

**Sustainable Supply Chain Management Practices in Batik Small and Medium Scale Enterprises Performance**Hikmaturrizky A. Syukron<sup>1</sup>✉, Grace Tianna Solovida<sup>2</sup><sup>1</sup>Department of Accounting, STIE Bank BPD Jateng, Indonesia<sup>2</sup>Department of Accounting, STIE Bank BPD Jateng, Indonesia**Article Information***Article history:*

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**Abstract**

*The research was conducted to analyze the relationship between sustainable supply chain management practices and the performance of environmentally friendly batik SMEs. The concept of Sustainable Supply Chain Management has become the right choice for business activities. Eco-friendly batik SMEs must be responsible for environmental practices and social practices in the scope of internal and external management and their impact on all dimensions of corporate sustainability performance. The research sample was 70 owners of environmentally friendly batik SMEs in several cities in Central Java and Yogyakarta. Data analysis was performed through Partial Least Squares (PLS). The general conclusion of this research was that internal management and external management influenced corporate performance. However, supplier assessment and supervision and supplier collaboration did not influence corporate performance.*

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## INTRODUCTION

It is undeniable, the existence of small and medium scale enterprises (SME) can lever Indonesia's economic growth. The Indonesian economic development policies is a force to encourage SMEs to become real forces that are capable of increasing regional economic growth and absorbing labor. The presence of SMEs is also the most important part of the economy in Indonesia because SMEs are one of the biggest movers. According to Tambunan in (Wanty, 2006), the importance of SME in Indonesia is also related to its strategic position in various aspects. In the Indonesian economy, SMEs occupy a strategic position. This is due to the role of SMEs in creating new jobs, apart from being a means of equitable distribution of people's economy to reduce poverty and unemployment.

The batik industry is one of several SMEs in Indonesia. The Indonesian batik industry is considered to have controlled the world market so that it is able to become a driving force for the Indonesian economy. So far, the batik industry has experienced good growth. The Ministry of Industry noted that Indonesia's batik exports had reached Rp. 747.4 billion in 2018. In addition to having an increasingly improving economic impact on the surrounding community, the batik industry also accelerates economic growth in Indonesia. It also contributes foreign exchange for the country with exports done to a number of countries. But on the other hand, the batik industry also has some unfavorable impacts. Particularly, it is felt in the environment around the batik business from inorganic liquid waste. The causes of these problems include the inability of batik SMEs to design the production process properly and also the ignorance of batik SMEs to the bad impact of their production activities on the environment.

Kurniawan et al., (2014) said that the batik industry had a bad impact in the form of large amounts of inorganic wastewater, thick color, smelled and had temperature, acidity (pH), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), High Total Suspended Solid (TSS). This was due to the use of chemicals and dyes in the batik production process so environmental pollution occurred and a bad economic impact for industry players would be generated if it was not handled immediately with good planning. If wastewater is discharged into rivers without being treated first, it can cause environmental pollution, especially in aquatic ecosystems.

About river pollution in Pekalongan, Central Java, according to Living Environment Agency of the City of Pekalongan it was said that only 45% of batik waste was processed by the Wasted Water Processing Installation and most of the rest was disposed into the river. Several rivers in Pekalongan City had been polluted by batik waste. As happened in the river along Klego Village, East Pekalongan. The river water is already black, gives off a very strong odor, plus a drainpipe that leads to the river. At least, nearly 5 million liters of waste every day are contributed badly by the batik industry there. The city of Pekalongan is indeed one of the centers for the batik SME industry that has the potential to support the local economy, but it does not yet have an adequate wastewater management system. (Budi Susanto, 2019, <https://jateng.tribunnews.com/dlh-kota-pekaongan-sadari-baru-45-persen-limbah-batik-terolah-ipal-sisanya-terbuang-ke-sungai/>, 9 April 2019).

