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Assessment of Producer's Perspective on the Production of Environmentally Friendly Fashion Products: A Case Study in Indonesian Natural Dyes Batik Craftsmen

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Assessment of Producer's Perspective on the Production of Environmentally Friendly Fashion Products: A Case Study in Indonesian Natural Dyes Batik Craftsmen --Manuscript Draft--

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Abstract:	Batik is well-known as intangible cultural heritage. In Indonesia, batik is produced in several areas, with its own characteristics. The batik production process goes through several stages, in which overall processes require the aid of chemicals. Conventionally, the batik production process results in environmental pollution due to direct waste disposal without any significant processing. Along with the increase of public awareness of environmental protection, batik dyeing process currently back to natural dyes. The study was conducted to examine the production intention of natural dyes batik. A total of 209 producers of natural dyed batik became respondents in this study. Data collection was carried out directly through filling out paper-based questionnaires as well as using online forms. The findings of this study revealed that producers' attitude and satisfaction gave significant positive influences on the production intention of natural dyes batik products. Moreover, the findings exhibited the significant effects of social value, quality value, and green value on attitude and satisfaction of producer. Attitude was also determined by economic value, but satisfaction was insignificantly affected by economic value. Production intention was strongly predicted by satisfaction and also determined by attitude. The results of this study support in enhancing the concept of natural dyes batik production, which also provide an important role towards sustainable production.
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4	Keywords	producer; natural dye, batik, perspective

Please kindly acknowledge me for the receipt of the manuscript. If you have any inquiries, please do not hesitate to contact me through my email at adhi_kusumastuti@mail.unnes.ac.id. Your cooperation regarding this matter is very much appreciated.

Thank you and with kind regards.

Yours sincerely,

Dr. Adhi Kusumastuti

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Assessment of Producer's Perspective on the Production of Environmentally Friendly Fashion Products: A Case Study in Indonesian Natural Dyes Batik Craftsmen

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Abstract

Batik is well-known as intangible cultural heritage. In Indonesia, batik is produced in several areas, with its own characteristics. The batik production process goes through several stages, in which overall processes require the aid of chemicals. Conventionally, the batik production process results in environmental pollution due to direct waste disposal without any significant processing. Along with the increase of public awareness of environmental protection, batik dyeing process currently back to natural dyes. The study was conducted to examine the production intention of natural dyes batik. A total of 209 producers of natural dyed batik became respondents in this study. Data collection was carried out directly through filling out paper-based questionnaires as well as using online forms.

The findings of this study revealed that producers' attitude and satisfaction gave significant positive influences on the production intention of natural dyes batik products. Moreover, the findings exhibited the significant effects of social value,

quality value, and green value on attitude and satisfaction of producer. Attitude was also determined by economic value, but satisfaction was insignificantly affected by economic value. Production intention was strongly predicted by satisfaction and also determined by attitude. The results of this study support in enhancing the concept of natural dyes batik production, which also provide an important role towards sustainable production.

Keywords: producer; natural dye, batik, perspective

1 Introduction

Batik is the Indonesian art masterpiece as a blend of art and technology inherited by the ancestors. Batik fabric is a variety of decorative fabrics produced by resist dyeing using wax as colour barrier. Batik production process included motif drawing, dyeing, and wax removal. The most common used dyes in the batik-production process include naphthol, indigosol, Procyon, and Remazol.

Batik is produced by various regions in Indonesia with regional characteristics. Among the regions in Indonesia whose economy is dominated by the batik industry is Pekalongan. In 2011, there were 1342 small industries in Pekalongan of which about 83.1% were batik industries [1]. With a production capacity of around 300 to 1000 pieces of cloth per month [2], each industry has the potential to generate 202.4 m³ of waste. Considering that only about 0.6% of the industry has a sewage treatment unit [1], while the rest discharges wastewater directly into the environment, serious move should be applied. Textile wastewater generally contains heavy metals such as chromium, copper, and cadmium. This waste can contaminate soil and surface water which in turn contaminates ground water. As a pollutant, the accumulation of heavy metals results in various disorders of the body's organs because heavy metals cannot be degraded [3].

In the last two decades, green technology has received more attention. Green technology refers to all environmentally friendly technologies that do not interfere with or damage the environment and natural resources. The overuse of chemicals and overexploitation of resources lead to a worsening greenhouse effect, disturbed ecosystems, and global warming. With regard to the hazard posed by the use of synthetic dyes, natural dyes are reused back commercially. The use of natural dyes has increased along with the increasing awareness of consumers to get environmentally friendly textiles and the need to preserve the environment. This is driven by the carcinogenic nature of some synthetic dyes [4-6]. In addition, Indonesia has many types and sources of natural dyes. Natural dyes have a complex chemical structure [7], however, natural dyes also have disadvantages such as the long colouring process, inconsistent colour reproducibility, and relatively expensive costs [8, 9].

Various studies discussed about application of natural dyes on batik processes have been carried out. Some reports on customer behaviour in the selection of batik are also available. In addition, other studies were conducted on the general description of the batik industry [10-14]. However, there has been no study on the behaviour of batik craftsmen in the use of natural dyes. This study needs to be carried out to determine the behaviour and motivation of batik artisans to use natural dyes. The use of natural dyes is expected to minimize environmental pollution, increase the economic value of renewable natural materials, and the selling value of batik itself. In addition, the impact of the use of natural dyes on the sustainability of dye plants and the environment will be

analysed. In the end, it will be used to determine the policy direction for the use of natural dyes in the batik industry.

In the 1990s, manufacturers and retailers performed perceived value as an imperative strategic that will continue to be important well into the twenty-first century. Sweeney and Soutar [15] declared that from a retailing perspective, people-based needs could be satisfied by delivering value thus put them in a much stronger position in the long term. Another statement given by Burden [16], in which to increase retail target, through customer who emphasis the value and customer who gives time pressure. The retailing value move seems to be a global phenomenon as the most compelling (Asian retail) opportunities those are at the value end of the market given that consumers in Asia today are much more value conscious than they were in the mid-1990s.

Perceived value can be interpreted as a customer's overall assessment of the product or service benefits by taking into account the paid price with the obtained value. It is therefore, perceived value is assessed based on a comparison between what is obtained from the product or service with the components provided. Value is commonly defined as ratio or trade-off between quality and price which is a value-for-money conceptualization. Considering the fact that retail customers are "value-driven" customer's value should be deeply understood by managers thus could focus their attention to achieve the needed market place advantage.

This research is very prospective in contributing data regarding the behaviour of natural dye batik craftsmen. The use of natural dyes is very important to minimize waste pollution due to the use of synthetic dyes and their additive materials. The data obtained is expected to be used to make policies related to the use of natural dyes in the batik industry.

2 Literature Review and Hypothesis

Figure 1 depicts conceptual model of the proposed framework. Totally, 10 hypotheses were drawn from six constructs, i.e., social value, economic value, quality value, green value, attitude, satisfaction, and production intention of natural dyes batik.

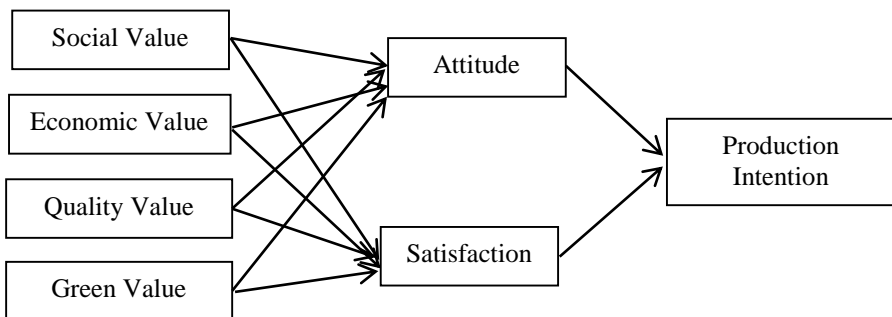


Figure 1 Conceptual Model

Attitude is a concept that includes evaluation of people, problems, objects, or events. Attitudes could change as the development of people's experience and knowledge. Attitude is the part that has a strong influence on behaviour. Attitude could be reflected from experience or background. Attitudes are something could be learned, affected by information and experiences. Furthermore, the fact that attitudes are predispositions to

respond leads to their relationship with actual producer behaviour. Producers attitude strongly affect production behaviours. Molina [17] stated that intention, attitude and subjective norms determine behaviours. Empiric studies about the relationship of attitude and behavioural intentions have been carried out before. Attitude could also be defined as individual characteristics which depicts either positive or negative behaviour and reflects feeling and knowledge to certain concept or subject [18]. Mantle-Bromley [19] stated that in the psychology study, attitude consists of three components, i.e., affect, cognition and behaviour. The components refer to people preferences level, person's knowledge of the attitudinal object and reactions and intention to the object, respectively. Another definition of attitude is a conviction in something that applies in a certain period of time that influences people to behave in a certain way regarding the matter. Attitude refers to psychological tendency that is expressed by assessing a particular system at certain degree of favourness. A single behaviour on a particular attitude object is strongly predicted by a specific attitude [20].

Social value is the utility of a product or service in enhancing the producer's perceived self-concept related to a particular social, demographic, socioeconomic or cultural group. Social value relates to self-image. It is believed that an action of producing natural dyes batik could improve producers' social-status. In terms of green products, social value is a perceived net utility gained from green product production based on the insight regarding social pressure or status gain. Social value has a significant positive influence on sustainable production behaviour [21]. Emotional value is the value obtained after the producer delivers product or service and finds that the resulting product has higher value thus cause emotional response. Social value could be determined as the emotional benefits acquired by the producers through the interaction with other producers in the community [22]. Producers are motivated by social affiliation to behave in the same way that of their social class. Producers tend to generate the products that represent their social status. Producers think their green production behaviour is a modern way of life. The production of natural dyes batik is important for their social identity in society. Hence, based on the above description, this study hypothesizes that:

Hypothesis 1a. Social value will positively affect producer attitude.

Producer satisfaction is the difference between the total benefits expected from a product/service and the total costs incurred to generate that product or service. Besides, producer satisfaction refers to the difference between the actual performance experienced and the expectation of the producer. Producer satisfaction refers to a person's subjective evaluation of the situation that result in a positive emotional response. Considering the intense competition, a successful response of producer satisfaction significantly defines the survival and long-term profitability of a business. Producers need to perform better thus resulting in higher service/product quality in order to establish and maintain a strong and long-term relationship with customers [23]. Previous study on producer satisfaction was done by Wagner [24]. They found that the average producer satisfaction was higher with flat and pit parlours over stall barns with pipeline systems for most areas surveyed. Kiss [25] revealed that despite their higher consumer prices, producer satisfaction in terms of saleable products quantity, selling prices, and customers number were the highest thing in the case of producer markets. Govindasamy [26] believed that producer's satisfaction is of important to appraise the

future growth prospect of the markets as well as to define the potential of recruitment targets for both existing and new outlets. The readiness to shift marketing and production focuses need to be done to satisfy customer request thus leads to long-term profitability as well as satisfaction. In perspective of producer, perceived satisfaction can be defined as producer acceptance of natural dyes batik and the comfort degree involved in the production. Shee and Wang [27] defined satisfaction as the pleasure or contentment in performing a compulsory or desirable action and experiences the result. In positive way, satisfaction is conceptualized as collection of feelings or attitudes against numerous factors that determine a particular situation. A higher degree of producer satisfaction signifies a higher degree of willingness to carry the process. A great deal of efforts has been carried out to estimate user satisfaction. It was revealed that user satisfaction is a complex concept, the matter varies with the experience or case character [28]. It is therefore, the following hypothesis was developed:

Hypothesis 1b. Social value will positively affect producer satisfaction.

In term of producer, economic value associates to profits generated by production as well as relationship with supplier and customer in relation to realised costs [29]. Economic value refers to value that person gives on an economic good based on the advantage of the good. Economic value is commonly estimated based on the person's willingness to pay for the good, typically measured in units of currency. Production of natural dyes batik offers producers perceived economic value through tangible benefits, such as low materials and production costs as well as maximum price. Research analysis of Jelcic and Mabic [29] showed that satisfaction was determined by economic value. However, the standardised coefficients beta revealed the higher contribution of emotional value in predicting client satisfaction than economic value. Wei et al. [30] defined economic value in terms of more reasonable pricing of brand agricultural products, in line value of brand agricultural products with the price, more economical brand agricultural products. Economic value is believed to determine purchase intention. Thus, it is hypothesized that:

Hypothesis 2a. Economic value will positively affect producer attitude.

Hypothesis 2b. Economic value will positively affect producer satisfaction.

Perceived quality is another dimension of brand value that is very important for producers in choosing the materials for production. It is important to note that product quality is an important company resource to achieve competitive advantage. Perceived quality reveals assessment (perception) of overall product advantages compared to its alternative product/service. Based on this definition it is also known that perceived quality is product ability to be accepted in providing satisfaction compared relatively to the available alternatives' product. High perceived quality indicates that the differences and advantages of the product to those of similar products after a long period of time have been discovered. Perceived quality is a component of brand value, therefore high perceived quality will encourage consumers' preference to our brand over the competitors. Product quality significantly enhances purchase motivation thus in turn affects consumer's purchasing decisions [31]. They discovered that the eagerness of consumers to continue purchasing luxury fashion brands in the future was determined by perceived brand quality and customer service. Previous studies related perceived

quality with willingness to purchase, brand purchase intentions and brand choices [32]. Considering the importance of natural dyes batik quality in ensuring the business sustainability, the following hypothesis are developed:

Hypothesis 3a. Quality value will positively affect producer attitude.

Hypothesis 3b. Quality value will positively affect producer satisfaction.

Green value is the producer's overall assessment of the product or service benefits related to the balance of capital and earnings based on the producer's environmental desires, sustainable expectations, and environmentally friendly needs for producers [33]. While Hamzah and Tanwir [34] defined perceived green value as an individual's moral sense in honouring pro-environmental actions that advantage them through the decrease of both environmental damage and energy costs. Demand increment of natural dyes batik is ignited due to natural dyes batik purchase may enhance social status. Wearing natural dyes batik indicates environmentally friendly manner thus give high contribution to society. This behaviour relates to the fact that wearing natural dyes batik signal to others that a person is pro-social rather than pro-self-individual. Due to the current prevalence of environmental consciousness is "green perceived value" was developed by Chen and Chang [35] and defined as overall consumer's judgment of the net benefit of a product or service of the proper balance of expended capital towards the obtained results based on the consumer's environmental preference, sustainable expectations, and green requirement. Based on their study, Hur [36] indicated that focus on value perception need to be increase by producer of green products by clarifying the physical and psychological advantages of green products. Despite the introduction of green attributes of green products to enhance green product consumption, greenness itself is insufficient to encourage consumer request for the products. Thus, importantly producers have to recognize the needs that boost the purchases. Green products purchase is associated to consumers' individual perceived values. Hur [36] discovered that customer satisfaction, customer retention increment and price sensitivity decrease determine perceived value. The considerations lead to the following hypothesis:

Hypothesis 4a. Green value will positively affect producer attitude.

Hypothesis 4b. Green value will positively affect producer satisfaction.

Perceived intentions represent more normative beliefs leading to behavioural outcomes. Perceived intention is a context-specific perception that is derived from normative beliefs. Production intentions can be used to verify the application of a new products in line with environmental concerns thus help managers define whether the concept worthy of further establishment and determine which geographic markets and consumer segments to target through the channel. Production intention is of important in predicting actual behaviour. To predict production intention, it is important to understand the social, economic, quality, and green values that ultimately generate the attitudes and satisfaction. It is therefore, the following hypothesis is proposed:

Hypothesis 5. Attitude will positively affect production intention.

Hypothesis 6. Satisfaction will positively affect production intention.

3 Methodology

3.1 Sample

Currently, data collection could be effectively carried out through web-based surveys. The empirical data for the present study were collected through Google form and paper-based questionnaire. A broadcast of the survey goals was posted for 1 week on WhatsApp groups of the batik community. Considering that most batik producers are not familiar with filling out online forms, paper-based questionnaire was also applied. There were 40 respondents filled out the online form and 169 respondents filled out the paper-based questionnaire. To avoid duplicate responses, a single IP address or email account was applied. The final sample included 209 valid responses.

Among the respondents, 32.5% were male, 90% were under the age of 50, 91% were high school graduates and 42% had experience in producing natural dyes batik for 1-5 years. Table 1 summarizes the demographics of the respondents. The demographic profile showed that producers are mostly in productive ages and well experienced.

Table 1 Demographic Profile

Measure	Items	Frequency	Percent
Gender	Male	68	32.5
	Female	141	67.5
Age	20-24	24	11.5
	25-29	22	10.5
	30-34	38	18.2
	35-39	35	16.8
	40-44	51	24.4
	45-49	22	10.5
	>50	17	8.1
	Banten	1	0.48
Domicile	Jawa Barat	9	4.3
	Jawa Tengah	197	94.26
	Jawa Timur	1	0.48
	DIY	1	0.48
Education	High School	190	90.91
	College	5	2.39
	Undergraduate	14	6.7
	Degree		
Experience	1-5 years	87	41.63
	6-10 years	50	23.92
	11-15 years	60	28.71
	>16 years	12	5.74
Production Capacity/Momth	< 100 pcs	26	12.44
	101-200 pcs	27	12.92
	201-300 pcs	12	5.74
	301-400 pcs	13	6.22
	>401 pcs	31	14.83

3.2 Measure

Measurement variables, as shown in Table 2, considered each construct used in this study. Variables were either selected or modified from previous studies. A total of seven constructs were applied. Social value was measured on four items and developed from previous study [37]. The validated four items were used to measure economic value. The quality was also measured on four items based on previous research [37]. Then, green value was measured by five different items. Subsequently, attitude was measured using two items based on previous studies [38, 39]. Satisfaction was then measured using four items based on previous study of Hsu and Lin [39]. Finally, production intention for natural dyes batik products was measured through four items taken from Paul et al. and Yadav and Pathak [38, 40]. A 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was applied in the questionnaire. This scale requests respondents to declare the level of strongly disagree or agree with a sequence of statements on a certain topic.

Descriptive statistics of the questionnaire items are available in Table 2, including the mean values of social value, economic value, quality, green value, attitude, satisfaction and production intention for natural dyes batik products were quite high and relatively favourable. The mean values of the lower costs of production of natural dye batik were low compared with the other constructs at 3.622 because most producers assume production of natural dyes batik is a long process thus requires higher costs. All data have standard deviation of almost 0, shows that no deviation found in the data distribution, no outlier exists in the data. The sample perception is uniform.

Table 2 Descriptive Statistic Results

Constructs/ Questionnaire Items	Mean	Standard Deviation
Social Value		
My friends would think producing natural dye batik is a good idea [37]	4.072	0.677
Producing natural dye batik improves the way I am perceived [37]	3.967	0.473
Producing natural dye batik makes a good impression [37]	4.043	0.482
Producing natural dye batik shows that I am environmental care	4.086	0.714
Economic Value		
Production of natural dye batik needs lower costs	3.622	0.862
Natural dye batik is more marketable	3.746	0.617
Selling natural dye batik increases my income as batik craftsman	3.986	0.729
Natural dyes are less expensive	3.713	0.920
Quality		
The natural dye batik is of good quality [37]	4.392	0.691
The natural dye batik is of well-made [37]	4.273	0.632
The natural dye batik is long lasting	4.278	0.764
Natural dye batik has excellent colour fastness	4.364	0.808

Green Value		
Natural dyes for batik dyeing generate less wastewater	4.522	0.619
Natural dyes utilise the unused natural resources	4.316	0.682
Natural dyes explore local materials	4.263	0.628
Natural dyes generate harmless wastewater	4.301	0.570
Natural dyes need simple wastewater treatment facility	3.885	0.689
Attitude		
I like the idea of producing natural dye batik [38]	4.100	0.512
I have favourable attitude towards producing natural dye batik [38]	4.091	0.523
My attitude toward producing natural dye batik is favourable [39]	3.895	0.769
Satisfaction		
Producing natural dye batik makes me feel very satisfied [39]	3.856	0.718
Producing natural dye batik gives me a sense of enjoyment [39]	3.995	0.786
Producing natural dye batik makes me feel very contented [39]	3.885	0.689
Producing natural dye batik makes me feel very delighted [39]	3.962	0.757
Production Intention		
I'm willing to produce natural dye batik [40]	4.072	0.738
I will make an effort to produce natural dye batik [40]	4.120	0.719
I will consider switching to environmental friendly materials for ecological reasons [38]	4.153	0.716
I expect to produce natural dye batik for the positive environmental contribution [38]	4.488	0.706

4 Tools for Analysis

Data analyses were conducted using the statistical package with graphical user interface for variance-based structural equation modelling using the partial least squares path modelling method (SmartPLS). The software was used to test hypotheses of this study. SmartPLS was used for descriptive analysis to analyse preliminary results.

4.1 Testing of Reliability and Validity of the Measurement Model

Confirmatory factor analysis (CFA) was applied to evaluate the measurement model. The measurement model confirms the factor loadings of the seven constructs; social value, economic value, quality value, green value, attitude, satisfaction and production intention for natural dyes batik products. Model validity and reliability verification

was carried out by analysing convergent and discriminant validities and the overall fit with data. The internal consistency of the indicators of each studied construct was examined using the most common method, by determining the coefficient alpha of a given construct [41]. Table 3 reveals that Cronbach's α coefficients were calculated for internal validity, and the values ranged from 0.722 to 0.924. Nunnally and Bernstein [42] suggested Cronbach's level beyond 0.700, thus, the values obtained recommended that all constructs were internally consistent and reliable. The loading factor showed that all items used to measure the variable are valid.

