

## SUSTAINABLE INDUSTRY, CULTURE AND COMMUNITY DEVELOPMENT: A CASE STUDY OF KAMPUNG BATIK LAWEYAN, INDONESIA

SARJIYANTO<sup>1</sup>, SARWOTO<sup>1</sup>, MAHINDA SENEVI GUNARATNE<sup>2</sup> AND R.B. RADIN FIRDAUS<sup>2\*</sup>

<sup>1</sup>Fakultas Ekonomi dan Bisnis, Universitas Sebelas Maret, Jalan Ir. Sutami, Kentingan, Surakarta 57126, Indonesia. <sup>2</sup>School of Social Sciences, Universiti Sains Malaysia, 11800 USM, Pulau Pinang, Malaysia.

\*Corresponding author: radin@usm.my

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**Abstract:** This study aims to identify and analyse the sustainability factors of the batik industry in Kampung Batik Laweyan (KBL) in Surakarta and the way these factors relate to and shape successful local community development. Cross-sectional data collection was conducted through a survey questionnaire, involving 511 respondents that comprised 254 enterprises and 257 community members, selected through stratified random sampling techniques. This study used path analysis to examine the hypothetical model. The results of the path analysis support our hypothetical model in which industrial sustainability factors, i.e., economic, environmental, and social factors have a positive and significant relationship with the sustainability of batik enterprises in KBL. The sustainability of the batik enterprise has a positive and significant relationship with the well-being of the community and social capital. This study also proves that the influence of enterprises' sustainability on social capital was highly influenced by local culture. This, however, cannot be proven when the culture is linked to the relationship between the enterprises' sustainability and community well-being. Overall, this study concludes that the way sustainability of the batik industry in KBL contributes towards community development is also influenced by local cultural factors, particularly the social capital of the community.

Keywords: Local enterprise, sustainability, social capital, community well-being, path analysis.

Abbreviations: Kampung Batik Laweyan (KBL).

### Introduction

On October 2, 2009, the United Nations Educational, Scientific and Cultural Organisation (UNESCO) recognised batik as a cultural heritage of Indonesia that represents masterpieces of the oral and intangible culture of humanity (Permatasari & Cantoni, 2009). Besides being a cultural element, Indonesian batik has become a world-class industry in the recent past as the country's top export, but it comes with a price, i.e., adverse environmental consequences (Kusumawati *et al.*, 2021). The batik industry in Indonesia is spread over several areas on the island of Java, including Surakarta and Yogyakarta. Being the centre of Javanese culture, Surakarta has two batik industrial areas, namely Kauman and Laweyan.

Laweyan or Kampung Batik Laweyan (KBL) is a unique and historic batik industrial

centre in Surakarta (Baidi, 2006). KBL is home to 254 batik enterprises that offer economic opportunities to local communities and KBL is a renowned destination for cultural heritage tourism. Since KBL is recognised as a cultural heritage area in Surakarta with tangible and intangible cultural assets, Setiawati *et al.* (2011) assert that it deserves preservation.

In KBL, batik production relies on products made from local commodities and other natural resources and the batik enterprises are mainly established and operated by the local community (Choirunnisa & Mudakir, 2012). In a way, batik enterprises in KBL fulfil Hayton's (1996) concept of a business community. This is because the enterprises create jobs for locals; their ownership and control belong to locals; and, proceeds are reinvested or used in ways that benefit the local community.

The batik “community” enterprises in KBL are inseparable from communal life, which is reflected in many ways: Socially, economically, politically, and culturally (Soesilo, 2016). According to Hannida (2009), the development of batik enterprises in KBL was established based on the local community’s social values and cultural norms. Thus, batik products in KBL reflect a unique fusion of arts, civilisations, views of life, and the strong personality of the environment in which it was born in (Lono, 2013).

The batik enterprise in KBL, Surakarta, in the heart of the Laweyan community, has survived to this day despite intense competition with the batik printing industry that emerged in the early 1970s. Even though the competition initially threatened the sustainability of batik painting and stamping, batik entrepreneurs in KBL have managed to overcome the competition by improving their products, applying the latest techniques, as well as following and adapting to the latest developments and trends (Maruli & Ali, 2013). KBL’s batik products has continued to flourish and compete with local and international batik companies (Dibyoy & Sujadi, 2018).

This study is of the opinion that the batik industry in KBL, Surakarta, should not only be regarded as a mere enterprise as it also promotes sustainability. Its sustainability can be seen as one of the critical factors that shape successful local community development. While several studies have focused on various development aspects of KBL, as summarised in Table 1, none of them focused on the issues of industrial sustainability and community development. In general, industrial sustainability is a comparatively novel concept that focuses on integrating principles of sustainable development into the strategic and decision-making processes of enterprises. The sustainable industry caters to its stakeholders, customers, and broader communities by adopting environmentally friendly business operations. However, no known studies have been conducted on the sustainability factors of the local batik industry and its impact on the local community development, particularly in Indonesia. Hence, the present study attempts to analyse the sustainability factors of batik enterprises in KBL and the way these factors (including culture) relate to and shape successful local community development (i.e., well-being and social capital).

