

Spatial Distribution On The Search For
Economic Externalities
Acquisition In Rural Industry Clustering: A
Study Of Emerging Batik
Industry Clusters In Lagging Regions of
Wonosobo Regency and
Purworejo Regency, Indonesia

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Spatial Distribution on the search for economic externalities acquisition in rural industry clustering: A study of emerging batik industry clusters in lagging regions of Wonosobo Regency and Purworejo Regency, Indonesia

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Abstract. Compared to advanced countries, industrial clustering phenomena in developing countries have experienced multifaceted forms and different directions. When the former have featured robustness and predictability of cluster performance, the latter has been struggling with messy institutional support for business continuation. Cluster existence in developing countries lacks capabilities to establish economic externalities of industrial agglomeration due to poor inter-industry linkages and business cooperation. In Indonesia context, the emergence of rural industry clustering addresses intriguing explorations on its resilience in coping with the uncondusive business environment. This paper is aimed at examining the experience of the emerging batik industry clusters in lagging regions in response to a variety of obstacles in physical, social, economic, and institutional aspects. By using a sequential explanatory mixed-methods design, the study focuses on the formation of inter-industry linkages and business cooperation in the local batik industry clusters. Spatial distribution was analyzed using GIS. The preliminary conclusion suggests that the practice of rural industry clustering has merely demonstrated a trial-and-error opportunistic behaviour rather than a well-organised business milieu. The local government intervention to cluster formation has served as a temporary solution for small-and-medium enterprises development by utilising local resources and empowering village communities. For the long-term, such action may jeopardise the management of rural economies into ineffective burdens instead of promoting cluster competitiveness better.

Keywords: *Industrial clustering, spatial distribution, GIS*

1. Introduction

As a global phenomenon, cluster buzzwords have neither come up with theoretical generalisation nor empirical practicality in a convergence [1–3]. Recent literature discussions have found two theoretical mainstreams, namely Marshallian industrial district type [4,5] versus Porterian business cluster type [5–7], with all of their derivatives. The former type highlights a location-specific feature of economic agglomeration which suggests the beneficial factors of high-skilled labour pooling, supporting suppliers and ancillary services of specialised inputs, shared infrastructure, and knowledge spillovers [4,8,9]. On the contrary, the latter type necessitates inter-industry linkages of related and supporting firms of similar



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products and services, and collaborative interconnectedness of triple helix institutions: private firms, government agencies, and R&D institutions [6,7,10]. Key differences between these two include definite geographical boundaries [7,11–13], scope and scale of business linkages [14–18], persistent business environment [5,11,12,19–23], the embeddedness of local knowledge and technical skills [15,17,18,24–30], modes of innovation delivery [16,24,26,30–39], and forms of cooperation and competition [30,40–45].

On the empirical ground, there is a huge variety of cluster implementation around the world. In the advanced countries, clustered firms have experienced a strong industrial structure, a free-and-open market competition, vibrant inter-firm cooperation, the presence of high-quality infrastructure support, and sound policy governance. In the case of Danish clusters, for example, the traditional manufacturing industrial sectors, i.e., knitwear and clothing and wood and furniture, the export-oriented local clusters in peripheral counties of Ringkøbing and Viborg could grow rapidly due to combined factors of strong inter-firm linkages bounded within a strong tradition of entrepreneurship and flexible specialisation of craft family business, a well-developed infrastructure support, and a common practice of co-existent competitive and cooperative governance [46]. Another example has shown that investment in well-connected infrastructures such as railroads, freeways, and wireless broadband is essential to open up rural agricultural areas to be integrated into the regional innovation system in fostering the green technology clusters in California (US), North Jutland (Denmark), Wales (UK), and Norway [47]. In an advanced technology cluster such as biotechnology clusters in Sweden, Denmark, and Scotland, strong relations between triple helix institutions, i.e., the pharmaceutical industry, research universities, and the government bodies, have played a key role in fostering innovation and technology policy necessary to proliferate investments in problem-based research, knowledge transfer, and high skilled labour supply. The existing institutional framework could have managed commercially feasible intellectual property rights (IPRs) to meet growing market demand [48]. All these cases are associated with the emergence of the persistent business environment which enables individual firms and clusters in the advanced countries to establish higher value-adding activities by accumulating knowledge transfer and innovation through both formal and informal institutions [49].