Hair et al. [43] determined that the factor loading should be higher than 0.700. It was found that all of standardized factor loadings were significant ranging from 0.722 to 0.924. Composite reliability measures were used to examine the construct reliability thus assess the extent to which items in the construct measure the latent concept. Composite reliability (CR) and the average variance extracted (AVE) contribute to convergent validity of the CFA results [43]. It was determined that the approximation of CR and AVE, which measures the amount of variance explained by the given construct, should be higher than 0.700 and 0.500, respectively [43]. Table 3 shows that the CR and AVE values ranged from 0.824 to 0.946 and 0.487 to 0.814, respectively, surpassing the respective recommended levels of 0.700 and 0.500. The AVE value describes the variance or diversity of the manifest variables possessed by the latent construct. Thus, the greater the variance or diversity of the manifest variables that can be contained by the latent construct leads to greater representation of the manifest variable on the latent construct. The AVE value of 0.5 represents adequate convergent validity, which means that in average, one latent variable is able to explain more than half of the variance of its indicators. In the green value construct, the AVE value of 0.487 is considered close to the minimum value that must be achieved. The CFA results shows that the measurement model had suitable convergent and discriminant validities. It was also revealed that the hypothesized measurement model was reliable and considerable to justify the structural associations among the constructs.

Table 4 shows the fit measures results of the model. NFI calculates the Chi² value of the proposed model and compares it with a significant benchmark. Due to the insufficient information of Chi² value of the proposed model to evaluate model fit, the NFI applies the Chi² value from the null model, as a measurement standard. The NFI ranges in values between 0 and 1. The NFI value closer to 1 indicates the better fit. NFI values beyond 0.9 usually shows acceptable fit. The RMS_theta evaluates the correlation degree of outer model residuals. The value should be almost zero to represent good model fit, since it would mean that the correlations of the outer model residuals are very low (close to zero).

Table 3 Reliability and Validity of the Constructs

Constructs/ Questionnaire Items	Question Item	Cronbach's α	Standardized Factor Loading	Composite Reliability	Average Variance Extracted
Social Value (SCV)					
	SCV1		0.768		
	SCV2	0.763	0.852	0.849	0.587
	SCV3		0.822		
	SCV4		0.228		
Economic Value					

Quality	EV1		0.635		
	EV2	0.722	0.749	0.827	0.547
	EV3		0.522		
	EV4		0.603		
Green Value	QV1		0.808		
	QV2	0.771	0.717	0.847	0.581
	QV3		0.812		
	QV4		0.706		
Attitude	GV1		0.641		
	GV2		0.574		
	GV3	0.742	0.788	0.824	0.487
	GV4		0.750		
	GV5		0.714		
Satisfaction	ATT1		0.850		
	ATT2	0.725	0.860	0.844	0.646
	ATT3		0.689		
Production Intention	STF1		0.922		
	STF2	0.924	0.883	0.946	0.814
	STF3		0.922		
	STF4		0.882		
	PDI1		0.894		
	PDI2	0.833	0.919	0.886	0.663
	PDI3		0.754		
	PDI4		0.663		

Table 4 Fit Measures Results

	Saturated Model	Estimated Model
SRMR	0.108	0.120
d_ULS	4.753	5.859
d_G	1.477	1.578
Chi-Square	1644.483	1696.134
NFI	0.592	0.579
Rms Theta	0.185	

Table 5 shows the inter-correlations among measurement variables in the research model. It was showed that all correlations were significant ($p < 0.001$).

Table 5 Inter-correlation among model variables

	AT T1	AT T2	AT T3	EV 1	EV 2	EV 3	EV 4	G V1	G V2	G V3	G V4	G V5	PD I1	PD I2	PD I3	PD I4	Q V1	Q V2	Q V3	Q V4	SC V1	SC V2	SC V3	SC V4	ST F1	ST F2	ST F3	ST F4
ATT	1.0 00	0.6 08	0.4 52	0.2 49	0.2 47	0.2 35	0.1 32	0.2 87	0.1 01	0.1 11	0.2 89	0.3 04	0.4 24	0.2 22	0.2 71	0.2 88	0.2 26	0.2 40	0.2 71	0.1 20	0.2 82	0.3 49	0.3 89	0.2 12	0.5 20	0.3 93	0.4 26	0.4 42
ATT		1.0 00	0.3 45	0.3 41	0.3 23	0.3 30	0.1 93	0.3 56	0.1 61	0.4 36	0.2 45	0.2 68	0.5 28	0.5 56	0.4 48	0.4 11	0.2 19	0.4 02	0.3 20	0.1 82	0.3 73	0.4 95	0.3 26	0.3 38	0.4 93	0.3 97	0.4 27	0.4 92
ATT			1.0 00	0.1 57	0.2 36	0.0 74	0.3 16	0.1 96	0.1 27	0.3 74	0.2 36	0.4 47	0.3 92	0.0 77	0.2 99	0.1 88	0.2 67	0.1 57	0.1 72	0.2 16	0.4 28	0.2 14	0.2 44	0.1 47	0.5 70	0.6 25	0.4 92	0.3 88
EV1				1.0 00	0.3 15	0.2 89	0.3 70	0.2 17	0.2 36	0.2 63	0.2 03	0.0 64	0.3 89	0.3 90	0.3 27	0.2 17	0.1 17	0.3 45	0.2 19	0.2 04	0.0 63	0.1 57	0.1 31	0.1 70	0.1 91	0.0 47	0.1 85	0.2 71
EV2					1.0 00	0.6 20	0.4 28	0.2 96	0.2 13	0.3 20	0.2 04	- 0.0 23	0.3 34	0.3 27	0.3 80	0.3 94	0.4 02	0.3 00	0.4 34	0.5 11	0.1 69	0.1 51	0.1 49	0.0 39	0.2 85	0.2 05	0.2 92	0.2 25
EV3						1.0 00	0.3 44	0.3 35	0.2 88	0.3 01	0.2 64	0.0 54	0.2 95	0.3 87	0.2 52	0.2 46	0.3 15	0.2 48	0.4 11	0.3 75	0.0 70	0.1 10	0.0 97	0.0 30	0.3 25	0.1 75	0.3 40	0.2 51
EV4							1.0 00	0.1 37	0.0 00	0.2 71	0.0 92	- 0.0 22	0.0 44	0.0 88	0.1 39	0.2 75	0.2 98	0.1 92	0.2 02	0.3 21	0.2 56	0.1 43	0.1 57	0.0 16	0.1 12	0.1 77	0.1 07	- 0.0 02
GV1								1.0 00	0.5 28	0.3 60	0.3 54	0.1 96	0.3 26	0.4 29	0.3 16	0.3 81	0.3 83	0.3 33	0.2 82	0.2 90	0.1 84	0.2 72	0.3 57	0.1 69	0.3 41	0.2 51	0.3 42	0.2 98
GV2									1.0 00	0.3 76	0.3 33	0.1 59	0.2 78	0.3 23	0.2 34	0.2 66	0.2 04	0.1 33	0.3 10	0.3 74	0.0 55	0.1 81	0.1 33	0.0 92	0.2 39	0.2 28	0.1 71	0.2 00
GV3										1.0 00	0.4 86	0.4 23	0.5 27	0.5 34	0.2 83	0.4 11	0.2 58	0.2 41	0.1 47	0.2 17	0.4 50	0.4 32	0.2 94	0.3 44	0.4 44	0.4 68	0.4 45	0.4 54
GV4											1.0 00	0.4 41	0.3 92	0.3 67	0.0 98	0.1 93	0.1 25	0.1 44	0.2 14	0.1 36	0.2 04	0.3 57	0.3 88	0.1 71	0.4 21	0.2 59	0.4 17	0.3 15
GV5												1.0 00	0.4 11	0.3 46	0.0 61	0.1 31	0.0 96	0.0 39	0.1 85	0.2 69	0.2 74	0.4 43	0.4 32	0.3 31	0.5 08	0.5 03	0.5 16	0.4 69
PDI													1.0 00	0.8 22	0.5 04	0.3 92	0.2 54	0.3 07	0.3 04	0.1 57	0.2 96	0.3 90	0.3 00	0.3 24	0.6 42	0.6 03	0.6 65	0.7 84
PDI														1.0 00	0.5 69	0.4 69	0.2 91	0.3 49	0.4 01	0.2 38	0.2 77	0.3 78	0.3 03	0.3 44	0.5 90	0.5 09	0.6 17	0.6 94

PDI3	1.0 00	0.5 72	0.4 40	0.3 84	0.4 47	0.3 26	0.2 24	0.3 54	0.3 14	0.2 27	0.3 22	0.3 08	0.3 56	0.4 88
PDI4	1.0 00	0.5 59	0.4 42	0.5 12	0.4 94	0.3 87	0.2 92	0.2 05	0.2 54	0.1 70	0.2 15	0.3 63	0.2 39	0.3 39
QV1			1.0 00	0.3 90	0.5 46	0.5 07	0.2 26	0.0 40	0.1 36	- 0.0 10	0.2 49	0.2 94	0.2 65	0.2 94
QV2				1.0 00	0.3 39	0.1 90	0.2 34	0.2 87	0.1 34	0.0 43	0.2 76	0.3 30	0.3 14	0.3 02
QV3					1.0 00	0.7 67	- 0.0 38	- 0.0 27	0.0 20	- 0.0 61	0.1 86	- 0.0 06	0.2 15	0.1 84
QV4						1.0 00	0.0 40	- 0.1 31	- 0.0 52	- 0.1 29	0.1 15	0.0 10	0.1 09	0.0 85
SCV1							1.0 00	0.4 70	0.4 74	0.3 24	0.4 54	0.5 22	0.3 76	0.3 69
SCV2								1.0 00	0.6 15	0.3 77	0.4 23	0.4 50	0.4 29	0.3 84
SCV3									1.0 00	0.4 20	0.3 91	0.3 29	0.3 75	0.3 32
SCV4										1.0 00	0.2 67	0.2 40	0.2 73	0.3 43
STF1											1.0 00	0.7 62	0.8 47	0.7 21
STF2												1.0 00	0.7 41	0.7 08
STF3													1.0 00	0.7 35
STF4														1.0 00

Structural Equation Model was arranged by smartPLS using a maximum likelihood parameter that assessed the hypothesized conceptual model of this study as given in Figure 2.

The results of the structural model and the standardized path coefficient represented positive effects among the constructs in the structural model are available in Table 6. Totally, nine of ten hypotheses were accepted. The positive relationship between social value towards production intention of natural dyes batik products (H1: $1 = 0.379$, $t = 5.005$, $p = 0.0$) indicated that H1 was accepted. According to H2, the positive estimate of coefficients of social value and satisfaction of natural dyes batik production had significant positive effects (H2: $2 = 0.302$, $t = 4.483$, $p = 0.0$), thus, H2 was accepted. The impact of economic value (H3: $3 = 0.151$, $t = 1.908$, $p < 0.001$) had significant positive effects on attitude of natural dyes batik production, accepting H3. Economic value had insignificant positive effect on satisfaction of natural dyes batik production (H4: $4 = 0.025$, $t = 0.434$, $p = 0.665$). Furthermore, quality value gave significant positive effect to attitude of producing natural dyes batik (H5: $5 = 0.227$, $t = 3.725$, $p = 0.0$) and satisfaction (H6: $6 = 0.169$, $t = 2.367$, $p = 0.018$). Green value significantly affected attitude (H7: $7 = 0.165$, $t = 2.054$, $p = 0.040$) and satisfaction (H8: $8 = 0.387$, $t = 5.461$, $p = 0.0$) of natural dyes batik production. Finally, attitude (H9: $9 = 0.257$, $t = 3.558$, $p = 0.0$) and satisfaction (H10: $10 = 0.541$, $t = 9.108$, $p = 0.0$) of natural dyes batik production showed significant positive influences on production intention of natural dyes batik.

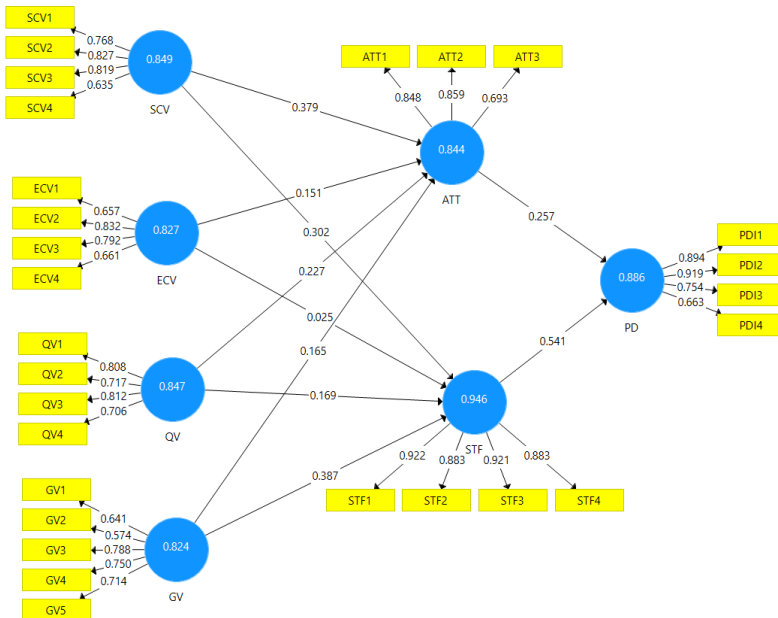


Figure 2 Standardized Factor Loading

Table 6 Hypotheses Result for the Structural Model

Path	Standard	T Statistics	P Values
Coefficient	Deviation	(O/STDEV)	
	(STDEV)		

H1	SCV -> ATT	0.379	0.076	5.005	0.000
H2	SCV -> STF	0.302	0.067	4.483	0.000
H3	ECV -> ATT	0.151	0.079	1.908	0.057
H4	ECV -> STF	0.025	0.057	0.434	0.665
H5	QV -> ATT	0.227	0.061	3.725	0.000
H6	QV -> STF	0.169	0.071	2.367	0.018
H7	GV -> ATT	0.165	0.080	2.054	0.040
H8	GV -> STF	0.387	0.071	5.461	0.000
H9	ATT -> PD	0.257	0.072	3.558	0.000
H10	STF -> PD	0.541	0.059	9.108	0.000
H8	GV -> STF	0.387	0.071	5.461	0.000

5 Results and Discussion

This study investigated the extended framework of the perceived model, in which social value, economic value, quality value and green value are added as antecedents of attitude and satisfaction of natural dyes batik production. The purpose was to examine Indonesian natural dyes batik producers on the production intention of natural dyes batik products. The result recommended that producers' intention for this group to produce natural dyes batik products can be predicted by attitude, satisfaction, social value, economic value, quality value and green value.

Attitude and satisfaction were found to give significant positive impacts on production intention of natural dyes batik products. Satisfaction had the most significant influence on producers' production intention, which reveals that satisfaction was the strongest predictor of production intention of natural dyes batik products followed attitude. The overall results assured that the perceived model and its behaviour were suitable for the investigated group. Ajzen [44] revealed that higher positive attitude consumers have towards purchase behaviour, leads to stronger consumer's intentions to implement a behaviour under their control. Molina [17] revealed that in the field of clothing and footwear, no exact association was found between the determinants of attitude and loyalty towards the sellers. Study of Tomasetti showed the positive influence of attitude towards behavioural intention of restaurants consumers. Maichum [41] determined positive correspondence between attitude of purchasing green products and purchase intention of green products. However, Hamzah and Tanwir [34] revealed that no significant relationship was observed between

Green Purchase Attitude towards intention to purchase hybrid vehicles. They assumed that a positive attitude of having environmental-friendly products does not ignite consumers' motives towards pro-environmental attitude.

Equally, there were positive relationships between social value towards attitude and satisfaction of producers in producing natural dyes batik. Producers would have positive attitude and satisfaction towards producing natural dyes batik when they have high level of social value. Perceived impression of natural dyes batik production as well as the image as environmental care people are good motives in producing natural dyes batik. Producers would satisfy and enjoy the process of natural dyes batik production. Different trend was obtained by Hamzah and Tanwir [34], in which subjective norms insignificantly affected purchase intention. This is due to the consumers' social network, involving co-workers and fellow as well as relatives gave insufficient effect in determining their compliance to purchase hybrid vehicles. Another reason is their social influencers are not entirely knowledgeable of the advantages of applying pro-environmental behaviour. No significant relationship was obtained between social value and behavioural intention to consume organic food products. It was mean that no social recognition or social image enhancement was perceived by taking organic food products [21].

Economic value significantly defined attitude of producing natural dyes batik. The belief of low production costs and more marketable products leads to the higher level of producing natural dyes batik attitude. Moreover, the exclusivity of natural dyes batik products may enhance the sales thus in turn increase the profits. The low production costs gave impact in lower selling price. As a result, producers have favourable attitude towards resulting the products. Producers are currently more environmentally aware about the hazard of textile dyes and chemical agents used in conventional dyeing process. Their awareness is able to increase their responsibility to protect the environment through the use of natural dyes to minimize environmental pollution. This is in accordance with the finding of Qasim [21] that economic value is among the performance factors assessed by consumers. They tend to purchase premium costly products as long as the products provide high return. On the other hand, economic value insignificantly determined producer satisfaction. Despite their responsible attitude towards the environment, producers are not satisfied with the results obtained, especially during the pandemic. Basic daily necessities are more preferable rather than natural dyes batik product. Yuniarti et al. [45] recorded low inflation in May 2020 of about 0.07% indicated the decrease of people's purchasing power. The lower purchasing power gave impact to the decrease of profits.

Producers' attitude and satisfaction are also affected by quality value. Natural dyes batik products generated at premium quality could improve the favourable attitude of producers. They could get more idea to sustainably produce good batik products by maintaining superior quality. A confidence attitude leading to a better comprehension towards the utility of technology, thus inducing to a tendency to apply these technologies. Producers who exhibited conviction about applying and learning technologies and perceived a net gain from applying these technologies indicated higher trend to use accurate agriculture technologies [46]. Verbeke [47] exhibited that every producer assured that his production method

serves good quality products. Study in the meat producers was carried out towards 12 livestock producers. Based on the interviews results, it was obtained that good quality meat was achieved through about the same production details. Producers had about the same attitude in resulting good quality meat. Producing excellent quality of natural dyes batik, in term of long lastness, good colour fastness, as well as well-made products enhance producers' satisfaction. Producer satisfaction plays an important role in determining the success of natural dyes batik production. Producers' satisfaction is also of important in determining the growth and future success of natural dyes batik industries. Thielemann [48] suggested that quality and value directly affected customer satisfaction. Perceived value shows to certainly influence customer loyalty with satisfaction as a partial mediator. Govindasamy [26] found that sustainable financial gain and satisfaction with returns from direct trading is associated to compliance to modify selling as well as production focus to satisfy customer requests. Mutonyi [49] described that trust moderates price satisfaction and producer loyalty. Trust could affect the likeness of social values of producer and customer, which severally generates the increase of buyer bounding, the enhance of retaliation and the development of sustainable relationships.

The study found that green value significantly determined producer attitude and satisfaction. The facts that natural dyes batik production generate less and harmless wastewater lead to the positive attitude thus very helpful in achieving their goals. They could continue producing natural dyes batik without worrying about the negative impact on the environment. The negative impacts toward customer body as well as surrounding environment by the production of natural dyes batik are negligible. In term of satisfaction, the pro-environment facts of natural dyes batik induce producers' contentment. The other facts are the employment of unused natural resources and local material in the production of natural dyes batik. This selection causes an attitude of pride and satisfaction for producers.

6 Conclusion

Production intention of environmentally friendly fashion products has been evaluated successfully. This work focused on the natural dyes batik producers in Indonesia. The results showed that production intention was affected significantly by the producers' attitude and satisfaction. In the meantime, the attitude and satisfaction of the producer were highly influenced by social value, quality value, and green value parameter. Economic value, however, provided contribution on the producer's attitude, but insignificantly contributed to the producer's satisfaction. Overall, production intention of natural dyes batik was strongly predicted by satisfaction and also determined by attitude. The results of this study support in enhancing the concept of natural dyes batik production, which also provide an important role towards sustainable production.

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Declarations

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Yours sincerely,

Dr. Philippe Garrigues
Managing Editor
Environmental Science and Pollution Research

Reviewers' comments:

Reviewer #1:

1. The use of language is quite mixed; it is acceptable in some areas, while isn't in other areas. Similarly, there are sentences that need to be simplified. Please check and improve the use of language, and grammar. For instance, the language used in the introduction of 'attitude' appears to be very 'flat' and monotonous (line 140-144)

2. A main issue with the manuscript in its present form is its lack of motivation. It is not clear why you are doing this study and why it is important for the field that you do it. The introduction should be the section driving this. However, what presented in the Introduction is not enough to establish a need for the study. Without a strong problematization of relevant literature, findings lose meaningfulness. Findings need to work to help you address the problem. Thus, it was also hard for me to follow the logic of this manuscript as it has no underlying theory. Without an underlying theory, the research gap and novelty aspects are severely compromised.

3. The engagement with the literature is descriptive and not critical. In other words, it's a summary of what other people/research says. Please offer critical debate/argument that could enrich this section with valuable insights. Start by developing your own original thoughts. Then imagine yourself on the opponent's side, and think of the counter-arguments that can be used to rebut your original views. You may read further from this interesting web article:

<https://patthomson.net/2017/09/11/avoiding-the-laundry-list-literature-review/>

4.-In line 92-93, the author(s) claimed: "However, there has been no study on the behaviour of batik craftsmen in the use of natural dyes". The tone of this statement sounds exaggerated, while the word 'behavior' alone is too general.

5.-In line 125, "were drawn from six constructs,". Shouldn't it be seven constructs (as depicted in Figure 1).

6.-In methodology-sample section, please highlight the inclusion and exclusion criteria. Does this mean that all batik producers from various background are qualified to participate? How did you filter their participation?

7. -In methodology-sample section, is there any content validation by experts prior to data collection? I notice that some of the wordings of the measures are prone to grammatical errors/issues (e.g."Producing natural dye batik shows that I am environmental care"; "Selling natural dye batik increases my income as batik craftsman"). In addition, you have not declared if dual-languag is used (e.g. Bahasa Indonesia?) considering majority of them were school-leavers.