Based on the above phenomenon, a batik enterprise can be terminated if it disturbs the environment around it or does not comply with the expectations of the surrounding community. Batik business actors should not only seek the profit, but they also have to pay attention to environmental conditions, such as improper waste disposal and the application of Sustainability Supply Chain Management (SSCM) because they set up a business that cannot be separated from the surrounding community. SSCM explained that companies could improve their internal processes through environmental and social practices and improve supplier performance (Jing & Dai, 2018). Wantao (2018) explained that SSCM was a combination of GSCM and CSR and aimed to maximize the performance of all dimensions that led to sustainable development, such as paying attention to social responsibility and environmental practices in conducting business activities. GSCM (Green Supply Chain Management) was an extension of the traditional supply chain where the green supply chain included a series of activities aimed at minimizing bad environmental impacts.

The aim of this research was to ascertain (a) the influence of internal environmental management practices on the environmental performance, social performance and economic performance of SMEs (b) the influence of social responsibility management practices on environmental performance, social performance and economic performance of SMEs (c) the influence of collaboration of suppliers on environmental performance, social performance and economic performance of SMEs (d) the influence of assessment and supervision on environmental performance, social performance and economic performance of SMEs (e) the influence of environmental performance and social performance on the economic performance of SMEs.

Our study contributes to the current literature in several ways. First, this study tries to examine the effect of implementing internal environmental management by considering external support, namely the company's cooperation with its suppliers (Jing & Dai (2018) on the economic performance of Zhu, Sarkis, & Geng (2005) and non-economic Kolk (2016)). Second, this research is important for managers in making decisions related to environmental management by emphasizing on sustainable supply chain management which will ultimately have an impact on the company's economic and social performance.

## **Hypothesis Development**

### **Internal Environmental Management Practices and SME Performance**

Beske & Seuring (2014) explained that the application of environmental practices (such as environmental management systems) could lead to better environmental performance. Jing & Dai (2018) explained that social sustainability was focused on internal and external parts of the company.

Environmental management practices can be expected to have a positive impact on both parts. Such as environmentally friendly production can reduce waste and preserve the community's environment, so it can increase the company's social reputation.

Zhu, Sarkis, & Geng (2005) stated that environmental management practices had a positive impact on a company's economic performance. The use of environmentally friendly materials, efficient production processes, and reduce the use of resources could reduce high production costs. Based on the explanation above, the hypotheses formulated were :

H1a: Positively, environmental management practices influence environmental performance of SMEs.

H1b: Positively, environmental management practices influence social performance of SMEs.

H1c: Positively, environmental management practices influence economic performance of SMEs.

Kolk (2016) explains that in corporate social responsibility management (CSR management), the involvement of employees and the community can improve community environmental protection and company environmental performance. Jing & Dai (2018) explained that CSR management practices included two parts (employees and society).

Good relations between employees and the community (customers) can improve the company's social reputation and social performance. Walker & Jones (2012) explained that if a company improved employee safety and working conditions, it could increase employee satisfaction and reduce accidents, thus it could increase the amount of production and reduce losses. The application of corporate social responsibility management can increase production efficiency. From some of the supporting arguments, the hypotheses formulated were:

H1d: Positively, social responsibility management practices influences the environmental performance of SMEs.

H1e: Positive social responsibility management practices influences the social performance of SMEs.

H1f: Positively, responsibility management practices influences the economic performance of SMEs.

### **External Supplier Management and SME Performance**

Jing & Dai (2018) explained that collaboration with several raw material suppliers had a positive impact on the company's environmental performance. It suggested that supplier collaboration could reduce transaction costs and get resources that were priced according to the company's desire to have a comparative advantage in environmental performance. However, supplier collaboration does not have a significant direct impact on corporate social performance. It can be viewed from the current development process that did not really care about supplier collaboration. They only focused on one supplier. Therefore, some of the research hypotheses formulated were:

H2a: Positively, supplier collaboration influences the environmental performance of SMEs.