Compared to advanced countries, industrial clustering phenomena in developing countries have experienced multifaceted forms and different directions. When the former have featured robustness and predictability of cluster performance, the latter has been struggling with messy institutional support for business continuation. Cluster practices in developing countries heavily depend on social networks and structure through which the formation of the institutional framework of the co-located firms derived. As exemplified by agribusiness cluster in Chile, [42] found that social proximity built from trust and interpersonal relationships has facilitated inter-firm marketing cooperation in trade fairs and commercial missions. However, such social capital engagement does not always work for cluster development in different contextual settings. In Malaysia, a policy-driven cluster to promote Multimedia Super Corridor composed of the agglomeration of information and communication technology (ICT) firms and related institutions in Cyberjaya has failed to benefit from informal interactions of tacit knowledge transfer in order to build the so-called localised business atmosphere necessary to connecting cluster activities with international market [50]. In contrast, the intensified social relations could impede further productivity and innovation within the cluster. Referring to Cibaduyut footwear industry in Bandung City, Indonesia, [51] found that over-reliance on internalised knowledge sharing resulted from social ties has led to cluster reluctance to further innovativeness. Proactiveness and risk-taking behaviour of the few (leading) firms have been a reliable source for product imitation and innovations. Surprisingly, several universities locate nearby have no connections with the cluster, creating a missing link between the industry and R&D institutions. Such circumstance reflects that clusters in developing countries tend to show a highly differentiated institutional framework in which the political economy governance of the government, private sector, civil society organisations, and related stakeholders has determined particular business culture where the clusters emerge, develop, and achieve maturity [52,53].

Regardless of differences in conceptual foundations and practical outcomes, there is a common understanding of the expected attractiveness of both industrial district and cluster approaches: gaining the benefits of economic externalities resulted from agglomeration effect. As a key driver of industrial and territorial development, there are two types of economic externalities, i.e., tradeable and non-

tradeable ones. The former constitutes pecuniary effects of buyer-supplier transactions, a division of labour, local branding, and product competitiveness while the second type concerns with the common pool resources utilisation of knowledge spillovers and shared facilities and infrastructures [4,8,16]. However, the effectiveness of these types of economic externalities to the economy remains debatable and sometimes raises controversies among scholars. This paper attempts to fill in the gaps of the current discussions by addressing the issue of institutional framework importance on supporting their efficacies. Taking case studies of batik industry clusters in Wonosobo Regency and Purworejo Regency, both in Central Java Province, Indonesia, this paper aimed at examining the experience of the emerging batik industry clusters in lagging regions in response to a variety of obstacles in physical, social, economic, and institutional aspects. The paper organisation consists of (1) introductory section to explain a short research background; (2) methods and data collection section to depict the completed research approach and instrumentation; (3) results and discussions section to elaborate analytical findings on spatial distribution, inter-industry linkages, and patterns of collective actions issues that have been existing in both locations; and (4) concluding section to explain lessons learned obtained for providing feedback to Marshallian industrial district theory and Porterian cluster theory.

2. Methods and Data Collection

This study applied a sequential explanatory mixed-methods design where the observers combined a quantitative survey at first to acquire general information about the batik industry clustering phenomena in both Wonosobo Regency and Purworejo Regency, then followed by a comparative case study method to obtain deepened understanding on the performance of each batik cluster in benefiting from economic externalities. The performance measurement was limited to the formation of inter-industry linkages and business cooperation between the local batik firms. The former was observed by looking at input-output flows for capturing various patterns of vertical linkages, and joint production networks for horizontal linkages. The latter accounted for types of business cooperation established within the cluster for sustaining either individual firm's business continuation or the overall local batik industry.

A series of field survey was undertaken in both locations found that all batik firms were established after the mid-2000s. The data collected using a questionnaire form and a semi-structured interview form to figure out the basic characteristics of the local batik industry covering production capacity and preference and perceptual organisational performance. A qualitative case study method was completed later using data and information triangulation which included in-depth interview, on-site observation, and content analysis. In-depth interview involved key informants consisting of the prominent batik entrepreneurs, batik cluster/community organisations, and senior officials at the Local Development Planning Agency and the Local Agency for Industry and Trade Services. The on-site observation was completed to figure out current production process *in situ* and patterns of social ties and interactions. The content analysis of previous studies, government reports, statistical publications, and mass media provided supplement inputs to enrich the knowledge comprehension in many aspects of the local batik industry performance.