8- In terms of the chosen analysis methods, common method bias (CMV) should be assessed in more detail, as it can be an issue here considering the samples involving single-source informants (even to simply have different Likert-scale point items and running the Harman's test is not yet sufficient).

9- In Table 3, there's no need to include Cronbach Alpha results. As for model fit measures (Table 4), these indicators should not be reported in line with experts (e.g Hair) recommendation to use fit indicators with caution when using smartPLS.

10- Referring to Table 5, why do you need to show the inter-correlation of items? Instead, provide the inter-construct correlations. Please provide a proper table of discriminant validity analysis (using the HTMT matrix), and also another table depicting cross-loadings among the items.

11- In line 342-354, you mention that "Hair et al. (2009) determined that the factor loading should be higher than 0.700. It was found that all of standardized factor loadings were significant ranging from 0.722 to 0.924.". This statement is flawed. But in Table 3, the loadings for EV1, EV4, GV2, ATT3, and PDI4 is below 0.7 (It's ok to have loadings below 0.7 if others have higher values that can complement the AVE to achieve value of >0.5, refer to Hair: a primer on PLS). To make things worse, item SCV4 has a very poor loading of .228 (which should have been removed). Please re-analyze your data, as the model, and results now seems to be inconvincing.

12a- Please check on your reporting standard (page 15). Beta coefficient symbol is missing. You do not have to indicate the exact p-value. Instead remove them, as t-value is suffice to show the level of significance.

Most importantly, there are multiple errors in reporting (statistics in tables do reflect the stats in the paragraphs).

In line 401 (H3: $\beta = 0.151$, $t = 1.908$, $p < 0.001$), either there's something wrong between t-value & p-value (for a t-value of 1.9, the p-value should be somewhere above -not below, 0.001. Might be typo error?). A check on Table 6 indicates that the p-value is 0.057. Furthermore, remove the Hypothesis symbol (H) in the brackets as this same hypothesis indicator is redundant with the subsequent explanation. The emergence of these errors warrant further close scrutiny on your side to check and rectify these mistakes.

12b- The naming convention for each variable needs to be consistent. For instance, In Table 6 and Figure 2, economic value is abbreviated as ECV, while this differs in Table 3 (EV)

13- The Discussion section needs to be split into a section discussing the results (a Discussion section that explains why the results appear like that), one discussing the Implications for Theory and Practice, and one Conclusion section. Also, in these sections (especially the one related to the Theoretical Implications) you would need to refer to earlier studies to clarify what the incremental contribution of your work has been.

14-In the discussion section, the author(s) provide little concrete/solid reasonings on why such results occurred. Even if there are some, these sound very descriptive and did not offer convincing explanation. In most cases, I don't really get what the paragraphs are trying to convey.

For instance, in line 474-477:

"Basic daily necessities are more preferable rather than natural dyes batik product. Yuniarti et al. (2021) recorded low inflation in May 2020 of about 0.07% indicated the decrease of people's purchasing power. The lower purchasing power gave impact to the decrease of profits."

This is just one of the many paragraphs that I found it difficult to understand and relate. Please examine other articles published in ESPR to make your presentation, arguments and flow consistent with the journal's norms.

15- The conclusion section is poorly written. Please highlight the study's Limitations and future research direction [what's insufficient in your research & how can future researchers address these issues, one for each of the limitation].

16-Make sure to have your paper inspected by a professional proof reader, to check for grammar, sentence construction and word choice.

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Environmental Science and Pollution Research

Assessment of Producer's Perspective on the Production of Environmentally Friendly Fashion Products: A Case Study in Indonesian Natural Dyes Batik Craftsmen --Manuscript Draft--

Manuscript Number:	ESPR-D-22-02442R1	
Full Title:	Assessment of Producer's Perspective on the Production of Environmentally Friendly Fashion Products: A Case Study in Indonesian Natural Dyes Batik Craftsmen	
Article Type:	Research Article	
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Funding Information:	Universitas Negeri Semarang (DIPA-023.17.2.677507/2021)	Dr Adhi Kusumastuti
Abstract:	<p>Batik is well-known as intangible cultural heritage. In Indonesia, batik is produced in several areas, with its own characteristics. The batik production process goes through several stages, in which overall processes require the aid of chemicals. Conventionally, the batik production process results in environmental pollution due to direct waste disposal without any significant processing. Along with the increase of public awareness of environmental protection, batik dyeing process currently back to natural dyes. The study was conducted to examine the production intention of natural dyes batik. A total of 209 producers of natural dyed batik became respondents in this study. Data collection was carried out directly through filling out paper-based questionnaires as well as using online forms. The findings of this study revealed that producers' attitude and satisfaction gave significant positive influences on the production intention of natural dyes batik products. Moreover, the findings exhibited the significant effects of social value, quality value, and green value on attitude and satisfaction of producer. Attitude was also determined by economic value, but satisfaction was insignificantly affected by economic value. Production intention was strongly predicted by satisfaction and also determined by attitude. The results of this study support in enhancing the concept of natural dyes batik production, which also provide an important role towards sustainable production.</p>	
Response to Reviewers:	<p>NoCommentsRevision</p> <p>1The use of language is quite mixed; it is acceptable in some areas, while isn't in other areas. Similarly, there are sentences that need to be simplified. Please check and improvise the use of language, and grammar. For instance, the language used in the introduction of 'attitude' appears to be very 'flat' and monotonous (line 140-144) The language in the manuscript has been rechecked and revised. The above-mentioned part has been revised:</p>	

“Attitude is a concept that includes evaluation of people, problems, objects, or events. Attitudes could change as the development of people’s experience and knowledge. It is the part that has a strong influence on behaviour. Behaviour could be reflected from experience or background. People’s perspective can be learned and influenced by information and experiences. Furthermore, the fact that attitudes are predispositions to respond leads to their relationship with actual producer behaviour. Producers attitude strongly affect production behaviours. The mindset of the producer has a significant impact on production behaviour.”

2A main issue with the manuscript in its present form is its lack of motivation. It is not clear why you are doing this study and why it is important for the field that you do it. The introduction should be the section driving this. However, what presented in the Introduction is not enough to establish a need for the study. Without a strong problematization of relevant literature, findings lose meaningfulness. Findings need to work to help you address the problem. Thus, it was also hard for me to follow the logic of this manuscript as it has no underlying theory. Without an underlying theory, the research gap and novelty aspects are severely compromised.

These following sentences have been added to strengthen the study objective:

“However, many studies have shown that the potential benefits of natural dye batik are not always recognized in all areas and in all management systems. This is due to natural dyes have a complex chemical structure (Patel and Vashi 2010), long colouring process, inconsistent colour reproducibility, and relatively expensive costs (Makkar 2010; Comlekcioglu et al. 2015). At the same time, the implementation of natural dyes batik development policy depends on the willingness of craftsmen to participate and make changes on their batik products. As a result, it’s critical to gain a better knowledge of how these artisans may be persuaded to use natural dyes in their batik production. In such endeavours, identification of socio-psychological conceptions and ideas that influence craftsmen’s intention to use natural dyes in batik production can help build and adapt present policies. In these circumstances, research on producer behavioural intent must combine theories of rational and ethical approach in the development of research models (Valizadeh et al. 2018; Nguyen et al. 2021).”

“This study objected to understanding the factors influencing producers’ intentions on natural dyes batik. Moreover, given the factors influencing the intention to produce natural dyes batik, a few recommendations sent to the state management to promote producers’ intentions to fabricate natural dyes batik in Indonesia.”

3The engagement with the literature is descriptive and not critical. In other words, it’s a summary of what other people/research says. Please offer critical debate/argument that could enrich this section with valuable insights. Start by developing your own original thoughts. Then imagine yourself on the opponent’s side, and think of the counter-arguments that can be used to rebut your original views. You may read further from this interesting web article:

<https://patthomson.net/2017/09/11/avoiding-the-laundry-list-literature-review/>

The manuscript has been revised:

“In this context, one of the factors influenced the behaviour is attitude (Ruiz-Molina and Gil-Saura 2008) in which attitude consists of three components, i.e. affect that refers to people preferences level, cognition that refers to person’s knowledge of the attitudinal object, and behaviour that refers to reactions and intention to the object (Mantle-Bromley 1995) either positive or negative behaviour to certain concept or subject (Hussein 2017). Moreover, attitude refers to psychological tendency that is expressed by assessing a particular system at certain degree of favourness and period of time that influences people to behave in a certain way regarding the matter. In a specific case, a single behaviour on a particular attitude object is strongly predicted by a specific attitude (Tan 2011).”

4In line 92-93, the author(s) claimed: "However, there has been no study on the behaviour of batik craftsmen in the use of natural dyes". The tone of this statement sounds exaggerated, while the word 'behavior' alone is too general

The sentence has been revised as:

“Study on the intention of batik craftsmen in applying natural dyes on their process is unexplored.”

5In line 125, "were drawn from six constructs,". Shouldn't it be seven constructs (as depicted in Figure 1)

The part has been revised as suggested

“Totally, 10 hypotheses were drawn from seven constructs, i.e.,...”

6In methodology-sample section, please highlight the inclusion and exclusion criteria. Does this mean that all batik producers from various background are qualified to

participate? How did you filter their participation?
The inclusion and exclusion criteria have been incorporated
“The sample criteria in this study were selected based on the provisions of those who experienced at least 1 year as natural dye batik producer.”

7In methodology-sample section, is there any content validation by experts prior to data collection? I notice that some of the wordings of the measures are prone to grammatical errors/issues (e.g., “Producing natural dye batik shows that I am environmental care”; “Selling natural dye batik increases my income as batik craftsman”). In addition, you have not declared if dual-language is used (e.g., Bahasa Indonesia?) considering majority of them were school-leavers.

The manuscript has been revised by incorporating information on validation process
“Furthermore, to find out the extent of the instrument’s representation of the specific behaviour to be measured, content validity was carried out prior to data collection process. Content validity of an instrument is the extent to which the items in the instrument represent the components in the overall content area of the object to be measured and the extent to which the items reflect the behavioural characteristics to be measured (Fernandes 1984; Nunnally and Bernstein 1994). Content validity was determined using the agreement of 3 experts, 2 batik experts and 1 psychological measurement expert. To determine the content validity index based on expert agreement, the content validity index proposed by Aiken (Aiken 1980) was used. Questionnaire items that have been compiled based on indicator variables, was assessed by three experts by filling in a score (Score 1 = Not relevant; Score 2 = less relevant; Score 3 = quite relevant; Score 4 = relevant; Score 5= very relevant). The assessments results of the three experts as validators were then calculated using the Aiken V index formula, and the value was 0.89. It showed that the content validity index of the instrument used was very valid. Considering the respondents backgrounds, the questionnaire was given in Indonesian.”

8In terms of the chosen analysis methods, common method bias (CMV) should be assessed in more detail, as it can be an issue here considering the samples involving single-source informants (even to simply have different Likert-scale point items and running the Harman's test is not yet sufficient)

Common method bias has been applied and the results have been incorporated in the manuscript
“Common Method Bias is an effort made to see the strength or size of gap between the observed correlation and the true correlation between constructs or variables. Therefore, Common Method Bias test in this study was objected to avoid the causes of errors in measuring or testing data. To show the issue of Common Method Bias or not, it can be analysed using the full collinearity test (Kock & Lynn, 2012). Through this procedure, a construct model that may be contaminated by Common Method Bias can be seen based on variance inflation factors (VIFs). VIF > 3.3 indicates a pathological collinearity as well as contaminated model by Common Method Bias. On the other hand, VIF from the full collinearity test of greater than 3.3, the model is considered free from Common Method Bias. Table 3 describes full collinearity test results, reveals that latent variables have a VIF value greater than 3.3, that no Common Method Bias occurred in this study.”

9In Table 3, there's no need to include Cronbach Alpha results. As for model fit measures (Table 4), these indicators should not be reported in line with experts (e.g., Hair) recommendation to use fit indicators with caution when using smartPLS. The Cronbach Alpha results have been omitted. Table 4 has been omitted.

10Referring to Table 5, why do you need to show the inter-correlation of items? Instead, provide the inter-construct correlations. Please provide a proper table of discriminant validity analysis (using the HTMT matrix), and also another table depicting cross-loadings among the items.
Table 5 has been omitted. Table of discriminant validity analysis using the HTMT matrix has been incorporated

11In line 342-354, you mention that "Hair et al. (2009) determined that the factor loading should be higher than 0.700. It was found that all of standardized factor loadings were significant ranging from 0.722 to 0.924.". This statement is flawed. But in Table 3, the loadings for EV1, EV4, GV2, ATT3, and PDI4 is below 0.7 (It's ok to have loadings below 0.7 if others have higher values that can complement the AVE to achieve value of >0.5, refer to Hair: a primer on PLS). To make things worse, item SCV4 has a very poor loading of .228 (which should have been removed). Please re-analyse your data, as the model, and results now seems to be unconvincing.
In Table 2 and Table 4, SCV4 & GV2 have been removed thus the Average Variance

Extracted > 0.5

12a Please check on your reporting standard (page 15). Beta coefficient symbol is missing. You do not have to indicate the exact p-value. Instead remove them, as t-value is sufficed to show the level of significance.

Most importantly, there are multiple errors in reporting (statistics in tables do reflect the stats in the paragraphs).

In line 401 (H3: $\beta = 0.151$, $t = 1.908$, $p < 0.001$), either there's something wrong between t-value & p-value (for a t-value of 1.9, the p-value should be somewhere above -not below, 0.001. Might be typo error?). A check on Table 6 indicates that the p-value is 0.057. Furthermore, remove the Hypothesis symbol (H) in the brackets as this same hypothesis indicator is redundant with the subsequent explanation. The emergence of these errors warrants further close scrutiny on your side to check and rectify these mistakes.

Beta coefficient symbol has been incorporated; p-value has been removed

Error in line 401 has been revised: " $\beta = 0.148$, $t = 1.811$ "

The hypothesis symbols in the brackets have been removed.

12b The naming convention for each variable needs to be consistent. For instance, In Table 6 and Figure 2, economic value is abbreviated as ECV, while this differs in Table 3 (EV)

The naming convention of economic value has been consistent in Table 3, Table 6, and Figure 2.

13 The Discussion section needs to be split into a section discussing the results (a Discussion section that explains why the results appear like that), one discussing the Implications for Theory and Practice, and one Conclusion section. Also, in these sections (especially the one related to the Theoretical Implications) you would need to refer to earlier studies to clarify what the incremental contribution of your work has been.

Theoretical and practical implications of the study have been incorporated in the manuscript

"5.1 Theoretical Implications

Application of natural dyes have been widely investigated. Indonesia as tropical country provides abundant types of natural resources having potential to be applied as natural dyes. However, research on producers' intention towards natural dyes batik has not been found yet. Previous research limited to the relationship exploration of green subjective standards, awareness of green products and attitudes towards green purchasing intentions through the Internal Environmental Control Locus (INELOC) between craft shopping tourists in the Batik town of Pekalongan (Sunarjo et al. 2021). This research was driven by curiosity and the desire to expand knowledge in producers' intention area. It is believed that it gives a specific contribution to the academic body of knowledge in the research area of natural dyes batik producer intention.

In the field of natural dyes batik, studying producers' intentions, this research confirms the role of the theory of planned behaviour in the acceptance of natural dyes. This study confirms the appropriateness theory of planned behaviour in understanding producers' intention toward natural dyes batik production in Indonesia. This model has proven the suitability of the approaches, in which social value, quality value, economic value, and green value give a direct effect of 43.5% in increasing attitude. Those factors also simultaneously have an impact on satisfaction increment at about 47.3%. Meanwhile, production intention was directly affected by attitude and satisfaction of about 53.6%.

5.2 Practical Implications

Adopting natural dyes batik not only to increase producers' income but also to protect environmental pollution by avoiding harmful chemicals. In Indonesia, natural dyes batik is becoming a trend thus being promoted through many government policies. In order to increase the intention of adopting natural dyes batik production, the government needs to access to factors that influence the intentions and ethical aspects of producers. Based on the research results of factors affecting producers' intention toward natural dyes batik production in Indonesia, the following suggestions are given: 1. The raising values among producers about the role of natural dyes batik and the health and environmental impacts of not applying natural dyes. This research was developed based on the relationship between the factors in planned behaviour and the relationship between attitude and satisfaction with intentions of producers. Values of

	<p>the consequences of natural dyes application were proven to have a direct and indirect positive effect through the belief of responsibility on the ethical perception of applying or not applying natural dyes.</p> <p>Satisfaction, will positively affect producers' intention toward natural dyes batik production in Indonesia. Besides, producers' intention would also be affected by attitude.</p> <p>2. Communicating to producers through different means about the benefits of natural dyes compared to synthetic dyes on the health of producers themselves and customers. The study contributes to the satisfaction of producers, a factor that has been shown to have the strongest influence on the intention toward natural dyes batik production of Indonesian craftsmen.</p> <p>3. Forming information spill over groups between craftsmen who have developed natural dyes batik and others who have not yet done so. Those who have not practiced natural dyes batik will be given precise and practical information on the benefits of natural dyes thus forming natural dyes intentions. Information exchange among these craftsmen will affect attitude.”</p> <p>14In the discussion section, the author(s) provide little concrete/solid reasonings on why such results occurred. Even if there are some, these sound very descriptive and did not offer convincing explanation. In most cases, I don't really get what the paragraphs are trying to convey.</p> <p>For instance, in line 474-477: "Basic daily necessities are more preferable rather than natural dyes batik product. Yuniarti et al. (2021) recorded low inflation in May 2020 of about 0.07% indicated the decrease of people's purchasing power. The lower purchasing power gave impact to the decrease of profits."</p> <p>This is just one of the many paragraphs that I found it difficult to understand and relate. Please examine other articles published in ESPR to make your presentation, arguments and flow consistent with the journal's norms.</p> <p>Addition information has been incorporated to clarify the previous statements "It is therefore, the natural dyes batik sales tent to decrease during pandemic. This is supported to the fact that study of Yuniarti et al. (2021) recorded inflation in May 2020 of about 0.07% indicated the decrease of people's purchasing power. The lower purchasing power gave impact to the decrease of producers' profits.”</p> <p>15The conclusion section is poorly written. Please highlight the study's Limitations and future research direction [what's insufficient in your research & how can future researchers address these issues, one for each of the limitation].</p> <p>Limitations and future research direction have been added in the manuscript: "The current research has some limitations that need further investigation in the future. The study only focused on producers' intention toward natural dyes batik in some areas of Central Java; the findings are therefore not generalizable to all batik craftsmen in the country. Therefore, future studies should include producers from different areas. The use of intentions instead of actual behaviour is another limitation of this study, thus future studies need to investigate the impacts of factors in the model on natural dyes batik production implementations. The results on the difference and characterization of the demographic variables such as gender, age, domicile, education level, experience in batik production as well as the annual capacity of batik production should be taken into account that how they impact the intention toward natural dyes batik production in the next studies.”</p>
Additional Information:	
Question	Response
§Are you submitting to a Special Issue?	Yes
(If “yes”) Please select a Special Issue from the following list: as follow-up to "§Are you submitting to a Special Issue?"	SI: ICENV2021

31 May 2022

Chief Editor
Environmental Science and Pollution Research

Dear Professor Philippe Garrigues,

MS entitled: **“Assessment of Producer’s Perspective on the Production of Environmentally Friendly Fashion Products: A Case Study in Indonesian Natural Dyes Batik Craftsmen”**

I am resubmitting a revised version of our manuscript for possible publication in Environmental Science and Pollution Research for Special Issue of Green Technology and Industrial Revolution 4.0 for a Greener Future. The revised parts are highlighted in yellow.