Table 1: Selected studies of Kampung Batik Laweyan (KBL)

| <b>Authors</b>                 | <b>Focus</b>   |
|--------------------------------|--|
| Hariyani <i>et al.</i> (2006)  | Focused on the conservation of KBL as a potential cultural and economic landscape  |
| Maulana & Nurini (2010)        | Studied the formation of a joint trademark for the KBL business community as cultural and trade tourism  |
| Maruli & Ali (2013)            | Studied the process of business innovation in the batik business community in KBL  |
| Muin (2013)                    | Examined the development of KBL’s business community as a sustainable source of the local economy  |
| Setiawati <i>et al.</i> (2015) | Explored the effect of cultural economics on the development of batik industries in KBL  |
| Nasir (2015)                   | Examined customer decision-making in purchasing batik products from KBL  |
| Dibyoy & Sujadi (2018)         | Studied the role of the KBL brand in strengthening batik enterprises and increasing the competitiveness of Surakarta batik. Proved that KBL is a centre for community development based on the cultural economy in Surakarta |

## Literature Review

### *Sustainable Industry*

Sustainable industry is a comparatively new area of study that has garnered much attention in the last two decades. It has rapidly evolved from conventional operating practices to innovative practices that consider economic, environmental, and social impacts (Carter & Rogers, 2008; Ndubisi *et al.*, 2020). Most of the research on industrial sustainability have directed their focus on environmentally sound productions with the formulation of strategies such as the 4Rs: Renewing, reducing, recycling, and responsibility (Trifilova *et al.*, 2012).

In general, a sustainable industry mainly refers to the ability to use natural resources effectively and efficiently to balance the economic, environmental, and social responsibilities that underpin sustainable development (Garetti & Taisch, 2012; Samsinar & Firdaus, 2019). In his Triple Bottom Line (TBL) model, Elkington (2005) identified sustainability as the interaction of three different but interrelated pillars: Economic, social, and environmental. TBL recommends that businesses commit and act upon social and environmental issues, focusing on financial and economic gains, framed as corporate social responsibility (Masud *et al.*, 2019). The following section provides a brief review of economic, environmental, and social sustainability.

### *Economic Sustainability*

In general, economic sustainability relates to income and cost. Cost is an essential aspect of business sustainability because it is determined by economic factors such as taxes, business climate, employment, and business diversification (Slaper & Hall, 2011). By balancing costs and revenues, a business can maintain its sustainability (Cagno *et al.*, 2019). Studies use job growth to indicate corporate sustainability (e.g., Azapagic & Perdam, 2000; Slaper & Hall, 2011). Specifically, job growth refers to the act of creating more jobs and absorbing more local workers, which

perhaps can be explained in the context of batik enterprises in KBL.

Hence, sustainable local enterprises would be an important sector for employment, which may influence employment distribution and the growth of other business establishments. Batik enterprises in KBL, for instance, are community-based industries, which are the primary sources of job opportunities for most of its residents. Consequently, batik enterprises in KBL significantly contribute to regional economic advancement, thus improving a wider community livelihood and living standards. In this study, the items used to measure economic factors are listed in Table 2.

### *Environmental Sustainability*

Factors related to the environmental impacts of production activities vary from small-scale to large-scale producers. According to Slaper and Hall (2011), environmental variables are the measurements of natural resources, including air quality, water quality, energy efficiency, natural resources usage, solid and toxic waste management, and land-use patterns (refer to Table 2). Environmental sustainability mainly involves enhancing human well-being by safeguarding natural resources and raw materials. It further ensures that efficient waste management practices are in place and environmental quality is not compromised (Goodland, 1995; Amrina & Vilsa, 2015; Yadav *et al.*, 2017).

Material sustainability is critical to the production process (Azapagic & Perdam, 2000; Slaper & Hall, 2011; Cagno *et al.*, 2019). The adequacy of raw and supporting materials and even the availability of substitute materials are the environmental indicators most often used to measure enterprises' sustainability. The primary indicator of enterprise sustainability also relates to the availability of sufficient energy—both renewable and non-renewable energy (Amrina & Vilsa, 2015; Yadav *et al.*, 2017; Cagno *et al.*, 2019). Apart from availability, environmental indicators also include the efficient use of resources. For instance, a sustainable enterprise