In Wonosobo, there were two out of eight batik firms founded at the earliest period, i.e., Batik Kembang Keli firm in 2005 by Mrs Yohana and Batik Carica Lestari firm in 2008 by Mrs Alfiah. The remaining six firms were established between 2015-2016. Among other firms, Batik Carica Lestari was the only business group employing freelance women compared to the rest performing as an individual firm with a contractual employment agreement. These two batik firms pioneered the local batik industry establishment which carries out Pekalongan oriented *batik pesisiran* (coastal batik style). Due to the absence of batik tradition, they originated the local batik motif by borrowing production techniques and designs from Pekalongan at most through self-learning process. As a result, a mixture of traditional and modern batik production techniques which combines handwritten, stamping, and printing techniques have featured the industry until now. Table 1 presents a general profile of the existing batik firms in Wonosobo Regency.

In Purworejo, the survey found six active batik firms where there was only Batik Jazid Bastomi founded in 2006 while the rest were between 2010-2013. This batik firm has sustained the interrupted batik tradition with classical court batik style (*batik keraton*) through indirect family ties. However, similar to the Wonosobo case, the local batik industry was greatly influenced by coastal batik style from

Pekalongan and Semarang in particular. It was interesting since the absence of batik tradition root was originated from distant places instead of (re-)creating closer relations to the batik industry centre in the neighbouring region of Yogyakarta. As a result, the local batik industry has performed mixed traditional and modern production techniques as well. Table 2 shows a general profile of the existing batik firms in Purworejo Regency.

Table 1. Profile of the existing batik firms in Wonosobo Regency, 2018

Name of Firms	Starting Year	Product Types	Production Capacity Per Month (piece)	Gross Income Per Month (IDR)	Employment Size (workers)
Batik Kembang Keli	2005	Traditional fabrics and clothing	30 – hand 100 – stamp	20 million	6
Batik Carica Lestari	2008	Traditional and modern fabrics and accessories	500 in total	40 million	25
Batik Kahuripan	2015	Traditional fabrics and clothing	40 – hand	8 million	6
Batik Abhirama	2015	Traditional fabrics	80 – hand	10 million	3
Batik Abidin	2015	Traditional fabrics and clothing	30 in total	7 million	6
Batik Manggarsari	2015	Traditional fabrics	50 – hand	10 millions	6
Batik Kembang Silir	2015	Traditional fabrics	30 – hand	5 million	10
House of Batik I&I	2016	Traditional and modern fabrics and accessories	20 in total	25 million	5
Total Amount			880 in total	125 million	67

Table 2. Profile of the existing batik firms in Purworejo Regency, 2018

Name of Firms	Starting Year	Product Types	Production Capacity Per Month (piece)	Gross Income Per Month (IDR)	Employment Size (workers)
Batik Jazid Bastomi	2006	Traditional and modern fabrics and clothing	100 in total	43 million	20
Batik Sibak	2010	Traditional and modern fabrics and accessories	40 in total	6 million	2
Batik Dewa	2012	Traditional fabrics and clothing	160 in total	30 million	4
Batik Sawunggalih	2013	Traditional fabrics and clothing	50 in total	6 million	7
Batik Wink	2013	Traditional fabrics and accessories	20 in total	4 million	5
Batik Ngasto Tirta	2013	Traditional fabrics	100 in total	19 million	10
Total Amount			470 in total	118 million	48

3. Results and Discussions

3.1 Spatial Distribution

Both locations have revealed a dispersed spatial organisation of the batik industry. Neither does the local batik industry in Wonosobo case nor Purworejo case has spurred physical agglomeration of batik firms even if there is a common orientation to locate close to the urban centre and along the national/regional arterial roads. Their establishments are randomly scattered as a home-based industry in the different neighbourhood sites. The locations of batik firms in Wonosobo are scattered within 20 km away from the urban centre while their counterparts in Purworejo are about a 15-km perimeter. In addition, batik firms in Wonosobo are less accessible than those in Purworejo because of the contoured land surface. The former is still reachable using both private vehicles and public transportation, i.e., minibus, *angkutan desa* (a type of 12-passenger minivan), and *ojek* (a type of hired motorcycle), except Batik Carica Lestari in Talunombo Village (Sapuran Subdistrict) and Batik Kembang Silir in Ropoh

Village (Kepil Subdistrict) which are accessible by private vehicles only. Similarly, those batik firms in Purworejo are accessible using both private vehicles and public transportation except Batik Wink in Wingkoharjo Village (Ngombol Subdistrict) and Batik Ng¹⁶ Tirta in Grabag Village (Grabag Subdistrict) which mostly require private vehicles to access. Figure 1 and Figure 2 show the spatial distribution of batik firms in Wonosobo Regency and Purworejo Regency consecutively.