The revisions are listed in the table below:

No	Comments	Revision
1	The use of language is quite mixed; it is acceptable in some areas, while isn't in other areas. Similarly, there are sentences that need to be simplified. Please check and improve the use of language, and grammar. For instance, the language used in the introduction of 'attitude' appears to be very 'flat' and monotonous (line 140-144)	The language in the manuscript has been rechecked and revised. The above-mentioned part has been revised: “Attitude is a concept that includes evaluation of people, problems, objects, or events. Attitudes could change as the development of people's experience and knowledge. It is the part that has a strong influence on behaviour. Behaviour could be reflected from experience or background. People's perspective can be learned and influenced by information and experiences. Furthermore, the fact that attitudes are predispositions to respond leads to their relationship with actual producer behaviour. Producers attitude strongly affect production behaviours. The mindset of the producer has a significant impact on production behaviour.”
2	A main issue with the manuscript in its present form is its lack of motivation. It is not clear why you are doing this study and why it is important for the field that you do it. The introduction should be the section driving this. However, what presented in the Introduction is not enough to establish a need for the	These following sentences have been added to strengthen the study objective: “However, many studies have shown that the potential benefits of natural dye batik are not always recognized in all areas and in all management systems. This is due to natural dyes have a complex chemical structure (Patel and Vashi 2010), long colouring process, inconsistent colour reproducibility, and

	<p>study. Without a strong problematization of relevant literature, findings lose meaningfulness. Findings need to work to help you address the problem. Thus, it was also hard for me to follow the logic of this manuscript as it has no underlying theory. Without an underlying theory, the research gap and novelty aspects are severely compromised.</p>	<p>relatively expensive costs (Makkar 2010; Comlekcioglu et al. 2015). At the same time, the implementation of natural dyes batik development policy depends on the willingness of craftsmen to participate and make changes on their batik products. As a result, it's critical to gain a better knowledge of how these artisans may be persuaded to use natural dyes in their batik production. In such endeavours, identification of socio-psychological conceptions and ideas that influence craftsmen's intention to use natural dyes in batik production can help build and adapt present policies. In these circumstances, research on producer behavioural intent must combine theories of rational and ethical approach in the development of research models (Valizadeh et al. 2018; Nguyen et al. 2021).”</p> <p>“This study objected to understanding the factors influencing producers’ intentions on natural dyes batik. Moreover, given the factors influencing the intention to produce natural dyes batik, a few recommendations sent to the state management to promote producers’ intentions to fabricate natural dyes batik in Indonesia.”</p>
3	<p>The engagement with the literature is descriptive and not critical. In other words, it’s a summary of what other people/research says. Please offer critical debate/argument that could enrich this section with valuable insights. Start by developing your own original thoughts. Then imagine yourself on the opponent's side, and think of the counter-arguments that can be used to rebut your original views. You may read further from this interesting web article: https://patthomson.net/2017/09/11/avoiding-the-laundry-list-literature-review/</p>	<p>The manuscript has been revised: “In this context, one of the factors influenced the behaviour is attitude (Ruiz-Molina and Gil-Saura 2008) in which attitude consists of three components, i.e. affect that refers to people preferences level, cognition that refers to person’s knowledge of the attitudinal object, and behaviour that refers to reactions and intention to the object (Mantle-Bromley 1995) either positive or negative behaviour to certain concept or subject (Hussein 2017). Moreover, attitude refers to psychological tendency that is expressed by assessing a particular system at certain degree of favourness and period of time that influences people to behave in a certain way regarding the matter. In a specific case, a single behaviour on a particular attitude object is strongly predicted by a specific attitude (Tan 2011).”</p>
4	<p>In line 92-93, the author(s) claimed:</p>	<p>The sentence has been revised as:</p>

	<p>"However, there has been no study on the behaviour of batik craftsmen in the use of natural dyes". The tone of this statement sounds exaggerated, while the word 'behavior' alone is too general</p>	<p>"Study on the intention of batik craftsmen in applying natural dyes on their process is unexplored."</p>
5	<p>In line 125, "were drawn from six constructs,". Shouldn't it be seven constructs (as depicted in Figure 1)</p>	<p>The part has been revised as suggested "Totally, 10 hypotheses were drawn from seven constructs, i.e.,..."</p>
6	<p>In methodology-sample section, please highlight the inclusion and exclusion criteria. Does this mean that all batik producers from various background are qualified to participate? How did you filter their participation?</p>	<p>The inclusion and exclusion criteria have been incorporated "The sample criteria in this study were selected based on the provisions of those who experienced at least 1 year as natural dye batik producer."</p>
7	<p>In methodology-sample section, is there any content validation by experts prior to data collection? I notice that some of the wordings of the measures are prone to grammatical errors/issues (e.g., "Producing natural dye batik shows that I am environmental care"; "Selling natural dye batik increases my income as batik craftsman"). In addition, you have not declared if dual-language is used (e.g., Bahasa Indonesia?) considering majority of them were school-leavers.</p>	<p>The manuscript has been revised by incorporating information on validation process "Furthermore, to find out the extent of the instrument's representation of the specific behaviour to be measured, content validity was carried out prior to data collection process. Content validity of an instrument is the extent to which the items in the instrument represent the components in the overall content area of the object to be measured and the extent to which the items reflect the behavioural characteristics to be measured (Fernandes 1984; Nunnally and Bernstein 1994). Content validity was determined using the agreement of 3 experts, 2 batik experts and 1 psychological measurement expert. To determine the content validity index based on expert agreement, the content validity index proposed by Aiken (Aiken 1980) was used. Questionnaire items that have been compiled based on indicator variables, was assessed by three experts by filling in a score (Score 1 = Not relevant; Score 2 = less relevant; Score 3 = quite relevant; Score 4 = relevant; Score 5= very relevant). The assessments results of the three experts as validators were then calculated using the Aiken V index formula, and the value was 0.89. It showed that the content validity index of the instrument used was very valid. Considering the respondents backgrounds, the questionnaire was given in Indonesian."</p>

8	<p>In terms of the chosen analysis methods, common method bias (CMV) should be assessed in more detail, as it can be an issue here considering the samples involving single-source informants (even to simply have different Likert-scale point items and running the Harman's test is not yet sufficient)</p>	<p>Common method bias has been applied and the results have been incorporated in the manuscript</p> <p>“Common Method Bias is an effort made to see the strength or size of gap between the observed correlation and the true correlation between constructs or variables. Therefore, Common Method Bias test in this study was objected to avoid the causes of errors in measuring or testing data. To show the issue of Common Method Bias or not, it can be analysed using the full collinearity test (Kock & Lynn, 2012). Through this procedure, a construct model that may be contaminated by Common Method Bias can be seen based on variance inflation factors (VIFs). VIF > 3.3 indicates a pathological collinearity as well as contaminated model by Common Method Bias. On the other hand, VIF from the full collinearity test of greater than 3.3, the model is considered free from Common Method Bias. Table 3 describes full collinearity test results, reveals that latent variables have a VIF value greater than 3.3, that no Common Method Bias occurred in this study.”</p>
9	<p>In Table 3, there's no need to include Cronbach Alpha results. As for model fit measures (Table 4), these indicators should not be reported in line with experts (e.g., Hair) recommendation to use fit indicators with caution when using smartPLS.</p>	<p>The Cronbach Alpha results have been omitted. Table 4 has been omitted.</p>
10	<p>Referring to Table 5, why do you need to show the inter-correlation of items? Instead, provide the inter-construct correlations. Please provide a proper table of discriminant validity analysis (using the HTMT matrix), and also another table depicting cross-loadings among the items.</p>	<p>Table 5 has been omitted. Table of discriminant validity analysis using the HTMT matrix has been incorporated</p>
11	<p>In line 342-354, you mention that "Hair et al. (2009) determined that the factor loading should be higher than 0.700. It was found that all of standardized factor loadings were</p>	<p>In Table 2 and Table 4, SCV4 & GV2 have been removed thus the Average Variance Extracted > 0.5</p>

	<p>significant ranging from 0.722 to 0.924.". This statement is flawed. But in Table 3, the loadings for EV1, EV4, GV2, ATT3, and PDI4 is below 0.7 (It's ok to have loadings below 0.7 if others have higher values that can complement the AVE to achieve value of >0.5, refer to Hair: a primer on PLS). To make things worse, item SCV4 has a very poor loading of .228 (which should have been removed). Please re-analyse your data, as the model, and results now seems to be unconvincing.</p>	
12a	<p>Please check on your reporting standard (page 15). Beta coefficient symbol is missing. You do not have to indicate the exact p-value. Instead remove them, as t-value is sufficed to show the level of significance.</p> <p>Most importantly, there are multiple errors in reporting (statistics in tables do reflect the stats in the paragraphs).</p> <p>In line 401 (H3: $\beta_3 = 0.151$, $t = 1.908$, $p < 0.001$), either there's something wrong between t-value & p-value (for a t-value of 1.9, the p-value should be somewhere above -not below, 0.001. Might be typo error?). A check on Table 6 indicates that the p-value is 0.057. Furthermore, remove the Hypothesis symbol (H) in the brackets as this same hypothesis indicator is redundant with the subsequent explanation. The emergence of these errors warrants further close scrutiny on your side to check and rectify these mistakes.</p>	<p>Beta coefficient symbol has been incorporated; p-value has been removed Error in line 401 has been revised: "$\beta_3 = 0.148$, $t = 1.811$)"</p> <p>The hypothesis symbols in the brackets have been removed.</p>
12b	<p>The naming convention for each variable needs to be consistent. For instance, In Table 6 and Figure 2, economic value is abbreviated as ECV, while this differs in Table 3 (EV)</p>	<p>The naming convention of economic value has been consistent in Table 3, Table 6, and Figure 2.</p>
13	<p>The Discussion section needs to be</p>	<p>Theoretical and practical implications of the</p>

<p>split into a section discussing the results (a Discussion section that explains why the results appear like that), one discussing the Implications for Theory and Practice, and one Conclusion section. Also, in these sections (especially the one related to the Theoretical Implications) you would need to refer to earlier studies to clarify what the incremental contribution of your work has been.</p>	<p>study have been incorporated in the manuscript</p> <p>“5.1 Theoretical Implications</p> <p>Application of natural dyes have been widely investigated. Indonesia as tropical country provides abundant types of natural resources having potential to be applied as natural dyes. However, research on producers’ intention towards natural dyes batik has not been found yet. Previous research limited to the relationship exploration of green subjective standards, awareness of green products and attitudes towards green purchasing intentions through the Internal Environmental Control Locus (INELOC) between craft shopping tourists in the Batik town of Pekalongan (Sunarjo et al. 2021). This research was driven by curiosity and the desire to expand knowledge in producers' intention area. It is believed that it gives a specific contribution to the academic body of knowledge in the research area of natural dyes batik producer intention.</p> <p>In the field of natural dyes batik, studying producers’ intentions, this research confirms the role of the theory of planned behaviour in the acceptance of natural dyes. This study confirms the appropriateness theory of planned behaviour in understanding producers’ intention toward natural dyes batik production in Indonesia. This model has proven the suitability of the approaches, in which social value, quality value, economic value, and green value give a direct effect of 43.5% in increasing attitude. Those factors also simultaneously have an impact on satisfaction increment at about 47.3%. Meanwhile, production intention was directly affected by attitude and satisfaction of about 53.6%.</p> <p>5.2 Practical Implications</p> <p>Adopting natural dyes batik not only to increase producers’ income but also to protect environmental pollution by avoiding harmful chemicals. In Indonesia, natural dyes batik is becoming a trend thus being promoted through many government policies. In order to increase the intention of adopting natural dyes batik production, the government needs to access to factors that influence the intentions and ethical</p>
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		<p>aspects of producers. Based on the research results of factors affecting producers' intention toward natural dyes batik production in Indonesia, the following suggestions are given:</p> <ol style="list-style-type: none"> 1. The raising values among producers about the role of natural dyes batik and the health and environmental impacts of not applying natural dyes. This research was developed based on the relationship between the factors in planned behaviour and the relationship between attitude and satisfaction with intentions of producers. Values of the consequences of natural dyes application were proven to have a direct and indirect positive effect through the belief of responsibility on the ethical perception of applying or not applying natural dyes. Satisfaction, will positively affect producers' intention toward natural dyes batik production in Indonesia. Besides, producers' intention would also be affected by attitude. 2. Communicating to producers through different means about the benefits of natural dyes compared to synthetic dyes on the health of producers themselves and customers. The study contributes to the satisfaction of producers, a factor that has been shown to have the strongest influence on the intention toward natural dyes batik production of Indonesian craftsmen. 3. Forming information spill over groups between craftsmen who have developed natural dyes batik and others who have not yet done so. Those who have not practiced natural dyes batik will be given precise and practical information on the benefits of natural dyes thus forming natural dyes intentions. Information exchange among these craftsmen will affect attitude."
14	<p>In the discussion section, the author(s) provide little concrete/solid reasonings on why such results occurred. Even if there are some, these sound very descriptive and did not offer convincing explanation. In most cases, I don't really get what the</p>	<p>Addition information has been incorporated to clarify the previous statements "It is therefore, the natural dyes batik sales tent to decrease during pandemic. This is supported to the fact that study of Yuniarti et al. (2021) recorded inflation in May 2020 of about 0.07% indicated the decrease of people's purchasing power. The lower</p>

	<p>paragraphs are trying to convey.</p> <p>For instance, in line 474-477: "Basic daily necessities are more preferable rather than natural dyes batik product. Yuniarti et al. (2021) recorded low inflation in May 2020 of about 0.07% indicated the decrease of people's purchasing power. The lower purchasing power gave impact to the decrease of profits."</p> <p>This is just one of the many paragraphs that I found it difficult to understand and relate. Please examine other articles published in ESPR to make your presentation, arguments and flow consistent with the journal's norms.</p>	<p>purchasing power gave impact to the decrease of producers' profits."</p>
15	<p>The conclusion section is poorly written. Please highlight the study's Limitations and future research direction [what's insufficient in your research & how can future researchers address these issues, one for each of the limitation].</p>	<p>Limitations and future research direction have been added in the manuscript: "The current research has some limitations that need further investigation in the future. The study only focused on producers' intention toward natural dyes batik in some areas of Central Java; the findings are therefore not generalizable to all batik craftsmen in the country. Therefore, future studies should include producers from different areas. The use of intentions instead of actual behaviour is another limitation of this study, thus future studies need to investigate the impacts of factors in the model on natural dyes batik production implementations. The results on the difference and characterization of the demographic variables such as gender, age, domicile, education level, experience in batik production as well as the annual capacity of batik production should be taken into account that how they impact the intention toward natural dyes batik production in the next studies."</p>

Please kindly acknowledge me for the receipt of the manuscript. If you have any inquiries, please do not hesitate to contact me through my email at

adhi_kusumastuti@mail.unnes.ac.id. Your cooperation regarding this matter is very much appreciated.

Thank you and with kind regards.

Yours sincerely,

Dr. Adhi Kusumastuti



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Assessment of Producer's Perspective on the Production of Environmentally Friendly Fashion Products: A Case Study in Indonesian Natural Dyes Batik Craftsmen

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this work.

40

Abstract

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Batik is well-known as intangible cultural heritage. In Indonesia, batik is produced in several areas, with its own characteristics. The batik production process goes through several stages, in which overall processes require the aid of chemicals. Conventionally, the batik production process results in environmental pollution due to direct waste disposal without any significant processing. Along with the increase of public awareness of environmental protection, batik dyeing process currently back to natural dyes. The study was conducted to examine the production intention of natural dyes batik. A total of 209 producers of natural dyed batik became respondents in this study. Data collection was carried out directly through filling out paper-based questionnaires as well as using online forms.

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The findings of this study revealed that producers' attitude and satisfaction gave significant positive influences on the production intention of natural dyes batik products. Moreover, the findings exhibited the significant effects of social value, quality value, and green value on attitude and satisfaction of producer. Attitude was also determined by economic value, but satisfaction was insignificantly affected by economic value. Production intention was strongly predicted by satisfaction and also determined by attitude. The results of this study support in enhancing the concept of natural dyes batik production, which also provide an important role towards sustainable production.

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Keywords: producer; natural dye, batik, perspective

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1 Introduction

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Batik is the Indonesian art masterpiece as a blend of art and technology inherited by the ancestors. Batik fabric is a variety of decorative fabrics produced by resist dyeing using wax as colour barrier. Batik production process included motif drawing, dyeing, and wax removal. The most common used dyes in the batik-production process include naphthol, indigosol, Procyon, and Remazol.

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Batik is produced by various regions in Indonesia with regional characteristics. Among the regions in Indonesia whose economy is dominated by the batik industry is Pekalongan. In 2011, there were 1342 small industries in Pekalongan of which about 83.1% were batik industries (Fajri 2013). With a production capacity of around 300 to 1000 pieces of cloth per month (Nindita et al. 2012), each industry has the potential to generate 202.4 m³ of waste. Considering that only about 0.6% of the industry has a sewage treatment unit (Fajri 2013), while the rest discharges

84 wastewater directly into the environment, serious move should be applied.
85 Textile wastewater generally contains heavy metals such as chromium,
86 copper, and cadmium. This waste can contaminate soil and surface water
87 which in turn contaminates ground water. As a pollutant, the accumulation
88 of heavy metals results in various disorders of the body's organs because
89 heavy metals cannot be degraded (Malarkodi et al. 2007).

90 In the last two decades, green technology has received more attention.
91 Green technology refers to all environmentally friendly technologies that
92 do not interfere with or damage the environment and natural resources. The
93 overuse of chemicals and overexploitation of resources lead to a worsening
94 greenhouse effect, disturbed ecosystems, and global warming. With regard
95 to the hazard posed by the use of synthetic dyes, natural dyes are reused
96 back commercially. The use of natural dyes has increased along with the
97 increasing awareness of consumers to get environmentally friendly textiles
98 and the need to preserve the environment. This is driven by the
99 carcinogenic nature of some synthetic dyes (Bechtold et al. 2007; Saxena
100 and Raja 2014; Hassan et al. 2015). In addition, Indonesia has many types
101 and sources of natural dyes. However, many studies have shown that the
102 potential benefits of natural dye batik are not always recognized in all areas
103 and in all management systems. This is due to natural dyes have a complex
104 chemical structure (Patel and Vashi 2010), long colouring process,
105 inconsistent colour reproducibility, and relatively expensive costs (Makkar
106 2010; Comlekcioglu et al. 2015). At the same time, the implementation of
107 natural dyes batik development policy depends on the willingness of
108 craftsmen to participate and make changes on their batik products. As a
109 result, it's critical to gain a better knowledge of how these artisans may be
110 persuaded to use natural dyes in their batik production. In such endeavours,
111 identification of socio-psychological conceptions and ideas that influence
112 craftsmen's intention to use natural dyes in batik production can help build
113 and adapt present policies. In these circumstances, research on producer
114 behavioural intent must combine theories of rational and ethical approach
115 in the development of research models (Valizadeh et al. 2018; Nguyen et
116 al. 2021).

117 Various studies discussed about application of natural dyes on batik
118 processes have been carried out. Some reports on customer behaviour in
119 the selection of batik are also available. In addition, other studies were
120 conducted on the general description of the batik industry (Rahayu 2012;
121 Suryani 2013; Alamsyah 2018; Rhofur 2019; Martuti et al. 2020). Study
122 on the intention of batik craftsmen in applying natural dyes on their process
123 is unexplored. Therefore, in order to find out the factors affecting the
124 intention to produce natural batik, it is necessary to study the rational
125 approach and the ethical approach. This study needs to be carried out to
126 determine the behaviour and motivation of batik artisans to use natural

127 dyes. The use of natural dyes is expected to minimize environmental
128 pollution, increase the economic value of renewable natural materials, and
129 the selling value of batik itself. In addition, the impact of the use of natural
130 dyes on the sustainability of dye plants and the environment will be
131 analysed. In the end, it will be used to determine the policy direction for
132 the use of natural dyes in the batik industry.

133 In the 1990s, manufacturers and retailers performed perceived value as
134 an imperative strategic that will continue to be important well into the
135 twenty-first century. Sweeney and Soutar (2001) declared that from a
136 retailing perspective, people-based needs could be satisfied by delivering
137 value thus put them in a much stronger position in the long term. Another
138 statement given by Burden (1998), in which to increase retail target,
139 through customer who emphasis the value and customer who gives time
140 pressure. The retailing value move seems to be a global phenomenon as
141 the most compelling (Asian retail) opportunities those are at the value end
142 of the market given that consumers in Asia today are much more value
143 conscious than they were in the mid-1990s.

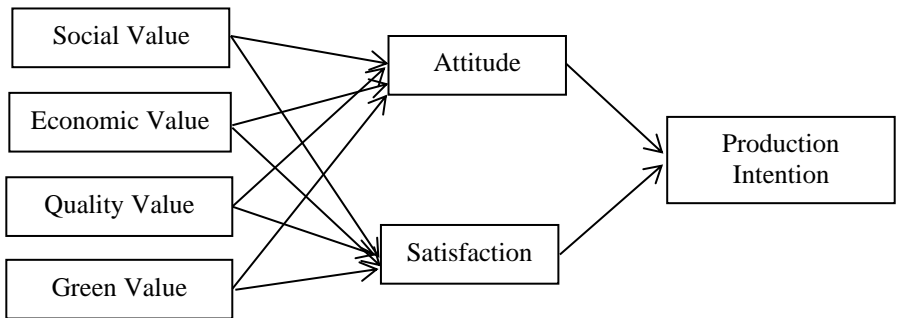
144 Perceived value can be interpreted as a customer's overall assessment
145 of the product or service benefits by taking into account the paid price with
146 the obtained value. It is therefore, perceived value is assessed based on a
147 comparison between what is obtained from the product or service with the
148 components provided. Value is commonly defined as ratio or trade-off
149 between quality and price which is a value-for-money conceptualization.
150 Considering the fact that retail customers are “value-driven” customer’s
151 value should be deeply understood by managers thus could focus their
152 attention to achieve the needed market place advantage.

153 This research is very prospective in contributing data regarding the
154 behaviour of natural dye batik craftsmen. The use of natural dyes is very
155 important to minimize waste pollution due to the use of synthetic dyes and
156 their additive materials. The data obtained is expected to be used to make
157 policies related to the use of natural dyes in the batik industry. **This study**
158 **objected to understanding the factors influencing producers’ intentions on**
159 **natural dyes batik. Moreover, given the factors influencing the intention to**
160 **produce natural dyes batik, a few recommendations sent to the state**
161 **management to promote producers’ intentions to fabricate natural dyes**
162 **batik in Indonesia.**

163 **2 Literature Review and Hypothesis**

164
165 Figure 1 depicts conceptual model of the proposed framework. Totally,
166 10 hypotheses were drawn from **seven** constructs, i.e., social value,
167 economic value, quality value, green value, attitude, satisfaction, and
168 production intention of natural dyes batik.

169 Attitude is a concept that includes evaluation of people, problems,
 170 objects, or events. Attitudes could change as the development of people's
 171 experience and knowledge. It is the part that has a strong influence on
 172 behaviour. Behaviour could be reflected from experience or background.
 173 People's perspective can be learned and influenced by information and
 174 experiences. Furthermore, the fact that attitudes are predispositions to
 175 respond leads to their relationship with actual producer behaviour.
 176 Producers attitude strongly affect production behaviours. The mindset of
 177 the producer has a significant impact on production behaviour. In this
 178 context, one of the factors influenced the behaviour is attitude (Ruiz-
 179 Molina and Gil-Saura 2008) in which attitude consists of three
 180 components, i.e. affect that refers to people preferences level, cognition
 181 that refers to person's knowledge of the attitudinal object, and behaviour
 182 that refers to reactions and intention to the object (Mantle-Bromley 1995)
 183 either positive or negative behaviour to certain concept or subject (Hussein
 184 2017). Moreover, attitude refers to psychological tendency that is
 185 expressed by assessing a particular system at certain degree of favourness
 186 and period of time that influences people to behave in a certain way
 187 regarding the matter. In a specific case, a single behaviour on a particular
 188 attitude object is strongly predicted by a specific attitude (Tan 2011).