H2b: Positively, supplier collaboration influences the social performance of SMEs.

Research conducted by Gimenez et al., (2012) concluded that assessment of suppliers did not have a significant direct impact on company performance. Assessment of suppliers could be indicated from the supplier's habits of visiting the company to provide raw materials. The aim is to reduce unprofessional suppliers so that it has a good effect both for supplier development and supplier improvement which in turn has a direct impact on the environment and supplier performance. In other words, the performance appraisal of suppliers directly impacts supplier performance. Based on the description above, the hypotheses formulated were:

H2c: Positively, supplier assessment and supervision influence the environmental performance of SMEs.

H2d: Positively, supplier assessment and supervision influence the social performance of SMEs.

Gimenez et al., (2012) explained that supplier collaboration and supplier assessment and supervision created a positive impact on company performance. Supplier collaboration as well as supplier assessment and supervision can help companies achieve higher production value and use fewer resources can lower production costs. Based on the explanation above, the hypotheses formulated were:

H2e: Positively, supplier collaboration influences the economic performance of SMEs

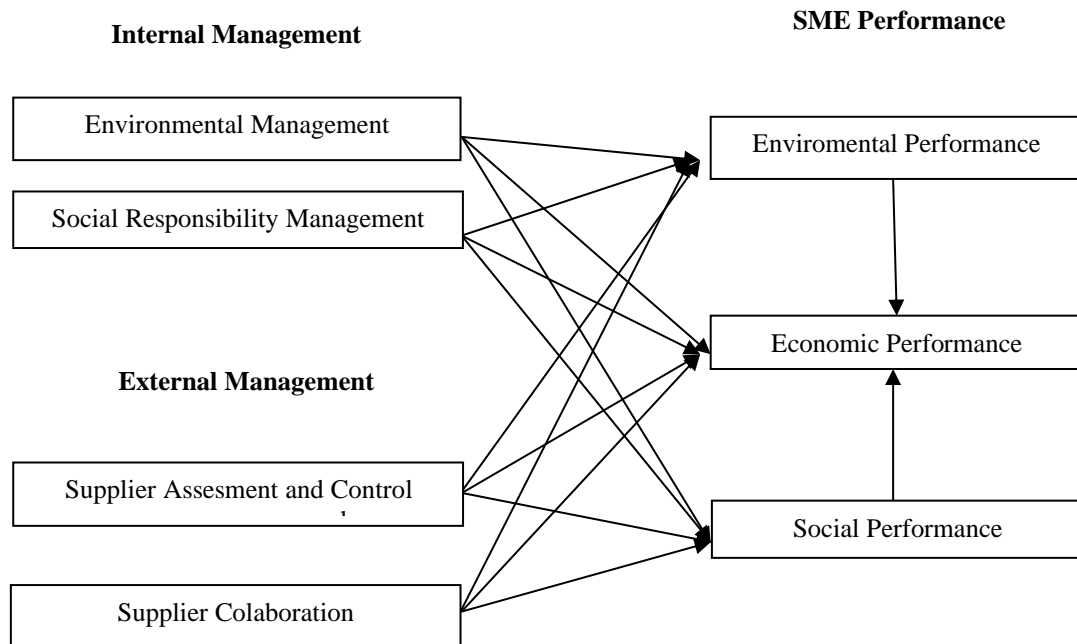
H2f: Positively, supplier assessment and supervision influence the economic performance of SMEs.

**SME performance**

Jing & Dai (2018) explained that environmental performance and social performance had a positive effect on economic performance. It indicates that companies with good environmental and social performance are able to achieve more economic benefits. Environmental and social performance can be considered as intangible assets. Intangible assets can promote to customers and increase community satisfaction thus the company's reputation is getting better. Therefore, the research hypotheses formulated were:

H3a: The environmental performance positively influences the economic performance of SMEs.