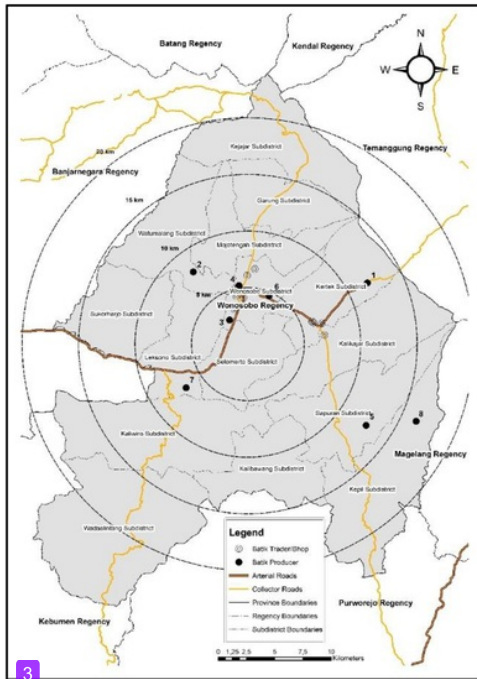


Figure 1. Spatial distribution of batik firms in Wonosobo Regency, 2018

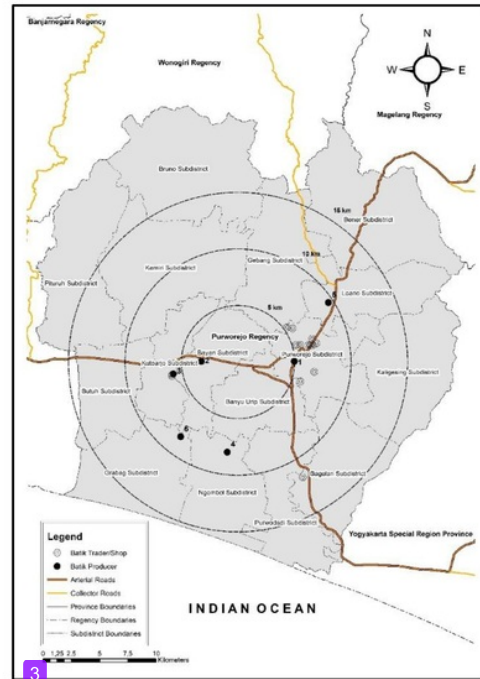


Figure 2. Spatial distribution of batik firms in Purworejo Regency, 2018

In Wonosobo, the study has found 22 batik firms comprising 8 batik producers and 14 batik traders. More than 70 per cent are concentrated around the city centre in Wonosobo Subdistrict while the rest spread in Kertek Subdistrict (3 firms), Kalikajar Subdistrict (1 firm), Sapuran Subdistrict (1 firm), Kepil Subdistrict (1 firm), Leksono Subdistrict (1 firm), and Watumalang Subdistrict (1 firm). Transportation and communication networks are excellent within the first three ring zones when their services start from transitional third ring zone to the outer one poorer. In contrast, there are 20 batik firms found in Purworejo which consist of 6 batik producers and 14 batik traders. Interestingly, five batik producers prefer to run their business outside the city centre in Purworejo Subdistrict. They locate in Kutoarjo Subdistrict, Bayan Subdistrict, Ngombol Subdistrict, Grabag Subdistrict, and Loano Subdistrict. This is not applicable to batik traders whom businesses preferably located close to the city centre except those two firms in Kutoarjo Subdistrict and Bagelen Subdistrict.

Regarding the existing physical agglomeration pattern, both cases may be assessed as a rural district cluster. In fact, they do not fit to Marshallian industrial district type since the batik firms are scattered into several villages. Even though there is a common tendency some batik firms to concentrate nearby the city centre, particularly the batik trading firms, they have failed to embrace a unique place identity at the extent to which “local industrial atmosphere” could be recognised easily. Referring to the industrial district theory, the localised business activity of the co-located firms shows place attachment to the local neighbourhood [12,54]. This means that the co-located firms in the industrial district should have spurred physical interactions between firms and local activities in terms of shared utilisation of facilities and infrastructures, labour absorption, and knowledge and technological spillovers [4,11,12].