200 **Figure 1** Conceptual Model

201
 202 Social value is the utility of a product or service in enhancing the
 203 producer's perceived self-concept related to a particular social,
 204 demographic, socioeconomic or cultural group. Social value relates to self-
 205 image. It is believed that an action of producing natural dyes batik could
 206 improve producers' social-status. In terms of green products, social value
 207 is a perceived net utility gained from green product production based on
 208 the insight regarding social pressure or status gain. Social value has a
 209 significant positive influence on sustainable production behaviour (Qasim
 210 et al. 2019). Emotional value is the value obtained after the producer
 211 delivers product or service and finds that the resulting product has higher

212 value thus cause emotional response. Social value could be determined as
213 the emotional benefits acquired by the producers through the interaction
214 with other producers in the community (Luna-Cortés et al. 2019).
215 Producers are motivated by social affiliation to behave in the same way
216 that of their social class. Producers tend to generate the products that
217 represent their social status. Producers think their green production
218 behaviour is a modern way of life. The production of natural dyes batik is
219 important for their social identity in society. Hence, based on the above
220 description, this study hypothesizes that:

221

222 Hypothesis 1a. Social value will positively affect producer attitude.

223

224 Producer satisfaction is the difference between the total benefits
225 expected from a product/service and the total costs incurred to generate
226 that product or service. Besides, producer satisfaction refers to the
227 difference between the actual performance experienced and the
228 expectation of the producer. Producer satisfaction refers to a person's
229 subjective evaluation of the situation that result in a positive emotional
230 response. Considering the intense competition, a successful response of
231 producer satisfaction significantly defines the survival and long-term
232 profitability of a business. Producers need to perform better thus resulting
233 in higher service/product quality in order to establish and maintain a strong
234 and long-term relationship with customers (Wu 2014). Previous study on
235 producer satisfaction was done by Wagner (2001). They found that the
236 average producer satisfaction was higher with flat and pit parlours over
237 stall barns with pipeline systems for most areas surveyed. Kiss (2019)
238 revealed that despite their higher consumer prices, producer satisfaction in
239 terms of saleable products quantity, selling prices, and customers number
240 were the highest thing in the case of producer markets. Govindasamy
241 (2003) believed that producer's satisfaction is of important to appraise the
242 future growth prospect of the markets as well as to define the potential of
243 recruitment targets for both existing and new outlets. The readiness to shift
244 marketing and production focuses need to be done to satisfy customer
245 request thus leads to long-term profitability as well as satisfaction. In
246 perspective of producer, perceived satisfaction can be defined as producer
247 acceptance of natural dyes batik and the comfort degree involved in the
248 production. Shee and Wang (2008) defined satisfaction as the pleasure or
249 contentment in performing a compulsory or desirable action and
250 experiences the result. In positive way, satisfaction is conceptualized as
251 collection of feelings or attitudes against numerous factors that determine
252 a particular situation. A higher degree of producer satisfaction signifies a
253 higher degree of willingness to carry the process. A great deal of efforts
254 has been carried out to estimate user satisfaction. It was revealed that user

255 satisfaction is a complex concept, the matter varies with the experience or
256 case character (Liaw and Huang 2013). It is therefore, the following
257 hypothesis was developed:

258

259 Hypothesis 1b. Social value will positively affect producer satisfaction.

260

261 In term of producer, economic value associates to profits generated by
262 production as well as relationship with supplier and customer in relation to
263 realised costs (Jelčić and Mabić 2020). Economic value refers to value that
264 person gives on an economic good based on the advantage of the good.
265 Economic value is commonly estimated based on the person's willingness
266 to pay for the good, typically measured in units of currency. Production of
267 natural dyes batik offers producers perceived economic value through
268 tangible benefits, such as low materials and production costs as well as
269 maximum price. Research analysis of Jelcic and Mabic (2020) showed that
270 satisfaction was determined by economic value. However, the standardised
271 coefficients beta revealed the higher contribution of emotional value in
272 predicting client satisfaction than economic value. Wei et al. (2020)
273 defined economic value in terms of more reasonable pricing of brand
274 agricultural products, in line value of brand agricultural products with the
275 price, more economical brand agricultural products. Economic value is
276 believed to determine purchase intention. Thus, it is hypothesized that:

277

278 Hypothesis 2a. Economic value will positively affect producer attitude.

279 Hypothesis 2b. Economic value will positively affect producer
280 satisfaction.

281

282 Perceived quality is another dimension of brand value that is very
283 important for producers in choosing the materials for production. It is
284 important to note that product quality is an important company resource to
285 achieve competitive advantage. Perceived quality reveals assessment
286 (perception) of overall product advantages compared to its alternative
287 product/service. Based on this definition it is also known that perceived
288 quality is product ability to be accepted in providing satisfaction compared
289 relatively to the available alternatives' product. High perceived quality
290 indicates that the differences and advantages of the product to those of
291 similar products after a long period of time have been discovered.
292 Perceived quality is a component of brand value, therefore high perceived
293 quality will encourage consumers' preference to our brand over the
294 competitors. Product quality significantly enhances purchase motivation
295 thus in turn affects consumer's purchasing decisions (Li et al. 2012). They
296 discovered that the eagerness of consumers to continue purchasing luxury
297 fashion brands in the future was determined by perceived brand quality and
298 customer service. Previous studies related perceived quality with

299 willingness to purchase, brand purchase intentions and brand choices
300 (Netemeyer et al. 2004). Considering the importance of natural dyes batik
301 quality in ensuring the business sustainability, the following hypothesis are
302 developed:

303

304 Hypothesis 3a. Quality value will positively affect producer attitude.

305 Hypothesis 3b. Quality value will positively affect producer satisfaction.

306

307 Green value is the producer's overall assessment of the product or
308 service benefits related to the balance of capital and earnings based on the
309 producer's environmental desires, sustainable expectations, and
310 environmentally friendly needs for producers (Wei and Jung 2017). While
311 Hamzah and Tanwir (2021) defined perceived green value as an
312 individual's moral sense in honouring pro-environmental actions that
313 advantage them through the decrease of both environmental damage and
314 energy costs. Demand increment of natural dyes batik is ignited due to
315 natural dyes batik purchase may enhance social status. Wearing natural
316 dyes batik indicates environmentally friendly manner thus give high
317 contribution to society. This behaviour relates to the fact that wearing
318 natural dyes batik signal to others that a person is pro-social rather than
319 pro-self-individual. Due to the current prevalence of environmental
320 consciousness is "green perceived value" was developed by Chen and
321 Chang (2012) and defined as overall consumer's judgment of the net
322 benefit of a product or service of the proper balance of expended capital
323 towards the obtained results based on the consumer's environmental
324 preference, sustainable expectations, and green requirement. Based on
325 their study, Hur (2013) indicated that focus on value perception need to be
326 increase by producer of green products by clarifying the physical and
327 psychological advantages of green products. Despite the introduction of
328 green attributes of green products to enhance green product consumption,
329 greenness itself is insufficient to encourage consumer request for the
330 products. Thus, importantly producers have to recognize the needs that
331 boost the purchases. Green products purchase is associated to consumers'
332 individual perceived values. Hur (2013) discovered that customer
333 satisfaction, customer retention increment and price sensitivity decrease
334 determine perceived value. The considerations lead to the following
335 hypothesis:

336

337 Hypothesis 4a. Green value will positively affect producer attitude.

338 Hypothesis 4b. Green value will positively affect producer satisfaction.

339

340 Perceived intentions represent more normative beliefs leading to
341 behavioural outcomes. Perceived intention is a context-specific perception
342 that is derived from normative beliefs. Production intentions can be used

343 to verify the application of a new products in line with environmental
 344 concerns thus help managers define whether the concept worthy of further
 345 establishment and determine which geographic markets and consumer
 346 segments to target through the channel. Production intention is of
 347 important in predicting actual behaviour. To predict production intention,
 348 it is important to understand the social, economic, quality, and green values
 349 that ultimately generate the attitudes and satisfaction. It is therefore, the
 350 following hypothesis is proposed:

351

352 Hypothesis 5. Attitude will positively affect production intention.

353 Hypothesis 6. Satisfaction will positively affect production intention.

354

355 **3 Methodology**

356 **3.1 Sample**

357 Currently, data collection could be effectively carried out through web-
 358 based surveys. The empirical data for the present study were collected
 359 through Google form and paper-based questionnaire. A broadcast of the
 360 survey goals was posted for 1 week on WhatsApp groups of the batik
 361 community. Considering that most batik producers are not familiar with
 362 filling out online forms, paper-based questionnaire was also applied. The
 363 sample criteria in this study were selected based on the provisions of those
 364 who experienced at least 1 year as natural dye batik producer. There were
 365 40 respondents filled out the online form and 169 respondents filled out
 366 the paper-based questionnaire. To avoid duplicate responses, a single IP
 367 address or email account was applied. The final sample included 209 valid
 368 responses.

369 Among the respondents, 32.5% were male; 90% were under the age of
 370 50; 91% were high school graduates and 42% had experience in producing
 371 natural dyes batik for 1-5 years. Table 1 summarizes the demographics of
 372 the respondents. The demographic profile showed that producers are
 373 mostly in productive ages and well experienced.

374

375

Table 1 Demographic Profile

Measure	Items	Frequency	Precent
Gender	Male	68	32.5
	Female	141	67.5
Age	20-24	24	11.5
	25-29	22	10.5
	30-34	38	18.2
	35-39	35	16.8
	40-44	51	24.4

	45-49	22	10.5
	>50	17	8.1
	Banten	1	0.48
	Jawa Barat	9	4.3
Domicile	Jawa Tengah	197	94.26
	Jawa Timur	1	0.48
	DIY	1	0.48
	High School	190	90.91
Education	College	5	2.39
	Undergraduate	14	6.7
	Degree		
	1-5 years	87	41.63
Experience	6-10 years	50	23.92
	11-15 years	60	28.71
	>16 years	12	5.74
	< 100 pcs	26	12.44
Production	101-200 pcs	27	12.92
Capacity/Month	201-300 pcs	12	5.74
	301-400 pcs	13	6.22
	>401 pcs	31	14.83

376 **3.2 Measure**

377 Measurement variables, as shown in Table 2, considered each construct
378 used in this study. Variables were either selected or modified from
379 previous studies. A total of seven constructs were applied. Social value
380 was measured on four items and developed from previous study (Hamari
381 et al. 2020). The validated four items were used to measure economic
382 value. The quality was also measured on four items based on previous
383 research (Hamari et al. 2020). Then, green value was measured by five
384 different items. Subsequently, attitude was measured using two items
385 based on previous studies (Hsu and Lin 2016; Paul et al. 2016).
386 Satisfaction was then measured using four items based on previous study
387 of Hsu and Lin (2016). Finally, production intention for natural dyes batik
388 products was measured through four items taken from Paul et al. (2016)
389 and Yadav and Pathak (2016). A 5-point Likert scale ranging from 1
390 (strongly disagree) to 5 (strongly agree) was applied in the questionnaire.
391 This scale requests respondents to declare the level of strongly disagree
392 or agree with a sequence of statements on a certain topic.

393 Furthermore, to find out the extent of the instrument's representation of
394 the specific behaviour to be measured, content validity was carried out
395 prior to data collection process. Content validity of an instrument is the
396 extent to which the items in the instrument represent the components in the
397 overall content area of the object to be measured and the extent to which
398 the items reflect the behavioural characteristics to be measured (Fernandes

1984; Nunnally and Bernstein 1994). Content validity was determined using the agreement of 3 experts, 2 batik experts and 1 psychological measurement expert. To determine the content validity index based on expert agreement, the content validity index proposed by Aiken (Aiken 1980) was used. Questionnaire items that have been compiled based on indicator variables, was assessed by three experts by filling in a score (Score 1 = Not relevant; Score 2 = less relevant; Score 3 = quite relevant; Score 4 = relevant; Score 5= very relevant). The assessments results of the three experts as validators were then calculated using the Aiken V index formula, and the value was 0.89. It showed that the content validity index of the instrument used was very valid. Considering the respondents backgrounds, the questionnaire was given in Indonesian.

Descriptive statistics of the questionnaire items are available in Table 2, including the mean values of social value, economic value, quality, green value, attitude, satisfaction and production intention for natural dyes batik products were quite high and relatively favourable. The mean values of the lower costs of production of natural dye batik were low compared with the other constructs at 3.622 because most producers assume production of natural dyes batik is a long process thus requires higher costs. All data have standard deviation of almost 0, shows that no deviation found in the data distribution, no outlier exists in the data. The sample perception is uniform.

Table 2 Descriptive Statistic Results

Constructs/ Questionnaire Items	Mean	Standard Deviation
Social Value (SCV)		
My friends would think producing natural dye batik is a good idea (Hamari et al. 2020)	4.072	0.677
Producing natural dye batik improves the way I am perceived (Hamari et al. 2020)	3.967	0.473
Producing natural dye batik makes a good impression (Hamari et al. 2020)	4.043	0.482
Economic Value (ECV)		
Production of natural dye batik needs lower costs	3.622	0.862
Natural dye batik is more marketable	3.746	0.617
Selling natural dye batik increases my income as batik craftsman	3.986	0.729
Natural dyes are less expensive	3.713	0.920
Quality (QV)		

The natural dye batik is of good quality (Hamari et al. 2020)	4.392	0.691
The natural dye batik is of well-made (Hamari et al. 2020)	4.273	0.632
The natural dye batik is long lasting	4.278	0.764
Natural dye batik has excellent colour fastness	4.364	0.808
Green Value (GV)		
Natural dyes for batik dyeing generate less wastewater	4.522	0.619
Natural dyes explore local materials	4.263	0.628
Natural dyes generate harmless wastewater	4.301	0.570
Natural dyes need simple wastewater treatment facility	3.885	0.689
Attitude (ATT)		
I like the idea of producing natural dye batik (Paul et al. 2016)	4.100	0.512
I have favourable attitude towards producing natural dye batik (Paul et al. 2016)	4.091	0.523
My attitude toward producing natural dye batik is favourable (Hsu and Lin 2016)	3.895	0.769
Satisfaction (STF)		
Producing natural dye batik makes me feel very satisfied (Hsu and Lin 2016)	3.856	0.718
Producing natural dye batik gives me a sense of enjoyment (Hsu and Lin 2016)	3.995	0.786
Producing natural dye batik makes me feel very contented (Hsu and Lin 2016)	3.885	0.689
Producing natural dye batik makes me feel very delighted (Hsu and Lin 2016)	3.962	0.757
Production Intention (PDI)		
I'm willing to produce natural dye batik (Yadav and Pathak 2016)	4.072	0.738
I will make an effort to produce natural dye batik (Yadav and Pathak 2016)	4.120	0.719
I will consider switching to environmental friendly materials for ecological reasons (Paul et al. 2016)	4.153	0.716
I expect to produce natural dye batik for the positive environmental contribution (Paul et al. 2016)	4.488	0.706

424 **4 Tools for Analysis**

425 Data analyses were conducted using the statistical package with graphical
 426 user interface for variance-based structural equation modelling using the
 427 partial least squares path modelling method (SmartPLS). The software
 428 was used to test hypotheses of this study. SmartPLS was used for
 429 descriptive analysis to analyse preliminary results.

430 **4.1 Testing of Common Method Bias of the** 431 **Measurement Model**

432 Common Method Bias is an effort made to see the strength or size of gap
 433 between the observed correlation and the true correlation between
 434 constructs or variables. Therefore, Common Method Bias test in this study
 435 was objected to avoid the causes of errors in measuring or testing data. To
 436 show the issue of Common Method Bias or not, it can be analysed using
 437 the full collinearity test (Kock and Lynn 2012). Through this procedure, a
 438 construct model that may be contaminated by Common Method Bias can
 439 be seen based on variance inflation factors (VIFs). $VIF > 3.3$ indicates a
 440 pathological collinearity as well as contaminated model by Common
 441 Method Bias. On the other hand, VIF from the full collinearity test of
 442 greater than 3.3, the model is considered free from Common Method Bias.
 443 Table 3 describes full collinearity test results, reveals that latent variables
 444 have a VIF value greater than 3.3, that no Common Method Bias occurred
 445 in this study.

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Table 3 Result of Full Collinearity Test

	ATT	ECV	GV	PDI	QV	SCV	STF
ATT				1.702			
ECV	1.487						1.487
GV	1.609						1.609
PDI							
QV	1.404						1.404
SCV	1.491						1.491
STF				1.702			

448

449 **4.2 Testing of Reliability and Validity of the** 450 **Measurement Model**

451 Confirmatory factor analysis (CFA) was applied to evaluate the
 452 measurement model. The measurement model confirms the factor
 453 loadings of the seven constructs; social value, economic value, quality
 454 value, green value, attitude, satisfaction and production intention for
 455 natural dyes batik products. Model validity and reliability verification

456 was carried out by analysing convergent and discriminant validities and
 457 the overall fit with data. The internal consistency of the indicators of each
 458 studied construct was examined using the most common method, by
 459 determining the coefficient alpha of a given construct (Maichum et al.
 460 2016). The loading factor showed that all items used to measure the
 461 variable are valid.

462 Hair et al. (2009) determined that the factor loading should be higher
 463 than 0.700. It was found that all of standardized factor loadings were
 464 significant ranging from 0.608 to 0.922. Composite reliability measures
 465 were used to examine the construct reliability thus assess the extent to
 466 which items in the construct measure the latent concept. Composite
 467 reliability (CR) and the average variance extracted (AVE) contribute to
 468 convergent validity of the CFA results (Jr et al. 2009). It was determined
 469 that the approximation of CR and AVE, which measures the amount of
 470 variance explained by the given construct, should be higher than 0.700 and
 471 0.500, respectively (Jr et al. 2009). Table 4 shows that the CR and AVE
 472 values ranged from 0.820 to 0.946 and 0.534 to 0.814, respectively,
 473 surpassing the respective recommended levels of 0.700 and 0.500. The
 474 AVE value describes the variance or diversity of the manifest variables
 475 posed by the latent construct. Thus, the greater the variance or diversity of
 476 the manifest variables that can be contained by the latent construct leads to
 477 greater representation of the manifest variable on the latent construct. The
 478 AVE value of 0.5 represents adequate convergent validity, which means
 479 that in average, one latent variable is able to explain more than half of the
 480 variance of its indicators. The CFA results shows that the measurement
 481 model had suitable convergent and discriminant validities. It was also
 482 revealed that the hypothesized measurement model was reliable and
 483 considerable to justify the structural associations among the constructs.

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Table 4 Reliability and Validity of the Constructs

Constructs/ Questionnaire Items	Question Item	Standardized Factor Loading	Composite Reliability	Average Variance Extracted
Social Value (SCV)				
	SCV1	0.796		
	SCV2	0.849	0.864	0.679
	SCV3	0.827		
Economic Value (ECV)				
	ECV1	0.656		
	ECV2	0.832	0.827	0.547
	ECV3	0.792		
	ECV3	0.662		

Quality (QV)	QV1	0.808	0.847	0.581
	QV2	0.717		
	QV3	0.812		
	QV4	0.707		
Green Value (GV)	GV1	0.608	0.820	0.534
	GV3	0.794		
	GV4	0.759		
	GV5	0.749		
Attitude (ATT)	ATT1	0.847	0.844	0.646
	ATT2	0.856		
	ATT3	0.698		
Satisfaction (STF)	STF1	0.922	0.946	0.814
	STF2	0.884		
	STF3	0.921		
	STF4	0.882		
Production Intention (PDI)	PDI1	0.894	0.886	0.663
	PDI2	0.919		
	PDI3	0.754		
	PDI4	0.663		

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Table 5 describes Heterotrait-Monotrait Ratio (HTMT), objected to determine the correlation level of an indicator with its construct. It was shown in the table that all HTMT values < 0.9 , revealed that all constructs were valid with discriminant validity.

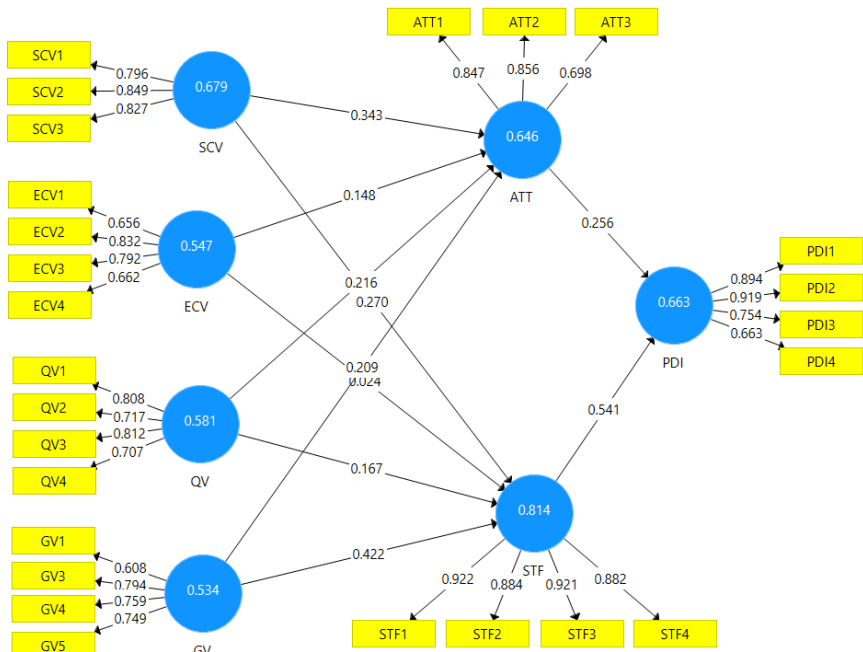
Table 5 Heterotrait-Monotrait Ratio (HTMT)

	ATT	ECV	GV	PDI	QV	SCV	STF
ATT							
ECV	0.549						
GV	0.704	0.497					
PDI	0.737	0.599	0.712				
QV	0.503	0.721	0.521	0.733			
SCV	0.699	0.304	0.770	0.578	0.234		
STF	0.795	0.366	0.757	0.751	0.345	0.644	

493

494 Structural Equation Model was arranged by smartPLS using a
495 maximum likelihood parameter that assessed the hypothesized
496 conceptual model of this study as given in Figure 2.

