were busier and had additional work to do after using DPs. They had to borrow their relatives and neighbours accounts for handling customer payments. Accordingly, they had to make more frequent contact with their relatives and neighbours and sometimes felt uncomfortable:

*"I feel busier now [after using a DP for selling Batik]. As I don't have a bank account, I have to borrow my relative's account [to handle customer payment] and I need to contact him very often to check payment and that makes me tired"[BO3]*

Some barriers such as poor digital readiness and unfamiliarity with DPs continued to exist after COVID-19 pandemic. We also identified emerging issues after adopting the DPs, potentially could be barriers or even add cost to their business. For instance, a potential threat on online data protection & security was one of the emerging barriers. This was because many BOs still had not registered e-banking accounts and the activities associated with of adopting the DPs (e.g., setting up accounts, updating and responding to customers) was not done by themselves.

Our analysis also identified a number of distinctive social and cultural traits associated with the indigeneity and locality of Madura people that are likely responsible for the slow uptake, or even



impeding, the adoption of DPs among Batik artisans. The most apparent is the ecological condition of Madura Island with unfertile land for agriculture, resulting in many Madura people becoming migrant workers and "expatriates". A notable tradition among them is *Toron*, i.e. people visiting Madura regularly, such as relatives of Madura residents on special occasions or during religious festivals (e.g. Eid, Hajj and Prophet Month). For Batik artisans, they benefited from this tradition as a channel for selling Batik outside Madura or overseas without possessing or using DPs. Another indigeneity example is that Batik business is mostly family owned enterprises that are handed down from one generation to the next, a custom influenced by a strong collectivism spirit called '*Sataretanan*'. With such strong family ties and close kinships, a Batik artisan can obtain business capital or even loan without interest and any collateral. This tradition is a likely contributing factor to the low ownership rate of bank account or e-banking practice among Batik artisans.

Another interesting finding in regard to indigeneity is the adherence of Madura people to the guidelines of respected public figures such as *Kyai* (Cleric) and *Klebun* (village leader) in all aspects that directly and indirectly influence their decision to adopt, or not to adopt, any DP. In particular, the influence of this tradition toward the use of DP was found to be a significant event before and after COVID-19 pandemic. For instance, the *Fatwa* (religious advice) from *Kyai* about the prohibition of taking interest rate has been the main consideration for many BOs not having an account from a conventional bank (non-*syariah* bank) or using its financial services, such as money transfer, remittance and loan. Such prohibition stands starkly as an insurmountable obstacle to doing business online, especially with the coming of digital payment services managed by conventional banks, as an integral part of e-business infrastructure. The tussle between being progressive (i.e. receptive to change) and maintaining a cultural practice has also resulted in the polarisation of views among the religious leaders. This finding further demonstrates the impact of indigeneity on digital transformation among Madura Batik artisans.

## 5 Conclusion

The shift in strategy among small indigenous Batik businesses in Madura after the COVID-19 pandemic might be expected; the difficulties and challenges some of them face in their attempt to move their business online extend beyond the conventional issues linked to indigeneity of Madura Island and its people, such as ecological condition, adhering heavily to *Kyai* and *Klebun* and socio culture values. The barriers small indigenous Batik businesses have to grapple with are not confined to their digital transformation journey. The problems surfacing after the online migration process point to several unexpected fallouts, such as the need to utilize a relative's bank account to collect payments, fear that the digital platform can propagate the piracy causing cultural value erosion as well as endangering intellectual property, and the lack of face-to-face interpersonal interactions to assure customers the quality of the product that could only be appreciated through physical touch-and-feel. These socio-cultural impediments endemic to small indigenous Batik artisans could undermine the confidence these businesses have on the long-term viability of online trading. Ultimately, it might mean the erosion of their faith in transferring their businesses to a digital platform.

Our preliminary findings have highlighted that DPs, while useful in supporting business owners in online marketing and selling, have also created problems requiring deeper considerations and further probing. Many BOs that had gone through the digital transformation process are still unable to gainfully benefit from its outcomes. Though preliminary, our findings have far reaching implications both for theory and practice. From a theoretical perspective, this study shows that the framework suggested by Chuang et al. (2019), while useful, needs to include element endemic to local customs and culture when analysing barriers and challenges to digital technology uptake by small indigenous business. Our findings on the distinctive characteristics of indigeneity and locality of small indigenous business have opened a new dimension to understanding barriers to digital transformation in an indigenous context. Therefore, this study has extended Chuang et al.'s (2019) framework by adding an indigeneity dimension, a feature not apparent to non-indigenous businesses.

From a practice and policy viewpoint, our pilot study has informed us that digital transformation is not restricted to the successful implementation of a digital trading platform. The operations subsequent to the establishment of online trading need to be fully understood so the impacts generated by the transformation could be managed in a sustainable manner. Thus, the findings of this study can be used to guide the development of appropriate support programs to help small indigenous businesses overcome the barriers and challenges of digital transformation. For example, an important component in the digital transformation of Batik artisans in Madura is to involve respected public figures, such as *Kyai* (Cleric) and *Klebun* (village leader), as collaborators in all support programs. Future studies on digital transformation of indigenous businesses should not ignore these socio-cultural imperatives.



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