Table 2: Variables and items of the research model

| Variables              | Items  | Authors  |
|------------------------|--|--|
| Economic factors       | <ul style="list-style-type: none"> <li>- Contribution to local and regional economic development (EC1)</li> <li>- Enterprise's incomes and costs (EC2)</li> <li>- Source of labour supply and demand (EC3)</li> <li>- Industrial size, added value and growth (EC4)</li> </ul>   | Adapted from Azapagic & Perdan (2000); Slaper & Hall (2011); Cagno <i>et al.</i> (2019)  |
| Environmental factors  | <ul style="list-style-type: none"> <li>- Types of materials used (EN1)</li> <li>- Water recycling practices (EN2)</li> <li>- Wastewater reduction (EN3)</li> <li>- The existence of sufficient energy (EN4)</li> <li>- Hazardous waste management (EN5)</li> </ul>   | Adapted from Azapagic & Perdan (2000); Slaper & Hall (2011); Yadav <i>et al.</i> (2017); Cagno <i>et al.</i> (2019)                              |
| Social factors         | <ul style="list-style-type: none"> <li>- Societal well-being (SF1)</li> <li>- Customer satisfaction with products (SF2)</li> <li>- Employee well-being and job satisfaction (SF3)</li> <li>- Occupational health and safety (SF4)</li> </ul>   | Adapted from Slaper & Hall (2011); Singh <i>et al.</i> (2016); Yadav <i>et al.</i> (2017)  |
| Sustainable enterprise | <ul style="list-style-type: none"> <li>- Enterprise's economic performance (SE1)</li> <li>- Enterprise's environmental practices (SE2)</li> <li>- Enterprise's social contributions (SE3)</li> </ul>   | Adapted from De Giovanni (2012)  |
| Community well-being   | <ul style="list-style-type: none"> <li>- Life satisfaction of the local community (CW1)</li> <li>- The integrity of the local community (CW2)</li> <li>- Living standard of the local community (CW3)</li> <li>- Safe drinking water, sanitation, and hygiene (CW4)</li> <li>- Good healthcare services (CW5)</li> <li>- Tolerance in diversity (CW6)</li> </ul> | Adapted from Rogerson (1999); Cummins <i>et al.</i> (2003); Sirgy <i>et al.</i> (2010); Magee <i>et al.</i> (2012); Rezvani <i>et al.</i> (2013) |
| Social capital         | <ul style="list-style-type: none"> <li>- The collective level of social norms (SC1)</li> <li>- Cooperation among community members (SC2)</li> <li>- Level of trustworthiness in the society (SC3)</li> </ul>   | Adapted from Narayan & Cassidy (2001); Kay (2005)  |
| Culture                | <ul style="list-style-type: none"> <li>- Freedom in cultural expression (CU1)</li> <li>- Cultural creativity and innovation (CU2)</li> <li>- Preservation of cultural practices (CU3)</li> <li>- Preservation of cultural sites (CU4)</li> </ul>   | Adapted from McKinley (1997); Choi & Sirkaya, (2006)   |

must maintain high water quality standards in the entire production chain, which poses a challenge in the batik industry (Kusumawati *et al.*, 2021). Another important indicator of environmental sustainability is the management of hazardous waste production that is crucial in preventing releases and promoting pollution abatements (Amrina & Vilsu, 2015; Singh *et al.*, 2016; Yadav *et al.*, 2017; Cagno *et al.*, 2019).

### **Social Sustainability**

Social sustainability can only be developed through systematic community participation and robust civil society (Goodland, 1995; Firdaus *et al.*, 2020). Diversity, cultural identity, politeness, patience, tolerance, humility,

compassion, friendship, fraternity, institutions, love, pluralism, honesty, laws, and discipline are subject to strict measures, all for social continuity. Slaper and Hall (2011) specified social indicators as the social dimensions related to a specific society or a region. They included various measures, such as educational facilities, equitable access to social systems and services, healthcare facilities, well-being, living standards, social capital and networking, anti-competitive behaviours, workplace relationships, occupational safety, and induction facilities and training for workers (Amrina & Vilsu, 2015; Yadav *et al.*, 2017).

Earlier researchers formulated the basis for indicators of social factors of sustainable

enterprise. For instance, Azapagic and Perdam (2000) used public well-being as a social factor in enterprise sustainability (e.g., public well-being and customer satisfaction). In this study, we use indicators such as public, consumers, employee well-being, and occupational health and safety as social factors of the sustainability of batik enterprises in KBL (see Table 2).

Consumer satisfaction can be measured by looking at the rate of exchanged or returned products from consumers (predominantly loyal customers) due to defects. It can also be measured by customer satisfaction with the enterprises' services (Singh *et al.*, 2016; Famiza *et al.*, 2017; Cagno *et al.*, 2019). Slaper and Hall (2011) and Cagno *et al.* (2019) used employee well-being, safety and health indicators as social factors that affect enterprises' sustainability, which can be assessed through the rate of accidents in the workplace, insurance/medical insurance availability for workers, workers training, as well as safe and comfortable working conditions provided to workers.

According to the literature and previous research related to enterprise sustainability, it can be concluded that promoting and practising economic, social, and environmental sustainability would help enterprises grow and develop. Table 2 specifies the items used in this study for the economic, environmental, and social factors.

### ***Community Development, Social Capital and Well-being***

Community development focuses on communities' collective efforts to improve their living conditions by relying on their initiatives and actions (Awortwi, 2012). Community development aims to increase the economic status of community members and their social capital (Embong, 2007). The long history and existence of KBL's batik enterprises in developing local communities—well-being and social capital—motivate this study.

According to Agyeman (2008), well-being and sustainability will ensure that social and economic justice is defined

as an integral aspect of well-being and sustainability. Mella and Gazzola (2015) and Gazzola *et al.* (2020) developed a model that explained how sustainability can help improve people's economic well-being. Consequently, sustainability orientation must include well-being, present and future, and justice and equality of life within the ecosystem boundaries.