H3b: Positively, social performance influences the economic performance of SMEs.



**Figure 1** Research Model

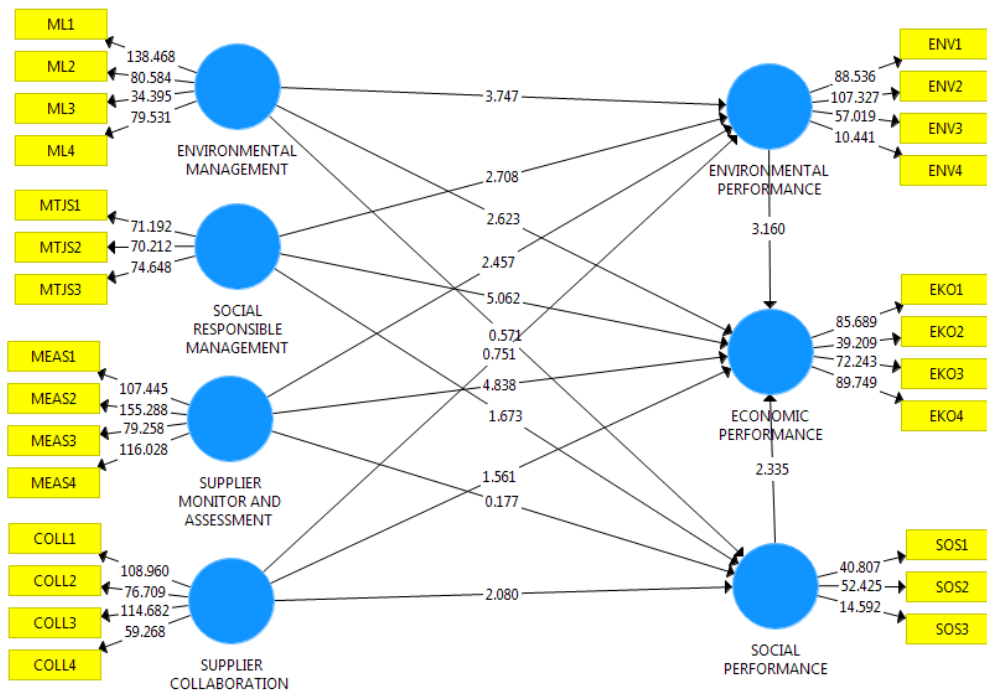
**METHOD**

The population of the study were batik SMEs (Small and Medium Enterprises) in Central Java and Yogyakarta including 17 batik craftsmen in Batik Village of Laweyan in Solo, 7 batik craftsmen in Semarang, 1 batik craftsman in Pekalongan, 30 batik craftsmen in Bayat Klaten and 15 batik craftsmen in Giriloyo Bantul Batik Village, Bantul Yogyakarta. The samples were selected through purposive sampling based on certain criteria and considerations. In the study, the samples were 70 batik SMEs which were assessed according to predetermined criteria. The criteria for SMEs as a sample were having a maximum of 30 employees, annual income was less than Rp. 2.5 billion, having used organic materials in batik coloring, being efficient in energy use and waste that did not pollute the environment.

The analytical method applied was PLS (Partial Least Square). The software used was SmartPLS. SmartPLS is a software used to test the relationship between the dependent latent variable and the independent

latent variable. Because PLS is based on variance, it can use a small sample size with a minimum criterion of 30-100 samples. Technical analysis was PLS which was carried out in two stages, conducting measurement model tests to test the validity and reliability of the constructs of each indicator and structural model tests to ensure the influence between variables.

**RESULT AND DISCUSSION**



**Figure 2** Structural Model

Based on the testing of first hypothesis, H1a was accepted. The conclusion indicated that environmental management practices had an effect on the environmental performance of SMEs. The environmental management practice variable had a high average index value which meant that environmental management practice had a good index. The indicator about the waste that was disposed of not endangering the environment was the highest index value. The application of environmental management practices such as the use of natural dyes in the batik coloring process and waste management could improve environmental performance.