In short, the co-located firms should perform “a critical mass of production” by promoting certain stickiness of forward and backward linkages to the local economy, so that their existence could foster a rich blend between the economy and society [5,55].

In contrast, the industrial agglomeration of batik firms in Wonosobo and Purworejo may comply with the Porterian cluster theory. Porter himself did not specify the physical boundaries of the term “geographical concentrations” in his cluster definition [6,7]; rather, he allowed such concentrations may fall into a broad range of local to global contexts [56] as a response towards many criticisms [e.g., 13,57,58]. Since his principle theoretical conception rests on the diamond-like inter-industrial business competitiveness framework, the physical proximity of the clustered firms seems to have not affected much to the overall cluster performance, particularly in terms of job creation, productivity increase, and knowledge and innovation spillovers [16,59,60]. However, further examinations on the so-called batik clusters in both locations must be done to figure out whether the local business competitiveness feature exists within such a coincident industrial agglomeration. The following sections will discuss this issue thoroughly by focusing more on economic and social/institutional proximities.

3.2 Inter-industry Linkages

A common feature of inter-industry linkages of the batik industry in both cases demonstrates high-cost inefficient supplies of input factors. High dependency on external sources for supplying various types of *kain mori* (cloth), batik-making equipment (i.e., *canting tulis* [handwritten pen stylus], *canting cap* [stamping tool], and dyeing equipment), waxes, and chemical dyeing agents has caused higher production costs. These sources are suppliers in Yogyakarta, Surakarta, and Magelang. Furthermore, individual procurement is more preferred causing higher transportation cost that each firm must burden. Around 90 per cent input expenditure has been allocated to satisfy their preferences while the rest to purchase supporting materials such as caustic soda, kerosene/firewood, and natural dyeing agents from the local suppliers. The individual procurement is executed through direct purchase to suppliers and *nempil* (a kind of input transaction between the fellow batik producers usually from the smaller to the larger ones). The latter has been practised between Batik Wink firm and Batik Dewa firm in Purworejo, for example. A different procurement performed by Batik Carica Lestari firm in Talunombo Village, Wonosobo Regency. The firm coordinates the collective procurement of raw materials, especially cloth and wax, to perform as *Kelompok Usaha Bersama/KUB* (collective business group), which is responsible to acquire and distribute raw materials to the group members internally. On the other hand, the individual procurement has also existed between the local batik traders. They collect batik products, usually the low-end cheaper ones from Pekalongan, but ironically, none comes from the local batik producers. The main reasons are associated with the consumers’ expectations to lower product prices and variants against the local products which are more expensive and targeted to middle-high income group.

Regarding the production process, all batik firms in Wonosobo and Purworejo prefer to produce batik at their home workshop. Performed as small and medium enterprises (SMEs), they have utilised their home into mixed business and residential functions. Commonly, the initial and final stages of production are done in their home. The initial production stage includes two main activities, i.e., product design and motif decision-making and raw materials (cloths and waxes) provision to their workers. With exception to the stamping batik process, the remaining batik making process could be done at the workers’ own home. After the intermediate product called as *batikan* finished, the final production stage conveying multiple processes of *pelorodan* (a waxing removal process in a hot-water tank) and dyeing application is completed entirely in the home workshop. On the other hand, the similar dual functioning of home space for both business and residential activities has also been applied by the batik traders. The difference is that they have managed the living room only to display their batik collections for sale, leaving the rest home spaces to remain for private residential use.

At the marketing and distribution stage, similar individual connections have applied to all batik firms in both locations. For the batik producers, direct selling through self-owned/joint batik showroom, an exhibition event, and special orders from loyal customers are more preferred than other means such

as door-to-door selling and opening store in the local market. Local government procurement for official staff uniform and any special occasions have been the first and foremost expected order for their business survival. Interestingly, they avoid using mobile and online marketing even though welcome to mobile and online transactions. Some reasons for such activities relate to their anticipation of product imitation threats by competitors and limited capacity to manage its routine maintenance as well as excessive orders beyond their production scale. On the other hand, the batik traders are more welcome to any means of marketing and distribution. In addition to selling products directly in their shop, they are used to perform as intermediate traders either through face-to-face or virtual contacts. As a result, market penetration of the local batik products in Wonosobo and Purworejo has remained very limited to their showroom and small-scale distant market when the local market overwhelmed by more competitive products from the other batik centres.