Norris *et al.* (2008) found that a community is resilient when it has a network of adaptive capacities to adapt to any difficult situation. In particular, a sustainable community requires a focus on resilience and sustainability rather than a contemporary focus on well-being in achieving future prosperity (McCrea *et al.*, 2014). This view is in line with Lucena (2015), who also stated that sustainability and community participation have become significant dimensions in achieving equitable development results.

An interactional approach with the community has become a popular activity in achieving the material needs of a fast-growing population while minimising environmental destructions. Bridger and Alter (2006) claimed that this approach is a shift from sustainable development to sustainable community development. Theodori (2005) implied that community development is a conceptual explanation of the ways community members interact with each other from different perspectives and how they maintain unity. Green and Haines (2002) and Phillips and Pittman (2009) echoed this view of community development as an organised endeavour to generate resources by increasing the capacities of a community to enhance well-being. Such assets primarily represent public capital, ranging from physical capital to financial, environmental, human, and social capital.

Social capital refers to mutual trust in society. This includes social trust, social norms, and networks that society generally use to resolve common problems (Lang & Hornburg, 1998). Social capital has resonated with many audiences, particularly as it holds the promise of bringing societies together (Coleman, 1989)



and helps rebuild a harmonious society that has deteriorated due to modernity (Bridger & Alter, 2006).

Coleman (1994) implied that social capital could be seen based on its function, not as an entity but consisting of many different entities, with two general characteristics, namely: (1) They inherit several structural components of a society, and (2) these entities leverage individual actions. Like other forms of capital, social capital is an enabler of productivity; several goals could not be achieved without its existence. In a number of ways, social capital is referred to as collective social norms, societal values, and interactions that reflect the engagements of individuals living together as a family and community (McClenaghan, 2000).

Social capital is increasingly used in community development practices to measure its contribution to local economic development. Social capital could open up economic and human capital opportunities in ensuring well-being (Portes, 1998). Studies on social capital, assessment methods and the contribution of social capital in enhancing socio-economic and community development are explored by Kay (2005).

Kay (2005) stated that social capital is a concrete element that develops through relationships between people and organisations. With substantial social capital, organisations or community groups can more easily determine what they want to do and manage other capital needs. Social capital cannot replace the more effective forms of capital, but it binds a community together (Labonte, 1999; Jennings & Sanchez-Pages, 2017). Conceptually, social capital has received recognition among development practitioners, academics, social researchers, and policymakers in bringing a sense of a society that has been lost.

Community development is a continuous process to improve community well-being. It is conceptualised as a collective learning process in society that empowers individuals while involving people in collective actions to achieve socio-economic development. Community

development aims at continuous progress, first as an agent of change, and secondly, by bringing people together to make progress in their own lives, thus, eventually improving the individual and collective well-being (Rahim & Asnarulkhadi, 2010).

Rogerson *et al.* (1989) noted that a number of previous studies defined the quality of life as synonymous with well-being. Kline (1995) argued that in a sustainable community, quality of life is recognised as supporting a sense of well-being that includes sense of belonging, pride in place, self-respect, security, its relation to nature, and meeting human needs. It can be placed in the ecological integrity of natural systems, and communities as a mechanism to address individual, social, and ecological well-being (Larson *et al.*, 2015).

People's well-being is among the crucial issues of the contemporary world and is central to the sustainable development of the economy, environment, and society. Well-being indicators must reflect community well-being and the quality of life that promote a comprehensive understanding of where people live with reference to different communities (Miles *et al.*, 2008). Community well-being comprises various dimensions and priorities — environmental, social, economic, cultural and governance—that are important to a particular community (Wiseman & Brasher, 2008). A renowned community well-being model was developed by Sirgy *et al.* (2010). The model has six dimensions; in which they were selected based on a broader collection of issues associated with communities. The six dimensions are concerns about crimes, job availability, access to appropriate healthcare facilities, housing and shelter, poverty, and satisfaction with the community.

### ***The Importance of Culture in Community Development***

Culture and development are two terms that do not always complement each other or have not been used in the same context. The combination of culture and development has led

to the discovery of new elements, instruments, and ideas that emphasise both concepts in the recent past. While the study on the interaction between culture and economic advancement is not new, economists frequently ignore the importance of culture when it comes to development. Nonetheless, social assets, such as skills and expertise, commodities, illustrations, and ideas, for instance, contribute to the socio-economic well-being of society yet are the products of culture (Phillips *et al.*, 2020). Research in the development field (Harrison, 2000) has increased its focus and is more critical of cultural values as facilitators in supporting development. Although the cultural and development paradigm is new in certain theoretical and conceptual work consensus, developmental ideologies have always placed culture and development collectively in specific socio-political, economic, and environmental contexts (Arizpe, 2015).

Culture is a driver of sustainable development (Zheng *et al.*, 2021). It plays a substantial role in ensuring the continuity of traditional local knowledge that builds upon indigenous groups' knowledge, practices, and experiences (Vargas, 2000). Culture is frequently used in social settings, symbolising life patterns, including social norms, principles, and expected behaviour of the people (Phillips *et al.*, 2020). Culture varies from one country to another and from one environment to another. Even in the smallest areas, culture functions as a leading factor in creating a collective identity while creating social cohesion and solidarity. Thus, culture's role in community development, local identity, and responding to community needs is arguably crucial. Therefore, neglecting the importance of culture can impede sustainable community development efforts (Brennan *et al.*, 2009).