497 The results of the structural model and the standardized path
498 coefficient represented positive effects among the constructs in the
499 structural model are available in Table 6. Totally, eight of ten
500 hypotheses were accepted. The positive relationship between social
501 value towards attitude of natural dyes batik products ($\rho_1 = 0.343$, $t =$
502 4.677) indicated that H1 was accepted. According to H2, the positive
503 estimate of coefficients of social value and satisfaction of natural
504 dyes batik production had significant positive effects ($\rho_2 = 0.270$, $t =$
505 3.878), thus, H2 was accepted. The impact of economic value (ρ_3
506 $= 0.148$, $t = 1.811$) had insignificant positive effects on attitude of
507 natural dyes batik production, rejected H3. Economic value had
508 insignificant positive effect on satisfaction of natural dyes batik
509 production ($\rho_4 = 0.024$, $t = 0.422$). Furthermore, quality value gave
510 significant positive effect to attitude of producing natural dyes batik
511 ($\rho_5 = 0.216$, $t = 3.331$) and satisfaction ($\rho_6 = 0.167$, $t = 2.537$). Green
512 value significantly affected attitude ($\rho_7 = 0.209$, $t = 2.730$) and
513 satisfaction ($\rho_8 = 0.422$, $t = 6.025$) of natural dyes batik production.
514 Finally, attitude ($\rho_9 = 0.256$, $t = 3.690$) and satisfaction ($\rho_{10} = 0.541$,
515 $t = 9.151$) of natural dyes batik production showed significant
516 positive influences on production intention of natural dyes batik.
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Table 6 Hypotheses Result for the Structural Model

		Path Coefficient	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
H1	SCV → ATT	0.343	0.071	4.812	0.000
H2	SCV → STF	0.270	0.066	4.075	0.000
H3	ECV → ATT	0.148	0.078	1.896	0.059
H4	ECV → STF	0.024	0.057	0.421	0.674
H5	QV → ATT	0.216	0.063	3.455	0.001
H6	QV → STF	0.167	0.066	2.528	0.012
H7	GV → ATT	0.209	0.071	2.940	0.003
H8	GV → STF	0.422	0.067	6.342	0.000
H9	ATT → PDI	0.256	0.072	3.578	0.000
H10	STF → PDI	0.541	0.063	8.587	0.000

522

5 Results and Discussion

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526

This study investigated the extended framework of the perceived model, in which social value, economic value, quality value and green value are added as antecedents of attitude and satisfaction of natural dyes batik production. The purpose was to examine

527 Indonesian natural dyes batik producers on the production intention
528 of natural dyes batik products. The result recommended that
529 producers' intention for this group to produce natural dyes batik
530 products can be predicted by attitude, satisfaction, social value,
531 economic value, quality value and green value.

532 Attitude and satisfaction were found to give significant positive
533 impacts on production intention of natural dyes batik products.
534 Satisfaction had the most significant influence on producers'
535 production intention, which reveals that satisfaction was the
536 strongest predictor of production intention of natural dyes batik
537 products followed attitude. The overall results assured that the
538 perceived model and its behaviour were suitable for the investigated
539 group. Ajzen (2015) revealed that higher positive attitude consumers
540 have towards purchase behaviour, leads to stronger consumer's
541 intentions to implement a behaviour under their control. Molina
542 (2008) revealed that in the field of clothing and footwear, no exact
543 association was found between the determinants of attitude and
544 loyalty towards the sellers. Study of Tomasetti et al. (2018) showed
545 the positive influence of attitude towards behavioural intention of
546 restaurants consumers. Maichum (2016) determined positive
547 correspondence between attitude of purchasing green products and
548 purchase intention of green products. However, Hamzah and Tanwir
549 (2021) revealed that no significant relationship was observed
550 between green purchase attitude towards intention to purchase
551 hybrid vehicles. They assumed that a positive attitude of having
552 environmental-friendly products does not ignite consumers' motives
553 towards pro-environmental attitude.

554 Equally, there were positive relationships between social value
555 towards attitude and satisfaction of producers in producing natural
556 dyes batik. Producers would have positive attitude and satisfaction
557 towards producing natural dyes batik when they have high level of
558 social value. Perceived impression of natural dyes batik production
559 as well as the image as environmental care people are good motives
560 in producing natural dyes batik. Producers would satisfy and enjoy
561 the process of natural dyes batik production. Different trend was
562 obtained by Hamzah and Tanwir (2021), in which subjective norms
563 insignificantly affected purchase intention. This is due to the
564 consumers' social network, involving co-workers and fellow as well
565 as relatives gave insufficient effect in determining their compliance
566 to purchase hybrid vehicles. Another reason is their social
567 influencers are not entirely knowledgeable of the advantages of
568 applying pro-environmental behaviour. No significant relationship
569 was obtained between social value and behavioural intention to

570 consume organic food products. It was mean that no social
571 recognition or social image enhancement was perceived by taking
572 organic food products (Qasim et al. 2019).

573 Economic value significantly defined attitude of producing
574 natural dyes batik. The belief of low production costs and more
575 marketable products leads to the higher level of producing natural
576 dyes batik attitude. Moreover, the exclusivity of natural dyes batik
577 products may enhance the sales thus in turn increase the profits. The
578 low production costs gave impact in lower selling price. As a result,
579 producers have favourable attitude towards resulting the products.
580 Producers are currently more environmentally aware about the
581 hazard of textile dyes and chemical agents used in conventional
582 dyeing process. Their awareness is able to increase their
583 responsibility to protect the environment through the use of natural
584 dyes to minimize environmental pollution. This is in accordance
585 with the finding of Qasim (2019) that economic value is among the
586 performance factors assessed by consumers. They tend to purchase
587 premium costly products as long as the products provide high return.
588 On the other hand, economic value insignificantly determined
589 producer satisfaction. Despite their responsible attitude towards the
590 environment, producers are not satisfied with the results obtained,
591 especially during the pandemic. Basic daily necessities are more
592 preferable rather than natural dyes batik product. **It is therefore, the
593 natural dyes batik sales tent to decrease during pandemic. This is
594 supported to the fact that study of Yuniarti et al. (2021) recorded
595 inflation in May 2020 of about 0.07% indicated the decrease of
596 people's purchasing power. The lower purchasing power gave
597 impact to the decrease of producers' profits.**

598 Producers' attitude and satisfaction are also affected by quality
599 value. Natural dyes batik products generated at premium quality
600 could improve the favourable attitude of producers. They could get
601 more idea to sustainably produce good batik products by maintaining
602 superior quality. A confidence attitude leading to a better
603 comprehension towards the utility of technology, thus inducing to a
604 tendency to apply these technologies. Producers who exhibited
605 conviction about applying and learning technologies and perceived
606 a net gain from applying these technologies indicated higher trend to
607 use accurate agriculture technologies (Adrian et al. 2005). Verbeke
608 (2005) exhibited that every producer assured that his production
609 method serves good quality products. Study in the meat producers
610 was carried out towards 12 livestock producers. Based on the
611 interviews results, it was obtained that good quality meat was
612 achieved through about the same production details. Producers had

613 about the same attitude in resulting good quality meat. Producing
614 excellent quality of natural dyes batik, in term of long lastness, good
615 colour fastness, as well as well-made products enhance producers'
616 satisfaction. Producer satisfaction plays an important role in
617 determining the success of natural dyes batik production. Producers'
618 satisfaction is also of important in determining the growth and future
619 success of natural dyes batik industries. Thielemann (2018)
620 suggested that quality and value directly affected customer
621 satisfaction. Perceived value shows to certainly influence customer
622 loyalty with satisfaction as a partial mediator. Govindasamy (2003)
623 found that sustainable financial gain and satisfaction with returns
624 from direct trading is associated to compliance to modify selling as
625 well as production focus to satisfy customer requests. Mutonyi
626 (2016) described that trust moderates price satisfaction and producer
627 loyalty. Trust could affect the likeness of social values of producer
628 and customer, which severally generates the increase of buyer
629 bounding, the enhance of retaliation and the development of
630 sustainable relationships.

631 The study found that green value significantly determined
632 producer attitude and satisfaction. The facts that natural dyes batik
633 production generate less and harmless wastewater lead to the
634 positive attitude thus very helpful in achieving their goals. They
635 could continue producing natural dyes batik without worrying about
636 the negative impact on the environment. The negative impacts
637 toward customer body as well as surrounding environment by the
638 production of natural dyes batik are negligible. In term of
639 satisfaction, the pro-environment facts of natural dyes batik induce
640 producers' contentment. The other facts are the employment of
641 unused natural resources and local material in the production of
642 natural dyes batik. This selection causes an attitude of pride and
643 satisfaction for producers.

644 **5.1 Theoretical Implications**

645 Application of natural dyes have been widely investigated.
646 Indonesia as tropical country provides abundant types of natural
647 resources having potential to be applied as natural dyes. However,
648 research on producers' intention towards natural dyes batik has not
649 been found yet. Previous research limited to the relationship
650 exploration of green subjective standards, awareness of green
651 products and attitudes towards green purchasing intentions through
652 the Internal Environmental Control Locus (INELOC) between craft
653 shopping tourists in the Batik town of Pekalongan (Sunarjo et al.
654 2021). This research was driven by curiosity and the desire to expand

655 knowledge in producers' intention area. It is believed that it gives a
656 specific contribution to the academic body of knowledge in the
657 research area of natural dyes batik producer intention.

658 In the field of natural dyes batik, studying producers' intentions,
659 this research confirms the role of the theory of planned behaviour in
660 the acceptance of natural dyes. This study confirms the
661 appropriateness theory of planned behaviour in understanding
662 producers' intention toward natural dyes batik production in
663 Indonesia. This model has proven the suitability of the approaches,
664 in which social value, quality value, economic value, and green value
665 give a direct effect of 43.5% in increasing attitude. Those factors also
666 simultaneously have an impact on satisfaction increment at about
667 47.3%. Meanwhile, production intention was directly affected by
668 attitude and satisfaction of about 53.6%.

669 **5.2 Practical Implications**

670 Adopting natural dyes batik not only to increase producers'
671 income but also to protect environmental pollution by avoiding
672 harmful chemicals. In Indonesia, natural dyes batik is becoming a
673 trend thus being promoted through many government policies. In
674 order to increase the intention of adopting natural dyes batik
675 production, the government needs to access to factors that influence
676 the intentions and ethical aspects of producers. Based on the research
677 results of factors affecting producers' intention toward natural dyes
678 batik production in Indonesia, the following suggestions are given:

- 679 1. The raising values among producers about the role of natural
680 dyes batik and the health and environmental impacts of not
681 applying natural dyes. This research was developed based on the
682 relationship between the factors in planned behaviour and the
683 relationship between attitude and satisfaction with intentions of
684 producers. Values of the consequences of natural dyes
685 application were proven to have a direct and indirect positive
686 effect through the belief of responsibility on the ethical
687 perception of applying or not applying natural dyes.
688 Satisfaction, will positively affect producers' intention toward
689 natural dyes batik production in Indonesia. Besides, producers'
690 intention would also be affected by attitude.
- 691 2. Communicating to producers through different means about the
692 benefits of natural dyes compared to synthetic dyes on the health
693 of producers themselves and customers. The study contributes to
694 the satisfaction of producers, a factor that has been shown to
695 have the strongest influence on the intention toward natural dyes
696 batik production of Indonesian craftsmen.

697 3. Forming information spill over groups between craftsmen who
698 have developed natural dyes batik and others who have not yet
699 done so. Those who have not practiced natural dyes batik will be
700 given precise and practical information on the benefits of natural
701 dyes thus forming natural dyes intentions. Information exchange
702 among these craftsmen will affect attitude.

703 **6 Conclusion**

704 Production intention of environmentally friendly fashion products has
705 been evaluated successfully. This work focused on the natural dyes batik
706 producers in Indonesia. The results showed that production intention was
707 affected significantly by the producers' attitude and satisfaction. In the
708 meantime, the attitude and satisfaction of the producer were highly
709 influenced by social value, quality value, and green value parameter.
710 Economic value, however, provided contribution on the producer's
711 attitude, but insignificantly contributed to the producer's satisfaction.
712 Overall, production intention of natural dyes batik was strongly predicted
713 by satisfaction and also determined by attitude. The results of this study
714 support in enhancing the concept of natural dyes batik production, which
715 also provide an important role towards sustainable production.

716 The current research has some limitations that need further
717 investigation in the future. The study only focused on producers' intention
718 toward natural dyes batik in some areas of Central Java; the findings are
719 therefore not generalizable to all batik craftsmen in the country. Therefore,
720 future studies should include producers from different areas. The use of
721 intentions instead of actual behaviour is another limitation of this study,
722 thus future studies need to investigate the impacts of factors in the model
723 on natural dyes batik production implementations. The results on the
724 difference and characterization of the demographic variables such as
725 gender, age, domicile, education level, experience in batik production as
726 well as the annual capacity of batik production should be taken into
727 account that how they impact the intention toward natural dyes batik
728 production in the next studies.

729

730 **Declarations**

731 **Ethical Approval**

732 This material is the authors' own original work, which has not been
733 previously published elsewhere. This manuscript is not currently being
734 considered for publication elsewhere. The manuscript reflects the authors'
735 own research and analysis in a truthful and complete manner. All sources
736 used are properly disclosed with correct citation and gave proper
737 reference.

738

739 **Consent to Participate**

740 All panellists have read and understand the provided information and
741 have had the opportunity to ask questions. All panellists understand that
742 their participation is voluntary and that they are free to withdraw at any
743 time, without giving a reason and without cost.

744

745 **Consent to Publish**

746 All panellists understand that in any report on the results of this research,
747 their identities will remain anonymous

748

749 **Author Contributions**

750 Author Contributions: Conceptualization and methodology, A.K.,
751 T.A.A., K.P. and A.N.H.; data collection, A.K. and A.A.; data analysis,
752 A.K., T.A.A. and A.N.H., writing—original draft preparation, A.K., K.P.,
753 and A.N.H.; writing—review and editing, A.K. and A.A.; supervision,
754 A.K., K.P. and A.N.H.; funding acquisition, A.K. All authors have read
755 and agreed to the published version of the manuscript.

756

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761

762 **Conflicts of Interest**

763 The authors declare no conflict of interest

764

765 **Data Availability Statement**

766 Data sharing is not applicable to this article

767

768 **Reference**

769

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From: Philippe Garrigues (em@editorialmanager.com)

To: adhi_kusumastuti@mail.unnes.ac.id

Date: Saturday, 11 June 2022 at 02:24 am GMT+7

Ref.:

Ms. No. ESPR-D-22-02442R1

Assessment of Producer's Perspective on the Production of Environmentally Friendly Fashion Products: A Case Study in Indonesian Natural Dyes Batik Craftsmen
Environmental Science and Pollution Research

Dear Dr Kusumastuti,

Reviewers have now commented on your paper. You will see that there are a number of issues that need to be addressed before the paper can be accepted for publication by ESPR.

Please include continuous line numbers in your manuscript to facilitate editorial handling and reviewing.

We ask that you give the comments raised by the referees your careful consideration and that you submit a revised version of your manuscript as well as an itemized reply to each of the reviewers' comments. Please make sure to mark all changes in a different colour and to submit your editable source files (i. e. Word, TeX)

Your revision is due by 10 Jul 2022.

If you decide to revise the work, please submit a list of changes or a rebuttal against each point which is being raised when you submit the revised manuscript.

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To submit a revision, go to <https://www.editorialmanager.com/espr/> and log in as an Author. You will see a menu item called 'Submissions Needing Revision'. You will find your submission record there.

I am looking forward to receiving you revised manuscript!

Yours sincerely,

Dr. Philippe Garrigues
Managing Editor
Environmental Science and Pollution Research

Reviewers' comments:

Reviewer #1:

Thank you for revising your manuscript. However, there are many areas that needs further improvement.

1. The use of language remains an archilles heel of this paper. Some can be simplified. Others could have the sentences reworded as the choice of words is an issue.

There are too many of them, which I could only highlight some below:

(e.g. Line 157: This study objected to understanding the factors influencing producers' intentions on natural dyes batik.; Line 170: Attitudes could change as the development of people's experience and knowledge.; Line 174: Furthermore, the fact that attitudes are predispositions to respond leads to their relationship with actual producer behaviour.; Line 243 The readiness to shift marketing and production focuses need to be done to satisfy customer request thus leads to long-term profitability as well as satisfaction.; Line 592: It is therefore, the natural dyes batik sales tent to decrease during pandemic).

Please hire a proofreader cum style-editor (native English language speaker is recommended). You can search using freelancing platforms for better deals.

2. I would appreciate if you can reorganize the structure of ideas, and remove the unnecessary sentences. At the moment, the 'laundry-list' problem has yet to be addressed. I noticed the widespread use of active-voiced statements (with citations in early part of the sentence) especially in the literature review section. To formulate an authoritative statement, citations need to be placed at the end of the statement (in passive form).

3. Line 122: Reword as follows: The intention of batik craftsmen in using natural dyes in their production process has not been widely studied.

4. For reporting beta coefficient, please use the β symbol (rather the p symbol). Its available in Ms Word. Not to be confused with the B alphabet, The symbol is sandwiched between the alpha & the inverted lamda symbols (subset:Greek & Coptic).

5. Its difficult for me to read the discussion section. The ideas are not flowing smoothly across subsequent paragraphs. Some sentences repeat the same ideas/keywords. Besides, there are many confusing statements. These are some of them:

Line 663-668- Please remove these sentences, as statistical figures should not be written in the discussion section,

Line 693: "The study contributes to the satisfaction of producers, ...". Literally, this is inaccurate.

Overall, there's much to be done in terms of language use. The writeup feels flat, excessively descriptive, and lack of argumentative points. Please address this issue.

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Environmental Science and Pollution Research

Assessment of Producer's Perspective on the Production of Environmentally Friendly Fashion Products: A Case Study in Indonesian Natural Dyes Batik Craftsmen --Manuscript Draft--

Manuscript Number:	ESPR-D-22-02442R2	
Full Title:	Assessment of Producer's Perspective on the Production of Environmentally Friendly Fashion Products: A Case Study in Indonesian Natural Dyes Batik Craftsmen	
Article Type:	Research Article	
Corresponding Author:	Adhi Kusumastuti Universitas Negeri Semarang Fakultas Teknik INDONESIA	
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Funding Information:	Universitas Negeri Semarang (DIPA-023.17.2.677507/2021)	Dr Adhi Kusumastuti
Abstract:	<p>Batik is well-known as intangible cultural heritage. In Indonesia, batik is produced in several areas, with its own characteristics. The batik production process goes through several stages, in which overall processes require the aid of chemicals. Conventionally, the batik production process results in environmental pollution due to direct waste disposal without any significant processing. Along with the increase of public awareness of environmental protection, batik dyeing process currently back to natural dyes. The study was conducted to examine the production intention of natural dyes batik. A total of 209 producers of natural dyed batik became respondents in this study. Data collection was carried out directly through filling out paper-based questionnaires as well as using online forms. The findings of this study revealed that producers' attitude and satisfaction gave significant positive influences on the production intention of natural dyes batik products. Moreover, the findings exhibited the significant effects of social value, quality value, and green value on attitude and satisfaction of producer. Attitude was also determined by economic value, but satisfaction was insignificantly affected by economic value. Production intention was strongly predicted by satisfaction and also determined by attitude. The results of this study support in enhancing the concept of natural dyes batik production, which also provide an important role towards sustainable production.</p>	
Response to Reviewers:	<p>1The use of language remains an archilles heel of this paper. Some can be simplified. Others could have the sentences reworded as the choice of words is an issue The language in the manuscript has been rechecked and revised. The above-mentioned part has been revised.</p> <p>2I would appreciate if you can reorganize the structure of ideas, and remove the unnecessary sentences. At the moment, the 'laundry-list' problem has yet to be addressed. I noticed the widespread use of active-voiced statements (with citations in</p>	

	<p>early part of the sentence) especially in the literature review section. To formulate an authoritative statement, citations need to be placed at the end of the statement (in passive form).</p> <p>The structure of ideas has been reorganized, and the unnecessary sentences have been removed. The active-voice statements have been changed to be passive-voice with citations at the end of the statement (in passive form).</p> <p>“Green product manufacturers should focus more on value perception by emphasizing the physical and psychological benefits of green products (Hur et al. 2013).”</p> <p>“This is due to the fact that the quality and focus of production in meeting customer demands have a direct impact on customer satisfaction, which in turn will form a long-term bond of mutual trust (Thielemann et al. (2018), Govindasamy et al. (2003), Mutonyi et al. (2016).”</p> <p>3Line 122: Reword as follows: The intention of batik craftsmen in using natural dyes in their production process has not been widely studied.</p> <p>The sentence has been reworded: “...studies on the intentions of batik craftsmen in using natural dyes in the production process have not been widely investigated.”</p> <p>4For reporting beta coefficient, please use the B symbol (rather the p symbol). Its available in Ms Word. Not to be confused with the B alphabet, The symbol is sandwiched between the alpha & the inverted lamda symbols (subset:Greek & Coptic). Symbol of beta coefficient has been changed with β</p> <p>5It’s difficult for me to read the discussion section. The ideas are not flowing smoothly across subsequent paragraphs. Some sentences repeat the same ideas/keywords. Besides, there are many confusing statements. These are some of them:</p> <p>Line 663-668- Please remove these sentences, as statistical figures should not be written in the discussion section,</p> <p>Line 693: "The study contributes to the satisfaction of producers, ...". Literally, this is inaccurate. The part has been revised as suggested. Line 663-668 has been removed. Line 693 has been removed.</p>
Additional Information:	
Question	Response
§Are you submitting to a Special Issue?	Yes
(If “yes”) Please select a Special Issue from the following list: as follow-up to "§Are you submitting to a Special Issue?"	SI: ICENV2021

20 July 2022

Chief Editor
Environmental Science and Pollution Research

Dear Professor Philippe Garrigues,

MS entitled: **“Assessment of Producer’s Perspective on the Production of Environmentally Friendly Fashion Products: A Case Study in Indonesian Natural Dyes Batik Craftsmen”**

I am resubmitting a revised version of our manuscript for possible publication in Environmental Science and Pollution Research for Special Issue of Green Technology and Industrial Revolution 4.0 for a Greener Future. The revised parts are highlighted in yellow.