The applicability of industrial district theory to explain the presence of economic externalities beneficial to the co-located batik firms in both locations is unclear. According to [12], a successful industrial district model comprises three components: (1) a polycentric industrial structure led by a few leading industries responsible to support a stable manufacturing specialisation across the co-located firms (specialisation feature); (2) a group of SMEs which articulates a local division of labour and thrives both specialisation and external economies evolution supported by the utilisation of shared local labour pooling, business market, and collective goods provisions (decentralisation feature); and (3) an active support of the local society whose the place identity and inheritance of social norms and relations lubricate various flows of capital, people, and knowledge, which in turn, result in localised resources accumulation advantageous to the strengthening and renewal of industrial specialisation and the SMEs' capacity upgrading (endogeneity feature).

In fact, neither a polycentric industrial structure nor a stable manufacturing specialisation does exist in the so-called batik industry clusters in Wonosobo and Purworejo cases. The absence of leading industries and local suppliers and missing coordination between the local batik firms have exposed the industry to a fragile and fragmented structure. Instead of promoting coordinated labour specialisation, each batik firm tends to focus on individual business continuation. This situation is worsened by the missing collective actions of the local batik firms in employing the available labour force, expanding the market, and sharing common facilities and infrastructures. Referring to Table 1 and Table 2, the total employment size of each batik cluster is very low at less than 100 employees. This indicates the absence of a skilled labour market at the place, making these emerging batik clusters have been struggling with the skilled labour force shortage since the start of the business operation. After a decade of the pioneering firm establishment, the local skilled labour market has grown very slowly. Batik training sessions facilitated at most by the local governments since the mid-2000s have not affected much to stimulate the rise of new business startups and skilled batik workers. Yet, such internal capacity limitation has never encouraged the local batik firms to cooperate in dealing with the skilled labour force shortage as well as limited market penetration and common facilities and infrastructures sharing. Even though there is a little evidence showing business-to-business cooperation, particularly involving Batik Abhirama firm and Batik Carica Lestari firm in Wonosobo Regency, and Batik Jazid Bastomi firm, Batik Wink firm, and Batik Dewa firm in Purworejo Regency, their initiatives have produced very limited effects to the local economy since their cooperation is built under individual not collective/institutional agreement at a casual short-term basis.

On the contrary, the assessment of the Porterian cluster theory application in both locations has come up with unsatisfied findings as well. The key components in cluster theory are the interconnected competitiveness attribute ¹⁸ follows: (1) factor conditions which include skilled labour market and supporting infrastructure ¹⁵ ability; (2) demand conditions which represent the home-market demand for goods and services; (3) ¹⁴ and supporting industries which form the existing industrial structure of input-output linkages; and (4) firm strategy, structure, and rivalry which constitutes the prevailing governance and institutions to direct business environment. At the heart of his conception, Porter suggests the importance of business alliance and networking in a free market competition regime in order to increase productivity and innovation from which industrial/national competitiveness arises

[6,7,60]. From this viewpoint, a strong industrial structure of ¹⁰the leading industries is required with adequate support from sound business institutional framework including government agencies, business and professional associations, financial institutions, and R&D institutions and universities.

In the cases of rural batik industry clustering in Wonosobo and Purworejo, the emerging batik industry clusters could have never created strong business linkages yet. The vertical linkages built from the supply chains to the marketing and distribution channels are fragmented. Instead of promoting greater multiplier effects into the local suppliers, the local batik industry has managed high dependency on suppliers from Yogyakarta, Surakarta, and Magelang. Individualistic business networking dominates the industry causing the horizontal linkages of inter-firm cooperation reluctant to exist. This situation has obstructed market penetration and decreased the competitiveness of the local products against the cheaper products from the other regions. Furthermore, there are no local champions that can perform as leading industries to stir the so-called business alliance and networking internally.

On the other hand, the existing institutional framework has not contributed much to the local batik industry promotion. The local governments in both locations have endorsed some policies and regulations relevant to industrial and product competitiveness upgrading. Not only in forms of common local development/sectoral plans or the government rhetorics, some coercive policies and actions have also taken place for protecting the local economy. For instance, the Wonosobo Government has released a policy to support the formation of batik cluster organisation and a circular letter within the internal bureaucracy imposing the public servants to wear local batik products on particular working days. A similar approach has been conducted by the Purworejo Government without obligation to the public servants to wear local batik products. Rather, the local government is keen to promote Adipurwo batik motif as a local batik identity branding to support product competitiveness upgrading. At the same time, both governments provide many technical assistance programs through batik training, exhibition, and marketing promotion regularly. Limited financial assistance programs are provided as well through microcredit funding scheme particularly for new business startups and SMEs. Unfortunately, all these government treatments have encouraged higher government reliance among the local batik firms. To some extent, such circumstance is good for the emerging cluster to access broader networks and markets while managing internal capacity and production scale [59]. For the long term, this may impede broader participation and collaboration with non-governmental organisations (NGOs) which are necessary to the building of sound business institutional framework.