McKinley (1997) created an index of cultural freedom consisting of personal integrity, free speech, and equality before the law. Self-integrity relates to the most basic and unconventional human freedom based on the values of one's culture. It is essential to uphold

these individuals' fundamental rights to prevent potential oppression from evolving to strengthen marginalised communities' communal rights. Such communal rights should not be utilised as a reason to violate the rights of the individual. For instance, in assessing the batik productions in Miao people in China, Chen *et al.* (2021) identified cultural heritage as a development drive that attracts commercial investments, maintains the ethnic identity, promotes social networks, and improves the status of indigenous people. Furthermore, McKinley (1997) suggested that cultural freedom demonstrates whether a community adheres to and permits fundamental freedoms to uphold beliefs and thoughts while expressing oneself.

Generally, culture does not have an approved resolution because it is still an ambiguous concept that is complex and difficult to define (Radcliffe & Laurie, 2006). Nevertheless, development economics views culture as an unrestricted analysis with increasingly significant roles (Clague & Grossbard-Shechtman, 2001; Sen, 2004). This is in line with the UN General Assembly resolutions that acknowledges the role of culture as a fundamental enabler and driver of sustainable development (Desmons *et al.*, 2020). Thus, in a developmental context, culture is an essential aspect of its goals and strategies. In this study, we place culture as a moderating variable that influences the impact of sustainability (i.e., sustainable industry and enterprise) on community development.

## Research Framework

Figure 1 exhibits the research model of this study. A summary of variables and items is presented in Table 2. With reference to the research framework, first, we hypothesise that three independent variables—economic (H1), environmental (H2), and social factors (H3)—would positively and significantly influence the sustainability of batik enterprises in KBL, Surakarta. Secondly, the sustainability of batik enterprises would have a positive influence on the community's development through community well-being (H4) and social capital

(H5). Finally, we hypothesise that culture would moderate the effect of sustainable batik enterprises on the community’s well-being (H6) and social capital (H7). Overall, there are seven hypotheses (H1 to H7), as depicted in Figure 1.

As per the literature review, we did not come across a study that observed the influence of culture on sustainability and community development simultaneously. Therefore, this study place culture as a moderating variable. Using culture as a moderating variable, the study aims to fill the gaps in the literature by examining the role of culture in moderating the effect of sustainability of batik enterprises on community development in KBL (see Figure 1). In this study, community development is observed from the aspects of the community’s well-being and social capital. The novelty of this study is examining the influence of culture as an intangible factor for industries in achieving sustainable performance and contributing to community development.

**Materials and Methods**

In this study, cross-sectional data were gathered using a researcher-administered questionnaire. The respondents were entrepreneurs of batik enterprises in KBL (or their representatives) and local community members. There are 254 batik enterprises in KBL; the questionnaires were distributed to all of them.

Community members were selected through stratified random sampling techniques and those who have resided for at least five years in KBL have been invited to participate in the survey. Other selection and stratification criteria are age, gender, and district. Overall, there are 2,568 residents in KBL, including batik enterprise owners and managers. Of the total population, approximately 1,800 residents meet our inclusion criteria. The lists of local community members (potential respondents) were obtained from the KBL village head. From the lists, we clustered the potential respondents based on the stratification criteria. From this profiling data,