The environmental performance variable performed a high index which meant that the environmental performance variable had a good index. The indicator on efforts to protect and protect the environment was the highest index. By protecting the environment, SMEs could improve their environmental performance. This conclusion was in line with the research conclusions by (Zhu et al., 2005; Beske & Seuring, 2014; Jing & Dai, 2018) which stated that environmental management practices had an effect on economic performance.

Based the second hypothesis testing, H1b was rejected. The conclusion indicated that environmental management practices had no influence on the social performance of SMEs. The environmental management practice variable displayed a high average index value which meant that it had a good index. However, indicators related to water use according to utility had the lowest index. It showed that SMEs had not fully implemented environmental management practices. So that if it was internally linked environmental management practices were not related to social performance.

The social performance variable displayed a high average index value which meant that it had a good index. However, environmental management practices had no effect on the social performance of SMEs. The conclusion contradicted the research conclusion of Gimenez et al., (2012) and (Jing & Dai, 2018) which stated that environmental management practices influenced corporate social performance.

Environmental management practices have a positive effect on the economic performance of SMEs. Thus, H1c was accepted. The environmental management practice variable displayed a high index which meant that it had a good index. The indicator about the waste that was disposed of not endangering the environment had the highest index. This showed that environmentally friendly batik SMEs had used natural dyes in the coloring process so that the resulting waste did not endanger the environment and it would be able to produce high prices and quality. Thus, the sales profit of SMEs increased.

The economic performance variable had a high average index value which meant that it had a good index. The indicator of an increase in return on sales had the highest index and this showed that product quality and high prices could increase sales profit so that the economic performance of SMEs increased. The conclusion was in line with the conclusions of research by Zhu et al., (2005) and Gimenez et al., (2012) which explained that environmental management practices had an effect on economic performance.

Based on the results of hypothesis testing, social responsibility management practices had a positive influence on the environmental performance of SMEs. Hence, H1d was accepted.

The social responsibility management practice variable had a high average value which meant that it displayed a good index. The indicator of the absence of underage employees was the highest index value. In the absence of underage employees, it would make it easier for SMEs to direct employees to reduce waste and save electrical energy to improve environmental performance.

The environmental performance variable had a high average index value which meant that it had good index. Indicators related to efforts to protect the environment were the highest index values. It showed that reducing waste and saving electrical energy played a role in protecting the environment so that the environmental performance of SMEs increased. The conclusion of study was in line with the conclusions of the study conducted by (Gimenez et al., 2012; Kolk, 2016; Jing & Dai, 2018) which stated that social responsibility management practices affected environmental performance.

From testing of the fifth hypothesis, social responsibility management practices have no effect on the social performance of SMEs. Hence, H1e was rejected.

The variable of social responsibility management practices had a high average index value which meant that it had a good index. However, the indicator regarding the provision of health insurance to employees had the lowest index. It showed that SMEs had not been able to provide health insurance to employees. So, if it was linked internally, SMEs had not been able to improve social performance.

The social performance variable showed a high average index value which meant that it had a good index. However, indicators on improving employee health and safety had the lowest index compared to other indicators. The inability of SMEs to ensure the health of employees indicated that they were not yet able to meet the needs of employees. The conclusion contradicted the conclusions of research from Gimenez et al., (2012) and (Jing & Dai, 2018) which stated that social responsibility management practices affected social performance.

Social responsibility management practices had a positive effect on the economic performance of SMEs. Thus, H1f was accepted.

The social responsibility management practice variable displayed a high average index value which meant that it had a good index. The indicator of the absence of underage employees was the highest index value. It showed that the absence of underage employees would make it easier for SMEs to direct the production process and the production process could produce products according to the target. Hence, it could increase sales profit. Then, the economic performance of SMEs had increased.