3.3 Patterns of Collective Actions

Currently, the patterns of collective actions in both locations are limited to production and marketing and distribution processes. Joint production initiatives come from the batik producers to cooperate with their counterparts or freelance batik workers in the neighbouring localities. In Wonosobo, Batik Abhirama firm is used to provide subcontracting order to Batik Carica Lestari firm for doing *nyanting* (drawing a batik motif using hot-waxed pen stylus) and *nyolet* (colouring *batikan* with a paintbrush) because of a labour shortage. Also, the firm is often empowering the unemployed ex-migrant workers to participate in the production process by providing prior batik making training and raw materials required. Another pattern is exemplified by House of I&I firm when the contract involves the partner firms in Surakarta. All these forms of joint production have deliberately occurred on a casual short-term basis depending on the market growth. Similarly, a few batik firms in Purworejo have managed joint production through subcontracting patterns. A layered production chain has involved three parties when Batik Jazid Bastomi firm provides *nyanting* and *nyolet* subcontracts to Batik Wink firm before the subcontractor firm distributes the order to freelance batik workers in the neighbourhood. Afterwards, the *batikan* products are delivered back to the Batik Jazid Bastomi firm for final processing completion.

Regarding marketing and distribution process, collective actions may occur either by loosely casual short-term basis or more organised arrangement. The former exists in a limited cross-selling practice through consignment and joint exhibition agreements. Consignment practice is found between Batik Wink firm, Batik Jazid Bastomi firm, and Batik Dewa firm in Purworejo Regency. Even the first two firms have also participated in joint exhibition events. In the Wonosobo case, a one-way

consignment practice is found when Batik Abhirama firm also sells Batik Carica Lestari firm's products. Meantime, the latter organised joint marketing and distribution in both locations is initiated by *Dewan Kerajinan Nasional Daerah/Dekranasda* (the Local Council for National Craft Industry). The Council provides a joint showroom for promoting as well as marketing all local branded products. In fact, its existence is less significant to promoting the local batik products particularly because of insufficient information and product displays.

Nevertheless, these patterns of collective actions require further assessment since the essence of collective actions in industrial clustering carries out broader meaning and implications on the economic localisation instead of simply the existence of inter-firm cooperation forms. From the Marshallian industrial district viewpoint, collective actions are manifested by the deliberate utilisation of collective property that forms collective ownership among the co-located firms [4]. Such collective property may emerge in physical, cognitive, and social/institutional forms. The shared utilisation of labour, equipment, storage, workshop, and showroom embraces the act of collective actions directly affects the economic externalities acquisition. Indirectly, the co-located firms may also benefit from sharing public facilities and infrastructures such as road, public transport, telecommunication, internet, and waste treatment facility. Collective learning may occur through labour division and specialisation resulted from either joint production network or imitation and trial-and-error processes. Such a learning region facilitates localised knowledge and innovation transfers which enhances the specialised labour market pooling. Lastly, the shared social/institutional property emerges when the local society supports the economic activity of industrial clustering and vice versa. The prevailing norms, trust, and social networks which encourage both pecuniary and non-tradeable transactions underpin the building of local institutions and governance necessary to sustain industrial district existence. All these patterns of collective actions are likely to produce collective efficiency in return [5,61–63].

In reality, the subcontracting patterns in both Wonosobo and Purworejo cases have failed to provide a strong evidence of collective actions. The absence of exchangeable physical collective property and shared public facilities and infrastructures has caused the benefits of inter-firm joint production cannot be acquired by other firms. Transfer of knowledge and innovation has occurred exclusively within this joint production network. Consequently, the non-participating batik firms should have accessed the alternative sources of advanced knowledge and innovation from the government-led batik training, exhibition, a direct internship with the successful batik firms, and self-learning process. Such a closed network has nurtured social/institutional collective property resulted from friendship ties and individual business connections as exemplified by Batik Carica Lestari firm with Talunombo Village community and Batik Abhirama firm with Penawangan Village community, both in Wonosobo Regency. Similarly, current joint marketing and distribution practices in both locations have not manifested noticeable collective actions because of a closed network of cross-selling forms organised by a few batik firms. On the other hand, the local government intervention to facilitate an opened platform for marketing and distributing the local batik products actually has taken place through a joint showroom provided by each Dekranasda. Unfortunately, such an initiative has a little impact to expand the marketing and distribution channels of the local batik industry compared to the closed joint marketing and distribution network.