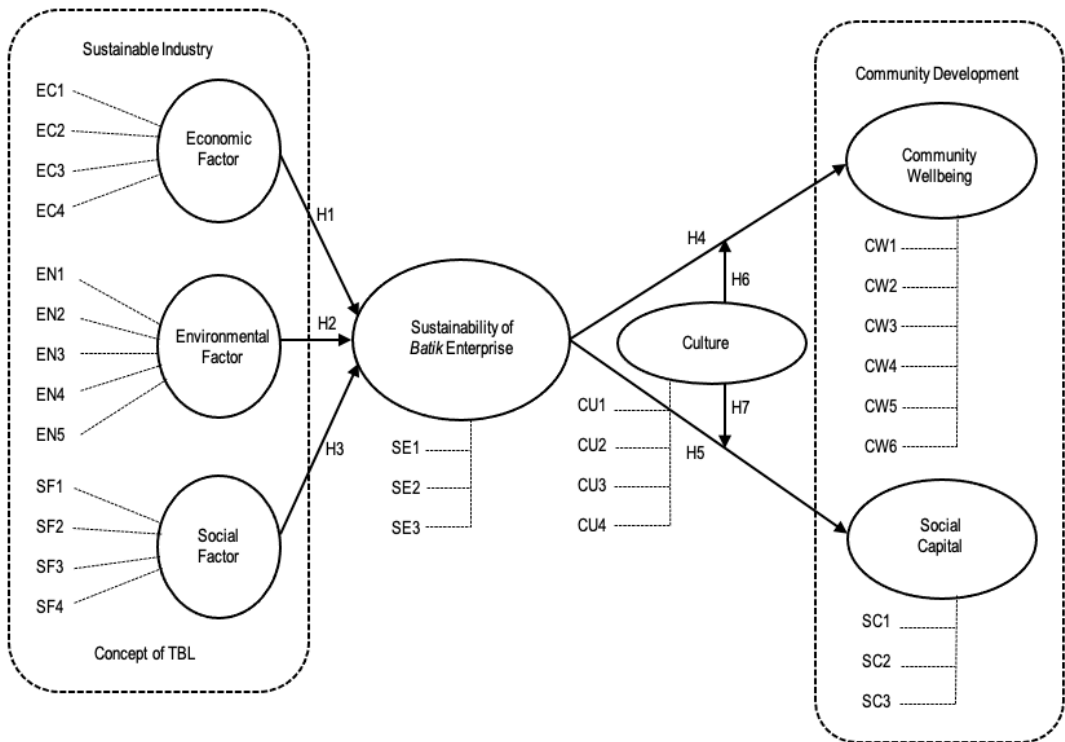


Figure 1: Research framework



respondents were randomly selected to make up the targeted sample size, i.e., at least 10% of the population size. Additionally, to ensure the sample of this study is representative (refer to Table 3), we checked our sample to confirm that it matched the dimensions of the population's demographic characteristics as suggested by Morse (1998). We collected 257 usable responses from local community members who completed our survey questionnaire, making it a total of 511 respondents. Participation was purely voluntary, and no rewards were given.

We developed two sets (Set A and Set B) of questionnaires. Set A was distributed to batik entrepreneurs, and the questions were designed to gather data for H1 to H3. Set B was distributed to local communities, and the questions were designed to test H4 to H7. 32 items and seven variables were used in this study. A Likert scale with 5 points was utilised to rank opinions, with "1" representing "strongly disagree" while "5" represent "strongly agree". A pilot study involving 30 respondents was conducted, where the questionnaires were tested and validated. From the discriminant validity and convergent validity tests, 21 questions were dropped as they did not fit well into variables ( $p > 0.05$ ). A composite reliability test was then

performed and no questions were dropped as the Cronbach's alpha values were higher than 0.70, as suggested by Hair *et al.* (2013). This confirms that when the same item is tested repeatedly to the same subject at different time intervals, the item produces the same or almost the same score.

Statistical analysis was performed using the partial least square (PLS) with the assistance of the Smart PLS software Version 3.2.9. The analysis was carried out in stages involving tests such as reliability and validity. Once the instrument was confirmed as valid and proved reliable, we performed a path analysis, using a standardised path coefficient, to determine the strength of the relationship between the variables. Model-to-data fit in the present study was evaluated using the normed fit of index (NFI), and standardised root mean square residual (SRMR), as suggested by Ringle *et al.* (2015).

## Results and Discussion

### Measurement Model

Table 4 shows the reliability, as well as the validity, of the cross-sectional data. For the convergent validity assessment, we followed

Table 3: Demographic characteristics of the study population

| No. | Characteristics    | Population | Sample                         |
|-----|--------------------|------------|--------------------------------|
| 1   | <b>Gender</b>      |            |                                |
|     | Male (M)           | 1,058      | 106                            |
|     | Female (F)         | 1,510      | 151                            |
|     | Total              | 2,568      | 257                            |
| 2   | <b>Age (years)</b> | 2,568      | 257                            |
|     | < 25               | 514        | 51 (D1 = 17; D2 = 16; D3 = 18) |
|     | 25 - 30            | 464        | 47 (D1 = 15; D2 = 15; D3 = 17) |
|     | 31 - 40            | 693        | 69 (D1 = 23; D2 = 22; D3 = 24) |
|     | ≥ 41               | 897        | 90 (D1 = 29; D2 = 30; D3 = 31) |
|     | Total              | 2,568      | 257                            |
| 3   | <b>District</b>    | 2,568      | 257                            |
|     | District 1 (D1)    | 841        | 84 (M = 33; F = 51)            |
|     | District 2 (D2)    | 829        | 83 (M = 35; F = 48)            |
|     | District 3 (D3)    | 898        | 90 (M = 38; F = 52)            |
|     | Total              | 2,568      | 257                            |

Table 4: Reliability and validity test results

| Variable               | Items | Loadings | Cronbach's Alpha | Composite Reliability | Average Variance Extracted |
|------------------------|-------|----------|------------------|-----------------------|----------------------------|
| Culture                | CU1   | 0.797    | 0.913            | 0.931                 | 0.658                      |
|                        | CU2   | 0.783    |                  |                       |                            |
|                        | CU3   | 0.821    |                  |                       |                            |
|                        | CU4   | 0.834    |                  |                       |                            |
| Economic factors       | EC1   | 0.860    | 0.951            | 0.957                 | 0.636                      |
|                        | EC2   | 0.815    |                  |                       |                            |
|                        | EC3   | 0.666    |                  |                       |                            |
|                        | EC4   | 0.808    |                  |                       |                            |
| Environmental factors  | EN1   | 0.725    | 0.917            | 0.928                 | 0.501                      |
|                        | EN2   | 0.756    |                  |                       |                            |
|                        | EN3   | 0.598    |                  |                       |                            |
|                        | EN4   | 0.667    |                  |                       |                            |
|                        | EN5   | 0.745    |                  |                       |                            |
| Social factors         | SF1   | 0.595    | 0.902            | 0.918                 | 0.599                      |
|                        | SF2   | 0.773    |                  |                       |                            |
|                        | SF3   | 0.802    |                  |                       |                            |
|                        | SF4   | 0.774    |                  |                       |                            |
| Sustainable enterprise | SE1   | 0.797    | 0.943            | 0.951                 | 0.661                      |
|                        | SE2   | 0.818    |                  |                       |                            |
|                        | SE3   | 0.832    |                  |                       |                            |
| Social capital         | SC1   | 0.780    | 0.903            | 0.922                 | 0.599                      |
|                        | SC2   | 0.821    |                  |                       |                            |
|                        | SC3   | 0.716    |                  |                       |                            |
| Community well-being   | CW1   | 0.789    | 0.936            | 0.949                 | 0.667                      |
|                        | CW2   | 0.891    |                  |                       |                            |
|                        | CW3   | 0.787    |                  |                       |                            |
|                        | CW4   | 0.837    |                  |                       |                            |
|                        | CW5   | 0.881    |                  |                       |                            |
|                        | CW6   | 0.872    |                  |                       |                            |