The revisions are listed in the table below:

No	Comments	Revision
1	The use of language remains an archilles heel of this paper. Some can be simplified. Others could have the sentences reworded as the choice of words is an issue	The language in the manuscript has been rechecked and revised. The above-mentioned part has been revised.
2	I would appreciate if you can reorganize the structure of ideas, and remove the unnecessary sentences. At the moment, the 'laundry-list' problem has yet to be addressed. I noticed the widespread use of active-voiced statements (with citations in early part of the sentence) especially in the literature review section. To formulate an authoritative statement, citations need to be placed at the end of the statement (in passive form).	The structure of ideas has been reorganized, and the unnecessary sentences have been removed. The active-voice statements have been changed to be passive-voice with citations at the end of the statement (in passive form). “Green product manufacturers should focus more on value perception by emphasising the physical and psychological benefits of green products (Hur et al. 2013).” “This is due to the fact that the quality and focus of production in meeting customer demands have a direct impact on customer satisfaction, which in turn will form a long-term bond of mutual trust (Thielemann et al. (2018), Govindasamy et al. (2003), Mutonyi et al. (2016).”
3	Line 122: Reword as follows: The intention of batik craftsmen in using natural dyes in their production process has not been widely studied.	The sentence has been reworded: “...studies on the intentions of batik craftsmen in using natural dyes in the production process have not been widely investigated.”
4	For reporting beta coefficient, please use the B symbol (rather the p	Symbol of beta coefficient has been changed with β

	symbol). Its available in Ms Word. Not to be confused with the B alphabet, The symbol is sandwiched between the alpha & the inverted lamda symbols (subset:Greek & Coptic).	
5	<p>It's difficult for me to read the discussion section. The ideas are not flowing smoothly across subsequent paragraphs. Some sentences repeat the same ideas/keywords. Besides, there are many confusing statements. These are some of them:</p> <p>Line 663-668- Please remove these sentences, as statistical figures should not be written in the discussion section,</p> <p>Line 693: "The study contributes to the satisfaction of producers, ...". Literally, this is inaccurate.</p>	<p>The part has been revised as suggested. Line 663-668 has been removed. Line 693 has been removed.</p>

Please kindly acknowledge me for the receipt of the manuscript. If you have any inquiries, please do not hesitate to contact me through my email at adhi_kusumastuti@mail.unnes.ac.id. Your cooperation regarding this matter is very much appreciated.

Thank you and with kind regards.

Yours sincerely,

Dr. Adhi Kusumastuti



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5 Assessment of Producer's Perspective on
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Abstract

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Batik is well-known as intangible cultural heritage. In Indonesia, batik is produced in several areas, with its own characteristics. The batik production process goes through several stages, in which overall processes require the aid of chemicals. Conventionally, the batik production process results in environmental pollution due to direct waste disposal without any significant processing. Along with the increase of public awareness of environmental protection, batik dyeing process currently back to natural dyes. The study was conducted to examine the production intention of natural dyes batik. A total of 209 producers of natural dyed batik became respondents in this study. Data collection was carried out directly through filling out paper-based questionnaires as well as using online forms.

The findings of this study revealed that producers' attitude and satisfaction gave significant positive influences on the production intention of natural dyes batik products. Moreover, the findings exhibited the significant effects of social value, quality value, and green value on attitude and satisfaction of producer. Attitude was also determined by economic value, but satisfaction was insignificantly affected by economic value. Production intention was strongly predicted by satisfaction and also determined by attitude. The results of this study support in enhancing the concept of natural dyes batik production, which also provide an important role towards sustainable production.

Keywords: producer; natural dye, batik, perspective

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1 Introduction

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Batik is the Indonesian art masterpiece as a blend of art and technology inherited by the ancestors. Batik fabric is a variety of decorative fabrics produced by resist dyeing using wax as colour barrier. Batik production process included motif drawing, dyeing, and wax removal. The most common used dyes in the batik-production process include naphthol, indigosol, Procyon, and Remazol.

Batik is produced by various regions in Indonesia with regional characteristics. Among the regions in Indonesia whose economy is dominated by the batik industry is Pekalongan. In 2011, there were 1342 small industries in Pekalongan of which about 83.1% were batik industries (Fajri 2013). With a production capacity of around 300 to 1000 pieces of cloth per month (Nindita et al. 2012), each industry has the potential to generate 202.4 m³ of waste. Considering that only about 0.6% of the industry has a sewage treatment unit (Fajri 2013), while the rest discharges

84 wastewater directly into the environment, serious move should be applied.
85 Textile wastewater generally contains heavy metals such as chromium,
86 copper, and cadmium. This waste can contaminate soil and surface water
87 which in turn contaminates ground water. As a pollutant, the accumulation
88 of heavy metals results in various disorders of the body's organs because
89 heavy metals cannot be degraded (Malarkodi et al. 2007).

90 In the last two decades, green technology has received more attention.
91 Green technology refers to all environmentally friendly technologies that
92 do not interfere with or damage the environment and natural resources. The
93 overuse of chemicals and overexploitation of resources lead to a worsening
94 greenhouse effect, disturbed ecosystems, and global warming. With regard
95 to the hazard posed by the use of synthetic dyes, natural dyes are reused
96 back commercially. The use of natural dyes has increased along with the
97 increasing awareness of consumers to get environmentally friendly textiles
98 and the need to preserve the environment. This is driven by the
99 carcinogenic nature of some synthetic dyes (Bechtold et al. 2007, Saxena
100 and Raja 2014, Hassan et al. 2015). In addition, Indonesia has many types
101 and sources of natural dyes. However, many studies have shown that the
102 potential benefits of natural dye batik are not always recognized in all areas
103 and in all management systems. This is due to natural dyes have a complex
104 chemical structure (Patel and Vashi 2010), long colouring process,
105 inconsistent colour reproducibility, and relatively expensive costs (Makkar
106 2010, Comlekcioglu et al. 2015). At the same time, the implementation of
107 natural dyes batik development policy depends on the willingness of
108 craftsmen to participate and make changes on their batik products. As a
109 result, it's critical to gain a better knowledge of how these artisans may be
110 persuaded to use natural dyes in their batik production. In such endeavours,
111 identification of socio-psychological conceptions and ideas that influence
112 craftsmen's intention to use natural dyes in batik production can help build
113 and adapt present policies. In these circumstances, research on producer
114 behavioural intent must combine theories of rational and ethical approach
115 in the development of research models (Valizadeh et al. 2018, Nguyen et
116 al. 2021).

117 Studies indicated that rational and ethical approach parameter such as
118 satisfaction, attitude, social atmosphere, and economic are the factors
119 responsible for producers' perceptions in the agricultural sector
120 (Govindasamy et al. 2003, Adrian et al. 2005, Kiss 2019, Valizadeh et
121 al. 2018; Nguyen et al. 2021). Furthermore, environmental awareness and
122 perceived quality have been identified as the primary factors influencing
123 the producers' behaviour in the food sector (Bossle et al. 2015, Silva et al.
124 2020, De Canio et al. 2021). These factors have also been linked to
125 consumer behaviour, as in the case of hybrid vehicles, organic food, and
126 restaurants which determine the benefits and sustainability of the company

127 (Hamzah and Tanwir 2021, Qasim et al. 2019, Thielemann et al. (2018)).
128 In the case of natural batik, some reports on customer behaviour in the
129 selection of batik are also available. In addition, other studies were
130 conducted on the general description of the batik industry (Rahayu 2012,
131 Suryani 2013, Alamsyah 2018, Rhofur 2019, Martuti et al. 2020).

132 According to the above description, although studies on producers'
133 intentions have been conducted, **studies on the intentions of batik**
134 **craftsmen in using natural dyes in the production process have not been**
135 **widely investigated.** To ascertain the factors influencing the intention to
136 produce natural dyes batik, it is necessary to apply the rational approach
137 and the ethical approach. This research is primarily needed to determine
138 the behaviour and motivation of batik craftsmen to use natural dyes.
139 Therefore, the goal of this study is to gain a better understanding of the
140 factors influencing producers' intentions toward batik with natural dyes.
141 The use of natural dyes is expected to minimize environmental pollution,
142 increase the economic value of renewable natural materials, and the selling
143 value of batik itself. Furthermore, recommendations are made for policy
144 makers to promote the craftsmen intention to use natural dyes in the batik
145 industry in Indonesia.

146 **2 Review and Hypothesis**

147
148 Figure 1 depicts conceptual model of the proposed framework. Totally,
149 10 hypotheses were drawn from seven constructs, i.e., social value,
150 economic value, quality value, green value, attitude, satisfaction, and
151 production intention of natural dyes batik. The proposed model as shown
152 in the figure illustrates that it is possible attitude and satisfaction determine
153 the production intentions. Both of these factors are related to social,
154 economic, quality, and green values.

155 The concept of attitude includes making judgments about people,
156 problems, or events. It's possible that people's perspectives will change as
157 they gain information and experience. It is the region where conduct is
158 most strongly influenced. The way someone behaves could reflect their
159 experiences or background. People's perspective can be learned and shaped
160 by information and experiences. Additionally, as attitudes are propensities
161 to act, they are linked to actual producer behaviour. Previous studies have
162 shown that producer attitudes have a significant impact on production
163 behaviour (Ruiz-Molina and Gil-Saura 2008). In this context, attitudes are
164 represented by affect, cognition, and behavior, both positive and
165 negative, which refer to the person's level of preference, people's
166 knowledge of the attitude object, and responses and intentions towards the
167 object, respectively (Mantle-Bromley 1995, Hussein 2017). In addition,
168 attitude describes a psychological inclination that is shown by rating a

169 certain system with a certain level of favourability over a certain amount
 170 of time, which prompts people to act in a particular manner in relation to
 171 the issue. In one instance, a certain attitude substantially predicts a single
 172 behaviour on a particular attitude object (Tan 2011).

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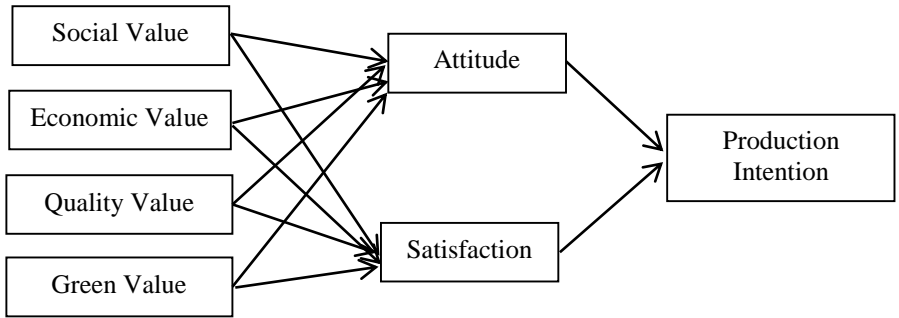
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Figure 1 Conceptual Model

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The utility of a product or service in improving the producer's perceived self-concept in relation to a specific social, demographic, socioeconomic, or cultural group is referred to as social value. Self-image is related to social value. It is believed that producing natural dyes batik could improve the social status of the producers. In the context of green products, social value is a perceived net utility gained from green product production based on social pressure or status gain. Social value has a significant positive influence on the behaviour of sustainable producers (Qasim et al. 2019). Emotional value is the value obtained after a producer delivers a product or service and discovers that the resulting product has a higher value, resulting in an emotional response. The emotional benefits gained by producers through interaction with other producers in the community could be defined as social value (Luna-Cortés et al. 2019). Producers are motivated to behave in the same manner as their social class by social affiliation. Producers tend to create products that reflect their social standing. Producers believe that green production is a modern way of life. The production of natural dyes batik is critical to their social identity. Hence, based on the above description, this study hypothesizes that:

Hypothesis 1a. Social value will positively affect producer attitude.

Producer satisfaction is defined as the difference between the total benefits expected from a product/service and the total costs incurred in producing that product/service. Furthermore, producer satisfaction refers

212 to the difference between the actual performance experienced and the
213 producer's expectation. A person's subjective evaluation of a situation that
214 results in a positive emotional response is referred to as producer
215 satisfaction. Given the intense competition, a successful response to
216 producer satisfaction significantly defines a company's survival and long-
217 term profitability. In order to establish and maintain a strong and long-term
218 relationship with customers, producers must perform better, resulting in
219 higher service/product quality (Wu 2014). A previous study on producer
220 satisfaction discovered that in most areas surveyed, flat and pit parlours
221 were preferred over stall barns with pipeline systems (Wagner (2001)).
222 Furthermore, despite higher consumer prices, producer satisfaction in
223 terms of saleable product quantity, selling prices, and customer number
224 was highest in producer markets (Kiss (2019)). Producer satisfaction is
225 critical in assessing market growth prospects and defining the potential of
226 recruitment targets for both existing and new outlets (Govindasamy
227 (2003)). Therefore, the willingness to shift marketing and production
228 priorities is required in order to meet customer demands, which leads to
229 long-term profitability and satisfaction. In this study, perceived
230 satisfaction can be defined as producer acceptance of natural dyes batik
231 and the level of comfort involved in production. Satisfaction is defined as
232 the pleasure or contentment that results from carrying out a necessary or
233 desirable action and experiencing the result Shee and Wang (2008). In a
234 positive sense, satisfaction is defined as a collection of feelings or attitudes
235 toward a variety of factors that determine a specific situation. A higher
236 level of producer satisfaction indicates a greater willingness to carry out
237 the process. A great deal of effort has taken into estimating user
238 satisfaction. It was revealed that user satisfaction is a complex concept that
239 varies depending on the experience or case character (Liaw and Huang
240 2013). It is therefore, the following hypothesis was developed:

241

242 Hypothesis 1b. Social value will positively affect producer satisfaction.

243

244 In the case of the producer, economic value is associated with
245 production profits as well as relationships with suppliers and customers in
246 relation to realised costs (Jelčić and Mabić 2020). Economic value is the
247 monetary value that a person assigns to an economic good based on its
248 utility. Economic value is frequently estimated by measuring a person's
249 willingness to pay for a good in currency units. It is characterised by more
250 reasonable pricing, product value in line with price, and more cost-
251 effective products (Wei et al. 2020). This case demonstrated that economic
252 value determines satisfaction, though emotional value predicted client
253 satisfaction more accurately than economic value (Jelcic and Mabic's
254 2020). In this work, natural dyes batik production provides perceived

255 economic value to producers through tangible benefits such as low material
256 and production costs and maximum price. Economic value is believed to
257 determine purchase intention. Thus, it is hypothesized that:

258

259 Hypothesis 2a. Economic value will positively affect producer attitude.

260 Hypothesis 2b. Economic value will positively affect producer
261 satisfaction.

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263 Perceived quality is another dimension of brand value that is very
264 important for producers in choosing the materials for production. It is
265 important to note that product quality is an important company resource to
266 achieve competitive advantage. Perceived quality reveals assessment
267 (perception) of overall product advantages compared to its alternative
268 product/service. Based on this definition it is also known that perceived
269 quality is product ability to be accepted in providing satisfaction compared
270 relatively to the available alternatives' product. Because perceived quality
271 is a component of brand value, high perceived quality will encourage
272 consumers to prefer our brand over competitors. Product quality has a
273 significant impact on purchase motivation, which influences consumer
274 purchasing decisions (Li et al. 2012). They discovered that perceived brand
275 quality and customer service influenced consumers' willingness to
276 continue purchasing luxury fashion brands in the future. Another study
277 found a link between perceived quality and willingness to purchase, brand
278 purchase intentions, and brand choices (Netemeyer et al. 2004).
279 Considering the importance of natural dyes batik quality in ensuring the
280 business sustainability, the following hypothesis are developed:

281

282 Hypothesis 3a. Quality value will positively affect producer attitude.

283 Hypothesis 3b. Quality value will positively affect producer satisfaction.

284

285 Green value is the producer's overall assessment of the benefits of a
286 product or service in terms of capital and earnings, based on the producer's
287 environmental desires, sustainable expectations, and environmentally
288 friendly needs (Wei and Jung 2017). **Meanwhile, perceived green value is**
289 **defined as a person's moral sense in honouring pro-environmental actions**
290 **that benefit them by lowering both environmental damage and energy costs**
291 **(Hamzah and Tanwir (2021)).** In the case of natural dyes batik, the increase
292 in demand is ignited due to natural dyes batik purchase may enhance social
293 status. Wearing natural dyes batik indicates environmentally friendly
294 manner thus give high contribution to society. This behaviour relates to the
295 fact that wearing natural dyes batik signal to others that a person is pro-
296 social rather than pro-self-individual. The current prevalence of
297 environmental consciousness is characterised by "green perceived value,"

298 which is based on the consumer's environmental preferences, sustainable
299 expectations, and green requirement (Chen and Chang (2012). Green
300 product manufacturers should focus more on value perception by
301 emphasising the physical and psychological benefits of green products
302 (Hur et al. 2013). Despite the addition of green attributes to green products
303 in order to increase green product consumption, greenness is insufficient
304 to encourage consumer demand for the products. As a result, it is critical
305 for producers to recognise the needs that drive purchases. Green product
306 purchases are linked to consumers' individual perceived values, such as
307 increased customer satisfaction, increased customer retention, and
308 decreased price sensitivity (Hur et al. 2013). The considerations lead to the
309 following hypothesis:

310

311 Hypothesis 4a. Green value will positively affect producer attitude.

312 Hypothesis 4b. Green value will positively affect producer satisfaction.

313

314 Perceived intentions represent more normative beliefs leading to
315 behavioural outcomes. Perceived intention is a context-specific perception
316 that is derived from normative beliefs. Production intentions can be used
317 to verify the application of a new products in line with environmental
318 concerns thus help managers define whether the concept worthy of further
319 establishment and determine which geographic markets and consumer
320 segments to target through the channel. Production intention is of
321 important in predicting actual behaviour. To predict production intention,
322 it is important to understand the social, economic, quality, and green values
323 that ultimately generate the attitudes and satisfaction. It is therefore, the
324 following hypothesis is proposed:

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326 Hypothesis 5. Attitude will positively affect production intention.

327 Hypothesis 6. Satisfaction will positively affect production intention.

328

329 **3 Methodology**

330 **3.1 Sample**

331 Currently, data collection could be effectively carried out through web-
332 based surveys. The empirical data for the present study were collected
333 through Google form and paper-based questionnaire. A broadcast of the
334 survey goals was posted for 1 week on WhatsApp groups of the batik
335 community. Considering that most batik producers are not familiar with
336 filling out online forms, paper-based questionnaire was also applied. The
337 sample criteria in this study were selected based on the provisions of those
338 who experienced at least 1 year as natural dye batik producer. There were

339 40 respondents filled out the online form and 169 respondents filled out
 340 the paper-based questionnaire. To avoid duplicate responses, a single IP
 341 address or email account was applied. The final sample included 209 valid
 342 responses.

343 Among the respondents, 32.5% were male; 90% were under the age of
 344 50; 91% were high school graduates and 42% had experience in producing
 345 natural dyes batik for 1-5 years. Table 1 summarizes the demographics of
 346 the respondents. The demographic profile showed that producers are
 347 mostly in productive ages and well experienced.

348
 349

Table 1 Demographic Profile

Measure	Items	Frequency	Percent
Gender	Male	68	32.5
	Female	141	67.5
Age	20-24	24	11.5
	25-29	22	10.5
	30-34	38	18.2
	35-39	35	16.8
	40-44	51	24.4
	45-49	22	10.5
	>50	17	8.1
Domicile	Banten	1	0.48
	Jawa Barat	9	4.3
	Jawa Tengah	197	94.26
	Jawa Timur	1	0.48
	DIY	1	0.48
Education	High School	190	90.91
	College	5	2.39
	Undergraduate	14	6.7
Experience	Degree	14	6.7
	1-5 years	87	41.63
	6-10 years	50	23.92
	11-15 years	60	28.71
Production Capacity/Month	>16 years	12	5.74
	< 100 pcs	26	12.44
	101-200 pcs	27	12.92
	201-300 pcs	12	5.74
	301-400 pcs	13	6.22
	>401 pcs	31	14.83

350 **3.2 Measure**

351 Measurement variables, as shown in Table 2, considered each construct
 352 used in this study. Variables were either selected or modified from
 353 previous studies. A total of seven constructs were applied. Social value

354 was measured on four items and developed from previous study (Hamari
355 et al. 2020). The validated four items were used to measure economic
356 value. The quality was also measured on four items based on previous
357 research (Hamari et al. 2020). Then, green value was measured by five
358 different items. Subsequently, attitude was measured using two items
359 based on previous studies (Hsu and Lin 2016, Paul et al. 2016).
360 Satisfaction was then measured using four items based on previous study
361 of Hsu and Lin (2016). Finally, production intention for natural dyes batik
362 products was measured through four items taken from Paul et al. (2016)
363 and Yadav and Pathak (2016). A 5-point Likert scale ranging from 1
364 (strongly disagree) to 5 (strongly agree) was applied in the questionnaire.
365 This scale requests respondents to declare the level of strongly disagree
366 or agree with a sequence of statements on a certain topic.

367 Furthermore, to find out the extent of the instrument's representation of
368 the specific behaviour to be measured, content validity was carried out
369 prior to data collection process. Content validity of an instrument is the
370 extent to which the items in the instrument represent the components in the
371 overall content area of the object to be measured and the extent to which
372 the items reflect the behavioural characteristics to be measured (Fernandes
373 1984, Nunnally and Bernstein 1994). Content validity was determined
374 using the agreement of 3 experts, 2 batik experts and 1 psychological
375 measurement expert. To determine the content validity index based on
376 expert agreement, the content validity index proposed by Aiken (1980) was
377 used. Questionnaire items that have been compiled based on indicator
378 variables, was assessed by three experts by filling in a score (Score 1 = Not
379 relevant; Score 2 = less relevant; Score 3 = quite relevant; Score 4 =
380 relevant; Score 5= very relevant). The assessments results of the three
381 experts as validators were then calculated using the Aiken V index
382 formula, and the value was 0.89. It showed that the content validity index
383 of the instrument used was very valid. Considering the respondents
384 backgrounds, the questionnaire was given in Indonesian.