From the Porterian cluster theory viewpoint, the need for collective actions relates to the building of a business alliance and networking in pursuit of industrial/national competitiveness. The theory suggests reciprocal relationships of both economic and organisational linkages between the interconnected firms and actors for generating a conducive business environment. Hence, the role of associations, R&D institutions, and the governments is crucial to establish a sound business institutional framework which represents a collective asset ownership. In other words, a conducive business environment may indicate a greater collective asset utilised in an economy [6,7,60,64].

To some extent, the current public-private institutional milieu in Wonosobo Regency and Purworejo Regency is quite promising for promoting the local batik industry growth. From the government side, the local government has been providing a routine budget allocation for facilitating training, promotion, exhibition, and meeting events for the batik industry stakeholders through various

financial and technical assistance programs. Limited participation has been performed by rural batik communities particularly in Talunombo Village and Penawangan Village. In Talunombo Village, Batik Carica Lestari firm proceeds collective business management for generating the village-based integrated batik industry. A different form of community participation is shown in Penawangan Village when Batik Abhirama firm directs subcontracting agreement with the ex-migrant workers in the village to perform as freelance batik makers. Interestingly, inter-firm cooperation is very limited within a closed business networking led by a few local batik firms. Meantime, the role of local association⁵ is missing. There is only a quasi-government organisation established in each regency, namely Forum for Economic Development and Employment Promotion (FEDEP), assigned by the Local Development Planning Authority (*Badan Perencanaan Pembangunan Daerah/Bappeda*) to promote competitive products for enhancing the local economy. However, the role of FEDEP is less significant to the local batik industry development, similar to another government-driven organisation Dekranasda. While FEDEP is more concerned with capacity building affairs by empowering resources attached to local actors and organisations, Dekranasda merely focuses on promoting local competitive products. Both organisations are funded by the local government revenue and budget (*Anggaran Pendapatan dan Belanja Daerah/APBD*), but FEDEP is designed to support policy formulation while Dekranasda is focused on product promotion and marketing. In reality, FEDEP in both locations cannot further the building of a business alliance and networking even though its membership comes from the representatives of government agencies, business associations, R&D institutions, and NGOs. Such circumstance has led to an elusive business institutional framework since all those efforts have failed to come up with the so-called conducive business environment.

4. Conclusions

Learning from both cases, rural industry clustering experiences in the local batik industry development have shown a typical government-driven cluster approach. Even though the government intervention is not excessive, the business-as-usual routines have played a key role in establishing a higher reliance of the local batik industry on the government support. Such circumstance has raised some confusions instead of enlightenment on promoting cluster direction. Due to unclear policy direction the practice of rural industry clustering has merely demonstrated a trial-and-error opportunistic behaviour rather than a well-organised business milieu. Most of the government intervention has focused on the establishment and marketing stages of industrialisation, leaving the middle stage of industrial structure formation and business cooperation into the market competition. As a result, these emerging local clusters are overshadowed by the government politics and rhetorics instead of underpinned by a conducive business environment. Hence, the local government intervention in cluster formation has served as a temporary solution for SMEs development by utilising local resources and empowering village communities. For the long-term, such action may jeopardise the management of rural economies into ineffective burdens instead of promoting cluster competitiveness better.

So, which one could be the most suitable approach for promoting rural industry clustering in these cases between Marshallian industrial district theory and Porterian cluster theory? The answer depends on how the policymakers and related actors could overcome the common failures in understanding either the industrial clustering process or the characteristics of the local industry for directing cluster development. Each theory actually carries out its merits and drawbacks, and previous studies around the world have disclosed success and failure in the different contextual settings. Therefore, it is important to notice that replicative government-driven cluster promotion may produce an unstable institutional framework which is counter-productive against the building of stronger localised economy and social empowerment. In fact, successful cluster promotion requires a lengthy endogenous process rather than an instant coercive course of action to increase the so-called industrial/territorial competitiveness.

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