three procedures as recommended by Hair *et al.* (2013). These were: (1) The factor loadings of each item, (2) composite reliability of each construct and (3) the average variance extracted (AVE). From Table 4, the factor loading of each item was greater than 0.5, indicating that convergent validity was demonstrated at the item level. The composite reliability ranged from

0.918 to 0.957, and this exceeds 0.70. Finally, all AVEs ranged from 0.50 to 0.66, suggesting that convergent validity in our model is adequate.

In addition, we used the Cronbach's alpha test to estimate the composite reliability of each variable. According to DeVellis (2003), values between 0.8 and 0.9 should be considered good,

and as per Table 4, all Cronbach's alpha values were higher than 0.9, hence, confirming the variables' consistency. The hypothetical model provided to be a good fit to the data according to the structural equation modelling fit indices (SRMR = 0.07; NFI = 0.92).

### ***Hypotheses Testing and Discussion***

As shown in Table 5, the results of the path model represent the relationship between the variables in this study. The hypothetical model tested in this study, which can be seen with standardised path coefficients in Figure 2, illustrates the results of the analysis. Overall, six out of seven hypotheses were significant. As per Table 5, all industrial sustainability variables—economic factors ( $t=5.01$ ), environmental factors ( $t=13.10$ ), and social factors ( $t=14.04$ )—had a significant positive influence on the sustainability of batik enterprises, supporting H1, H2 and H3, respectively.

For objective 2, our findings indicate that the sustainability of batik enterprises had a positive influence on community development, as measured by community well-being and social capital. This can be observed in the community well-being and social capital variables, which were significant at 99%, supporting H4 and H5, respectively. Our hypothesis that culture plays an essential role as a moderator between the sustainability of batik enterprises and community development was “partially” significant. The effect can only be observed

through social capital (H7), significant at 99%, while well-being was found to be insignificant (H6). In other words, culture does not moderate the relationship between the sustainability of batik enterprises and community well-being. However, culture does moderate the relationship between the sustainability of batik enterprises and social capital.

Of the three core sustainable factors, economic factors ( $\beta=0.165$ ) have the smallest coefficient value compared with other factors, social ( $\beta=0.573$ ) and environment ( $\beta=0.330$ ). This suggests that the sustainability of batik enterprises in KBL is not merely shaped by industrial economic factors, and that environmental and social factors are more imperative. In KBL, Surakarta, its batik enterprises represent a strong dialectical link between the economy, society and the environment (Muin, 2013). For most local communities and entrepreneurs in KBL, batik arts and enterprises are KBL's identity that must be upheld. In 2015, batik enterprises in KBL introduced the “green eco batik” initiative, a collective effort with the local community to introduce a cleaner manufacturing process to reduce water pollution and support Surakarta as an eco-cultural city.

The results from the path analysis also indicate that the sustainability of batik enterprises in KBL, Surakarta, has positively influenced the local community's well-being and social capital. This suggests that sustainability,

Table 5: Path analysis results

| <b>Path</b>  | <b>Path Coefficient</b> | <b>t-statistic</b> | <b>Results</b> |
|--|-------------------------|--------------------|----------------|
| H1: Economic factors ® Sustainability enterprises      | 0.165                   | 5.006**            | Supported      |
| H2: Environment factors ® Sustainability enterprises   | 0.330                   | 13.103**           | Supported      |
| H3: Social factors ® Sustainability enterprises        | 0.573                   | 14.041**           | Supported      |
| H4: Sustainability enterprises ® Community well-being  | 0.730                   | 24.087**           | Supported      |
| H5: Sustainability enterprises ® Social capital        | 0.216                   | 7.276**            | Supported      |
| H6: Culture (moderating effect) ® Community well-being | -0.015                  | 0.675              | Not supported  |
| H7: Culture (moderating effect) ® Social capital       | 0.264                   | 10.995**           | Supported      |