The economic performance variable had a high average index value which means that it had a good index. The indicator of an increase in return on sales had the highest index value which showed that the absence of underage employees could increase production results so that the return on sales increased. The conclusion contradicted the research conclusions of (Gimenez et al., 2012; Jing & Dai, 2018) which stated that social responsibility management practices had no effect on economic performance. However, the results of the study support the conclusions of Walker & Jones, (2012) which stated that social responsibility management practices had an effect on economic performance.

Based on the testing of seventh hypothesis, supplier assessment and supervision had a positive effect on the environmental performance of SMEs. Therefore, H2a was supported. The supplier assessment and supervision variable had a medium index value which meant that it had a fairly good index. Indicators regarding waste treatment by suppliers performed a fairly good index, which meant that indirectly supplier assessment and supervision could improve the environmental performance of SMEs.

The environmental performance variable had a high average index value which meant that it had a good index. The indicator on efforts to protect and protect the environment was the highest index. Suppliers who carry out waste treatment had participated in protecting and protecting the environment so that indirectly, supplier assessment and supervision could improve the environmental performance of SMEs. The conclusion was in line with the conclusions of research by (Carter & Rogers, 2008; Gimenez et al., 2012; Jing & Dai, 2018) which stated that supplier assessment and supervision had an effect on environmental performance.

Through testing for the eighth hypothesis, it was concluded that supplier assessment and supervision did not affect SME performance. Therefore, H2b was rejected. The supplier assessment and supervision variable performed a medium index value which meant that it had a fairly good index. However, the indicator for the level of environmental damage repair showed the lowest index. The suppliers only fulfilled their obligation to send raw materials to SMEs. They were not responsible for environmental damage due to operational activities. Social performance was not related to them.

The social performance variable had a high average index value which meant that it had a high index. This conclusion was the same as the research conclusions of Gimenez et al., (2012) and (Jing & Dai, 2018) which stated that supplier assessment and supervision had no effect on social performance.

From the eighth hypothesis testing that had been implemented, supplier assessment and supervision has a positive effect on the performance of SMEs. Thus, H2c was accepted.

The variable of supplier assessment and supervision had a medium index value which means that it had a fairly good index. The indicator of timeliness of raw material delivery was the highest index. The timeliness of the delivery of raw materials made the production process run smoothly without any obstacles so that the company could produce products according to the target. Therefore, the economic performance of SMEs increased.

The economic performance variable had a high average index value which meant that it had a good index. An indicator of an increase in return on sales was the highest index and this showed that the timeliness of the delivery of raw materials could facilitate the production process, which in turn it would increase sales profit. Thus, supplier assessment and supervision might improve the economic performance of SMEs. This conclusion contradicted the research by Jing & Dai, (2018) which stated that supplier assessment and supervision had no effect on economic performance. However, this study supported the research of Gimenez et al., (2012) and Zhu et al., (2005) which stated that supplier review and supervision did not influence economic performance.

The tenth hypothesis testing concluded that supplier collaboration had no effect on environmental performance. Thus, H2d was rejected.

The supplier collaboration variable had a high average index value which means that it had a good index. However, the indicator for meeting supplier needs had the lowest index compared to other indicators. It indicated that SMEs had not been able to meet supplier needs. Even though suppliers had sent natural raw materials, it turned out that the environmental performance was still poor, because they were still not fully able to process the resulting waste. The environmental performance variable had a high average index value which meant that it had a good index. However, the indicator of reuse / recycle ability had the lowest index compared to other indicators. It indicated that SMEs had not been able to process waste and they had not been able to improve their environmental performance. This conclusion contradicted the conclusions of research by Jing & Dai, (2018) and Carter & Rogers, (2008) which stated that supplier collaboration affected environmental performance. However, the results of this study supported the research by (Gimenez et al., 2012) which stated that supplier collaboration had no effect on environmental performance.