\*\* significant at 99%

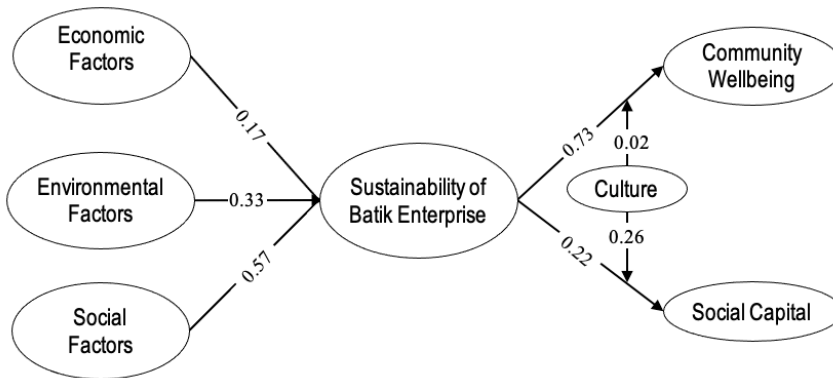


Figure 2: Model results indicating observed paths among study variables

in general, and community development in KBL are built as a subset of multiple characteristics, both tangible and intangible. Referring to Turcu (2013), in KBL, Surakarta, we deduced that these characteristics might include economic development, environmental standards, social integrity, social cohesion, community empowerment, and good governance. Our findings also concur with Theodori (2005) that the community development approach should be viewed based on an interactional perspective. Therefore, linking the social capital-based approach with the interactional approach as posited by Bridger and Alter (2006) can be an impactful strategy for community development, and probably in KBL, too, in future.

The research model also indicates that culture moderates the relationship between the sustainability of batik enterprises and social capital; this may imply that culture plays a role as a value that strengthens social ties in the development process in KBL. According to Phillips *et al.* (2020) and Papazoglou (2019), culture in societies usually corresponds with life patterns that include laws and regulations, beliefs and standards, rituals, traditional knowledge and expected knowledge behaviours. Culture is born from human and social interactions, and in KBL, the batik's culture and tradition contribute to the construction of local identity and unity. This influences community members' trust to work together on specific needs and problems (Bridger & Luloff, 1999; Schmidt *et al.*, 2002; Basiroen

& Kana, 2019), making the batik traditions and activities in KBL inseparable from their way of life. In KBL, a typical extensive approach of culture-centred development materialises by applying several best practices adopted from its local cultural heritage, which is batik.

This study corroborates that cultural freedom must be an indispensable feature in sustainable and community development. Therefore, it is critical for policymakers involved in community empowerment and sustainable development to recognise the prominent role that culture plays in improving local communities' well-being and social capital. By considering and integrating cultural values, traditional knowledge and local elements in the community development approaches and interventions, effective, cohesive, and efficient development endeavours can be commissioned (Tjarve & Zemīte, 2016; OECD, 2018). However, in multicultural settings, recognising cultural freedoms may require multicultural policy solutions that address and appreciate diversities.

In KBL, creative culture *i.e.*, batik illustrates the way people express and communicate their cultural values in innovative ways. This has allowed people in KBL to achieve their potential fully and to do something that they are proud of and appreciate. While creative culture generally offers local communities the opportunity to express their creativity and present artistic products (e.g., creative works of art through

batik), cultural activities and facilities that exist within the sustainable industrial environment have created various opportunities for the local community, entrepreneurs, and other economic sectors, such as tourism (Siregar *et al.*, 2020).

### Conclusion

In summary, the results of the path analysis support our hypothetical model, in which industrial sustainability factors i.e., economy (H1), environment (H2), and social (H3), significantly influence the sustainability of batik enterprises in KBL. Consequently, the sustainability of batik enterprises significantly influences community development (H4) and (H5), as measured by the community's well-being and social capital, respectively. This study has shown the positive effect of the local batik industry and enterprises, which embraces sustainability practices on community development, as well as the pivotal role played by local culture in reinforcing the effect. We found that culture moderated the influence of the sustainability of batik enterprises on social capital (H6), but not on community well-being (H7).

The research findings suggest the importance for policymakers of designing and promoting community development through synergies in a sustainable industry that embraces values of culture and heritage. This is in accordance with the contention by Sen (2014) that community development functions as a process of capacity improvement that ensures that people are free to live fully and creatively by their values. Accordingly, the freedom to choose one's cultural identity must be respected because people have the right to live with dignity and without prejudices. Such freedom is rooted in universal human rights declaration and several international treaties, where nation-states are obligated and committed to protecting and promoting them.

Moreover, promoting and safeguarding the local culture and heritage would contribute directly to achieving sustainable development

goals (SDGs) such as gender equality (SDG 5), decent work and economic growth (SDG 8), reduced inequalities (SDG 10), sustainable cities and communities (SDG 11), responsible consumption and production (SDG 12), and the environment (SDGs 13, 14, and 15) (Hosagrahar, 2017).

Notably, the present study has several limitations, which can be addressed in future research. First, this study was conducted with the involvement of a business community that has been operating for generations and dealt with only a single and similar commodity, namely, batik. Thus, generalisations must be made with care. Second, this study's cross-sectional nature prevents this study from drawing causal inferences. Third, the data collected is limited to the questionnaire responses. Information will be richer when using in-depth interviews or focus group discussions with respondents.

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