Based on testing of eleventh hypothesis, it was proven that supplier collaboration had a positive effect on social performance. Of course, H2e was accepted. The supplier collaboration variable had a high average index value which meant that it had a good index. The supplier service quality indicator had the highest index and it showed that the supplier had performed a good service satisfying SME actors. Good relations among suppliers and SMEs of batik would lead to mutual trust so that the social performance of SMEs was getting better.

The social performance variable displayed a high average index value which meant that it had a good index. The indicator that the product produced did not have a bad impact on health and that the public was involved in business activities had a high index. It indicated that the product was safe for health. In addition, the absorption of labor from the surrounding community increased social performance. This conclusion contradicted the results of research conducted by Jing & Dai, (2018) which stated that supplier collaboration had no effect on social

performance. However, the conclusions of this study supported the research conclusions of Pagell & Gobeli, (2009) and Gimenez et al., (2012) which stated that supplier collaboration affected social performance.

The twelfth hypothesis testing concluded that supplier collaboration did not affect the economic performance of SMEs. Thus, H2f was rejected.

The supplier collaboration variable had a high average index value which meant that it had a good index. However, the indicators of meeting supplier needs had the lowest index value. It showed that SMEs had not been able to meet supplier needs. Even though suppliers had sent natural raw materials, supplier collaboration had not been able to improve the economic performance of raw material efficiency.

The economic performance variable had a high average index value which meant that it had a good index. However, the production cost efficiency indicator had the lowest index because even though suppliers had sent natural raw materials, it did not make SMEs production cost efficient. This conclusion was in line with the conclusions of the research of Gimenez et al., (2012) and Jing & Dai, (2018) which stated that supplier collaboration did not affect economic performance.

Based on testing of the thirteenth hypothesis, environmental performance had a positive effect on economic performance. Thus, H3a was accepted.

The environmental performance variable had a high average index value which meant that environmental performance had a good index. The indicator on efforts to protect and protect the environment was the highest index. SMEs had implemented environmental practices such as selecting environmentally friendly natural dyes. Thus, SMEs had participated in protecting the environment. It made the quality of batik products increase at a high price. The condition made the sales profit achieved also increased. ,

The economic performance variable had a high average index value which meant that it had a good index. The indicator for an increase in return on sales was the highest index. Environmental performance was proven to improve the economic performance of SMEs. This conclusion was in line with the conclusions of research by de Giovanni, (2012) and Jing & Dai, (2018), which stated that environmental performance had a positive influence on economic performance.

Finally, from testing of fourteenth hypothesis, it was concluded that social performance affected economic performance. Hence, H3b was supported.

The social performance variable had a high average index value which meant that it had a good index. The indicator that the product produced did not have a bad impact on health was the highest index. SMEs had shown their concern for the community. Concern for the community was a plus value. The resulting product was increasingly in demand and it would increase sales profit.

The economic performance variable displayed a high average index value which meant that it has a good index. This showed that products that were safe for health were more attractive and increased sales profit. The increase in sales profit would of course affected the economic performance of SMEs. This conclusion was the same as the conclusions of research by (de Giovanni, 2012) and (Jing & Dai, 2018) which stated that social performance had a positive influence on economic performance.

## CONCLUSSION AND RECOMMENDATION

Based on the research results that had been explained, several conclusions formulated were : Positively, environmental management practices, social responsibility management practices and supplier assessment and supervision influenced environmental performance but Supplier collaboration did not influence environmental performance. Only, supplier collaboration influenced social performance and the other variable did not influence. All variable positively influenced economic performance excep supplier collaboration.

There were several limitations of the study. It was the difficulty in distributing questionnaires. In addition, this research was only conducted in Semarang, Klaten, Solo, Pekalongan, and Bantul. It was due to the lack of information sources regarding environmentally friendly batik SMEs. From some of the above limitations, it was suggested for further research to expand the object of research to the environmentally friendly batik industry in all over Central Java.

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