385 Descriptive statistics of the questionnaire items are available in Table
386 2, including the mean values of social value, economic value, quality,
387 green value, attitude, satisfaction and production intention for natural dyes
388 batik products were quite high and relatively favourable. The mean values
389 of the lower costs of production of natural dye batik were low compared
390 with the other constructs at 3.622 because most producers assume
391 production of natural dyes batik is a long process thus requires higher
392 costs. All data have standard deviation of almost 0, shows that no deviation
393 found in the data distribution, no outlier exists in the data. The sample
394 perception is uniform.

395 **Table 2** Descriptive Statistic Results

396

Constructs/ Questionnaire Items	Mean	Standard Deviation
Social Value (SCV)		
My friends would think producing natural dye batik is a good idea (Hamari et al. 2020)	4.072	0.677
Producing natural dye batik improves the way I am perceived (Hamari et al. 2020)	3.967	0.473
Producing natural dye batik makes a good impression (Hamari et al. 2020)	4.043	0.482
Economic Value (ECV)		
Production of natural dye batik needs lower costs	3.622	0.862
Natural dye batik is more marketable	3.746	0.617
Selling natural dye batik increases my income as batik craftsman	3.986	0.729
Natural dyes are less expensive	3.713	0.920
Quality (QV)		
The natural dye batik is of good quality (Hamari et al. 2020)	4.392	0.691
The natural dye batik is of well-made (Hamari et al. 2020)	4.273	0.632
The natural dye batik is long lasting	4.278	0.764
Natural dye batik has excellent colour fastness	4.364	0.808
Green Value (GV)		
Natural dyes for batik dyeing generate less wastewater	4.522	0.619
Natural dyes explore local materials	4.263	0.628
Natural dyes generate harmless wastewater	4.301	0.570
Natural dyes need simple wastewater treatment facility	3.885	0.689
Attitude (ATT)		
I like the idea of producing natural dye batik (Paul et al. 2016)	4.100	0.512
I have favourable attitude towards producing natural dye batik (Paul et al. 2016)	4.091	0.523
My attitude toward producing natural dye batik is favourable (Hsu and Lin 2016)	3.895	0.769
Satisfaction (STF)		

Producing natural dye batik makes me feel very satisfied (Hsu and Lin 2016)	3.856	0.718
Producing natural dye batik gives me a sense of enjoyment (Hsu and Lin 2016)	3.995	0.786
Producing natural dye batik makes me feel very contented (Hsu and Lin 2016)	3.885	0.689
Producing natural dye batik makes me feel very delighted (Hsu and Lin 2016)	3.962	0.757
Production Intention (PDI)		
I'm willing to produce natural dye batik (Yadav and Pathak 2016)	4.072	0.738
I will make an effort to produce natural dye batik (Yadav and Pathak 2016)	4.120	0.719
I will consider switching to environmental friendly materials for ecological reasons (Paul et al. 2016)	4.153	0.716
I expect to produce natural dye batik for the positive environmental contribution (Paul et al. 2016)	4.488	0.706

397

398 **4 Tools for Analysis**

399 Data analyses were conducted using the statistical package with graphical
 400 user interface for variance-based structural equation modelling using the
 401 partial least squares path modelling method (SmartPLS). The software
 402 was used to test hypotheses of this study. SmartPLS was used for
 403 descriptive analysis to analyse preliminary results.

404 **4.1 Testing of Common Method Bias of the** 405 **Measurement Model**

406 Common Method Bias is an effort made to see the strength or size of gap
 407 between the observed correlation and the true correlation between
 408 constructs or variables. Therefore, Common Method Bias test in this study
 409 was objected to avoid the causes of errors in measuring or testing data. To
 410 show the issue of Common Method Bias or not, it can be analysed using
 411 the full collinearity test (Kock and Lynn 2012). Through this procedure, a
 412 construct model that may be contaminated by Common Method Bias can
 413 be seen based on variance inflation factors (VIFs). $VIF > 3.3$ indicates a
 414 pathological collinearity as well as contaminated model by Common
 415 Method Bias. On the other hand, VIF from the full collinearity test of
 416 greater than 3.3, the model is considered free from Common Method Bias.
 417 Table 3 describes full collinearity test results, reveals that latent variables
 418 have a VIF value greater than 3.3, that no Common Method Bias occurred
 419 in this study.

420
421**Table 3** Result of Full Collinearity Test

	ATT	ECV	GV	PDI	QV	SCV	STF
ATT				1.702			
ECV	1.487						1.487
GV	1.609						1.609
PDI							
QV	1.404						1.404
SCV	1.491						1.491
STF				1.702			

422

4.2 Testing of Reliability and Validity of the Measurement Model

425 Confirmatory factor analysis (CFA) was applied to evaluate the
 426 measurement model. The measurement model confirms the factor
 427 loadings of the seven constructs; social value, economic value, quality
 428 value, green value, attitude, satisfaction and production intention for
 429 natural dyes batik products. Model validity and reliability verification
 430 was carried out by analysing convergent and discriminant validities and
 431 the overall fit with data. The internal consistency of the indicators of each
 432 studied construct was examined using the most common method, by
 433 determining the coefficient alpha of a given construct (Maichum et al.
 434 2016). The loading factor showed that all items used to measure the
 435 variable are valid.

436 **The factor loading was determined to be higher than 0.700 (Hair et al.**
 437 **2009).** It was found that all of standardized factor loadings were significant
 438 ranging from 0.608 to 0.922. Composite reliability measures were used to
 439 examine the construct reliability thus assess the extent to which items in
 440 the construct measure the latent concept. Composite reliability (CR) and
 441 the average variance extracted (AVE) contribute to convergent validity of
 442 the CFA results (Hair et al. 2009). It was determined that the
 443 approximation of CR and AVE, which measures the amount of variance
 444 explained by the given construct, should be higher than 0.700 and 0.500,
 445 respectively (Hair et al. 2009). Table 4 shows that the CR and AVE values
 446 ranged from 0.820 to 0.946 and 0.534 to 0.814, respectively, surpassing
 447 the respective recommended levels of 0.700 and 0.500. The AVE value
 448 describes the variance or diversity of the manifest variables posed by the
 449 latent construct. Thus, the greater the variance or diversity of the manifest
 450 variables that can be contained by the latent construct leads to greater
 451 representation of the manifest variable on the latent construct. The AVE
 452 value of 0.5 represents adequate convergent validity, which means that in

453 average, one latent variable is able to explain more than half of the variance
 454 of its indicators. The CFA results shows that the measurement model had
 455 suitable convergent and discriminant validities. It was also revealed that
 456 the hypothesized measurement model was reliable and considerable to
 457 justify the structural associations among the constructs.
 458
 459

Table 4 Reliability and Validity of the Constructs

Constructs/ Questionnaire Items	Question Item	Standardized Factor Loading	Composite Reliability	Average Variance Extracted
Social Value (SCV)				
	SCV1	0.796		
	SCV2	0.849	0.864	0.679
	SCV3	0.827		
Economic Value (ECV)				
	ECV1	0.656		
	ECV2	0.832	0.827	0.547
	ECV3	0.792		
	ECV3	0.662		
Quality (QV)				
	QV1	0.808		
	QV2	0.717	0.847	0.581
	QV3	0.812		
	QV4	0.707		
Green Value (GV)				
	GV1	0.608		
	GV3	0.794	0.820	0.534
	GV4	0.759		
	GV5	0.749		
Attitude (ATT)				
	ATT1	0.847		
	ATT2	0.856	0.844	0.646
	ATT3	0.698		
Satisfaction (STF)				
	STF1	0.922		
	STF2	0.884	0.946	0.814
	STF3	0.921		
	STF4	0.882		
Production Intention (PDI)				
	PDI1	0.894	0.886	0.663

PDI2	0.919
PDI3	0.754
PDI4	0.663

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Table 5 describes Heterotrait-Monotrait Ratio (HTMT), objected to determine the correlation level of an indicator with its construct. It was shown in the table that all HTMT values < 0.9, revealed that all constructs were valid with discriminant validity.

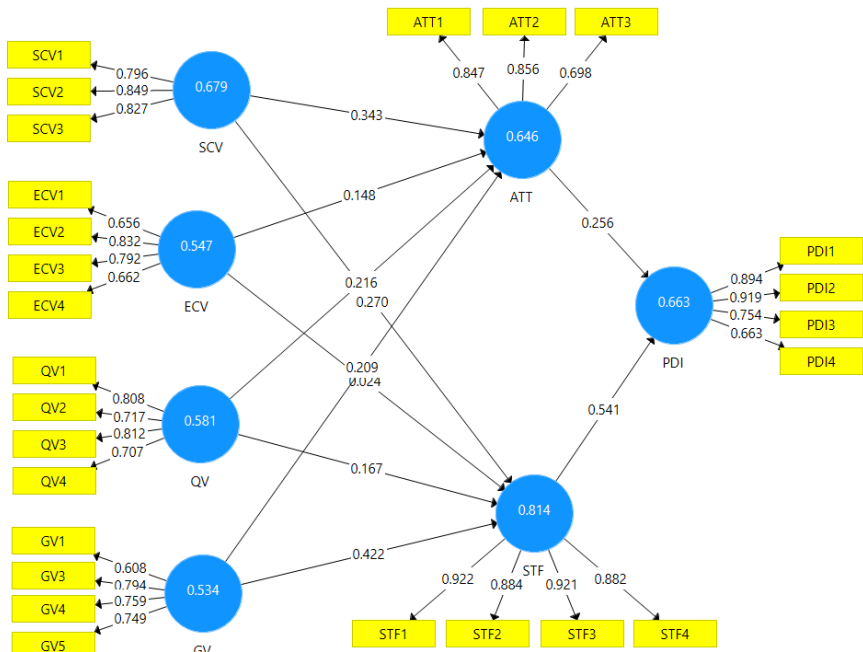
Table 5 Heterotrait-Monotrait Ratio (HTMT)

	ATT	ECV	GV	PDI	QV	SCV	STF
ATT							
ECV	0.549						
GV	0.704	0.497					
PDI	0.737	0.599	0.712				
QV	0.503	0.721	0.521	0.733			
SCV	0.699	0.304	0.770	0.578	0.234		
STF	0.795	0.366	0.757	0.751	0.345	0.644	

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Structural Equation Model was arranged by smartPLS using a maximum likelihood parameter that assessed the hypothesized conceptual model of this study as given in Figure 2.

The results of the structural model and the standardized path coefficient represented positive effects among the constructs in the structural model are available in Table 6. Totally, eight of ten hypotheses were accepted. The positive relationship between social value towards attitude of natural dyes batik products ($\beta_1 = 0.343$, $t = 4.677$) indicated that H1 was accepted. According to H2, the positive estimate of coefficients of social value and satisfaction of natural dyes batik production had significant positive effects ($\beta_2 = 0.270$, $t = 3.878$), thus, H2 was accepted. The impact of economic value ($\beta_3 = 0.148$, $t = 1.811$) had insignificant positive effects on attitude of natural dyes batik production, rejected H3. Economic value had insignificant positive effect on satisfaction of natural dyes batik production ($\beta_4 = 0.024$, $t = 0.422$). Furthermore, quality value gave significant positive effect to attitude of producing natural dyes batik ($\beta_5 = 0.216$, $t = 3.331$) and satisfaction ($\beta_6 = 0.167$, $t = 2.537$). Green value significantly affected attitude ($\beta_7 = 0.209$, $t = 2.730$) and satisfaction ($\beta_8 = 0.422$, $t = 6.025$), of natural dyes batik production. Finally, attitude ($\beta_9 = 0.256$, $t = 3.690$) and satisfaction ($\beta_{10} = 0.541$, $t = 9.151$) of natural dyes batik production showed significant positive influences on production intention of natural dyes batik.



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Figure 2 Standardized Factor Loading

Table 6 Hypotheses Result for the Structural Model

		Path Coefficient	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
H1	SCV → ATT	0.343	0.071	4.812	0.000
H2	SCV → STF	0.270	0.066	4.075	0.000
H3	ECV → ATT	0.148	0.078	1.896	0.059
H4	ECV → STF	0.024	0.057	0.421	0.674
H5	QV → ATT	0.216	0.063	3.455	0.001
H6	QV → STF	0.167	0.066	2.528	0.012
H7	GV → ATT	0.209	0.071	2.940	0.003
H8	GV → STF	0.422	0.067	6.342	0.000
H9	ATT → PDI	0.256	0.072	3.578	0.000
H10	STF → PDI	0.541	0.063	8.587	0.000

496 **5 Results and Discussion**

497 This study investigated the extended framework of the perceived
498 model, in which social value, economic value, quality value and
499 green value are added as antecedents of attitude and satisfaction of
500 natural dyes batik production. The purpose was to examine

501 Indonesian natural dyes batik producers on the production intention
502 of natural dyes batik products. The result recommended that
503 producers' intention for this group to produce natural dyes batik
504 products can be predicted by social value, economic value, quality
505 value, green value, attitude, and satisfaction. A detailed discussion
506 of each factor is given below.

507 *First*, there were positive relationships between **social value**
508 **towards attitude and satisfaction** of producers in producing natural
509 dyes batik. Producers would have positive attitude and satisfaction
510 towards producing natural dyes batik when they have high level of
511 social value. Perceived impression of natural dyes batik production
512 as well as the image as environmental care people are good motives
513 in producing natural dyes batik. Producers would satisfy and enjoy
514 the process of natural dyes batik production. Different trend was
515 obtained by Hamzah and Tanwir (2021), in which subjective norms
516 insignificantly affected purchase intention. This is due to the
517 consumers' social network, involving co-workers and fellow as well
518 as relatives gave insufficient effect in determining their compliance
519 to purchase product. Another reason is their social influencers are
520 not entirely knowledgeable of the advantages of applying pro-
521 environmental behaviour. Similarly, no significant relationship
522 between social value and behavioural intention to consume organic
523 products was found. That is, taking organic products does not result
524 in perceived social recognition or social image enhancement (Qasim
525 et al. 2019).

526 *Second*, **economic value significantly defined attitude** but
527 **insignificantly determined producer satisfaction** of producing
528 natural dyes batik. The belief of low production costs and more
529 marketable products leads to the higher level of producing natural
530 dyes batik attitude. Moreover, the exclusivity of natural dyes batik
531 products may enhance the sales thus in turn increase the profits. The
532 low production costs gave impact in lower selling price. As a result,
533 producers have favourable attitude towards resulting the products.
534 Producers are currently more environmentally aware about the
535 hazard of textile dyes and chemical agents used in conventional
536 dyeing process. Their awareness is able to increase their
537 responsibility to protect the environment through the use of natural
538 dyes to minimize environmental pollution. This is in accordance
539 with the finding of Qasim (2019) that economic value is among the
540 performance factors assessed by consumers. They tend to purchase
541 premium costly products as long as the products provide high return.
542 On the other hand, despite their responsible attitude towards the
543 environment, producers are not satisfied with the results obtained,

544 especially during the Covid-19 pandemic. Sales of natural dyes batik
545 tend to fall during the pandemic because people prioritise daily
546 necessities over natural dyes batik products. This is supported by the
547 fact that inflation was around 0.07% in May 2020, indicating a
548 decline in people's purchasing power (Yuniarti et al. (2021)).
549 Producer profits are affected by the decline in purchasing power.

550 *Third, producers' attitude and satisfaction are also affected*
551 **by quality value.** Natural dyes batik products generated at premium
552 quality could improve the favourable attitude of producers. They
553 could get more idea to sustainably produce good batik products by
554 maintaining superior quality. A confidence attitude leading to a
555 better comprehension towards the utility of technology, thus
556 inducing to a tendency to apply these technologies. Producers who
557 exhibited conviction about applying and learning technologies and
558 perceived a net gain from applying these technologies indicated
559 higher trend to use accurate agriculture technologies (Adrian et al.
560 2005). **According to a previous study, every producer has nearly the**
561 **same attitude, believing that good production methods result in high-**
562 **quality products (Verbeke et al. 2005).** Furthermore, producing
563 excellent quality of natural dyes batik, in term of long lastness, good
564 colour fastness, as well as well-made products enhance producers'
565 satisfaction. Producer satisfaction plays an important role in
566 determining the success of natural dyes batik production. Producers'
567 satisfaction is also of important in determining the growth and future
568 success of natural dyes batik industries. **This is due to the fact that**
569 **the quality and focus of production in meeting customer demands**
570 **have a direct impact on customer satisfaction, which in turn will**
571 **form a long-term bond of mutual trust (Thielemann et al. (2018),**
572 **Govindasamy et al. (2003), Mutonyi et al. (2016)).**

573 *Fourth,* the study found that **green value significantly**
574 **determined producer attitude and satisfaction.** The facts that
575 natural dyes batik production generate less and harmless wastewater
576 lead to the positive attitude thus very helpful in achieving their goals.
577 They could continue producing natural dyes batik without worrying
578 about the negative impact on the environment. The negative impacts
579 toward customer body as well as surrounding environment by the
580 production of natural dyes batik are negligible. In term of
581 satisfaction, the pro-environment facts of natural dyes batik induce
582 producers' contentment. The other facts are the employment of
583 unused natural resources and local material in the production of
584 natural dyes batik. This selection causes an attitude of pride and
585 satisfaction for producers.

586 *Finally, attitude and satisfaction were found to give*
587 **significant positive impacts on production intention** of natural
588 dyes batik products. Satisfaction had the most significant influence
589 on producers' production intention, which reveals that satisfaction
590 was the strongest predictor of production intention of natural dyes
591 batik products followed attitude. The overall results assured that the
592 perceived model and its behaviour were suitable for the investigated
593 group. **This study's findings support previous studies that higher**
594 **positive consumer attitudes toward environmentally friendly product**
595 **purchase behaviour result in stronger consumer intentions to**
596 **implement a behaviour under their control (Ajzen (2015), Tomasetti**
597 **et al. (2018), Maichum (2016)).** Although, in some cases, consumer
598 motives for pro-environment attitudes and loyalty to sellers are not
599 triggered by positive attitudes toward purchasing environmentally
600 friendly products (Hamzah and Tanwir (2021) and Molina (2008)).

601 **5.1 Theoretical Implications**

602 Indonesia as tropical country provides abundant types of natural
603 resources having potential to be applied as natural dyes. Although
604 application of natural dyes has been widely investigated, research on
605 producers' intention towards natural dyes batik has not been found
606 yet. Previous research limited to the relationship exploration of green
607 subjective standards, awareness of green products and attitudes
608 towards green purchasing intentions through the Internal
609 Environmental Control Locus (INELOC) between craft shopping
610 tourists in the Batik town of Pekalongan (Sunarjo et al. 2021). This
611 research was driven by curiosity and the desire to expand knowledge
612 in producers' intention area. It is believed that it gives a specific
613 contribution to the academic body of knowledge in the research area
614 of natural dyes batik producer intention.

615 In the field of natural dyes batik, studying producers' intentions,
616 this research confirms the role of the theory of planned behaviour in
617 the acceptance of natural dyes. This study confirms the
618 appropriateness theory of planned behaviour in understanding
619 producers' intention toward natural dyes batik production in
620 Indonesia. **This model has demonstrated the applicability of the**
621 **approaches, in which social value, quality value, economic value,**
622 **and green value all have a direct effect on attitude and satisfaction.**
623 **Meanwhile, attitude and satisfaction have a direct impact on**
624 **production intention.**

625 **5.2 Practical Implications**

626 Adopting natural dyes batik not only increases producers'
627 income but also protects environment by avoiding harmful
628 chemicals. Natural dyes batik is becoming popular in Indonesia, and
629 many government policies are promoting it. To increase the intention
630 of adopting natural dyes batik production, the government must gain
631 access to factors that influence producers' intentions and ethical
632 aspects. Based on the research results of factors affecting producers'
633 intention toward natural dyes batik production in Indonesia, the
634 following suggestions are given:

- 635 1. Raising awareness among producers about the importance of
636 natural dyes in batik, as well as the health and environmental
637 consequences of not using natural dyes. This study was based on
638 the relationship between the factors in planned behaviour and
639 the relationship between producer attitude and satisfaction with
640 their intentions. The values of the consequences of natural dyes
641 application were shown to have a direct and indirect positive
642 effect on the ethical perception of applying or not applying
643 natural dyes through the belief of responsibility.
644 Satisfaction will positively affect producers' intention toward
645 natural dyes batik production in Indonesia. Besides, producers'
646 intention would also be affected by attitude.
- 647 2. **Communicating to producers via various means about the**
648 **benefits of natural dyes over synthetic dyes on the health of**
649 **producers and customers.**
- 650 3. Forming information spill over groups between craftsmen who
651 have developed natural dyes batik and those who have not.
652 Those who have not previously practiced natural dyes batik will
653 be given precise and practical information on the benefits of
654 natural dyes, forming natural dyes intentions. The exchange of
655 information among these craftsmen will influence their attitudes.

656 **6 Conclusion**

657 Production intention of environmentally friendly fashion products has
658 been evaluated successfully. This work focused on the natural dyes batik
659 producers in Indonesia. The results showed that production intention was
660 affected significantly by the producers' attitude and satisfaction. In the
661 meantime, the attitude and satisfaction of the producer were highly
662 influenced by social value, quality value, and green value parameter.
663 Economic value, however, provided contribution on the producer's
664 attitude, but insignificantly contributed to the producer's satisfaction.
665 Overall, production intention of natural dyes batik was strongly predicted
666 by satisfaction and also determined by attitude. The results of this study

667 support in enhancing the concept of natural dyes batik production, which
668 also provide an important role towards sustainable production.

669 The current research has some limitations that need further
670 investigation in the future. The study only focused on producers' intention
671 toward natural dyes batik in some areas of Central Java; the findings are
672 therefore not generalizable to all batik craftsmen in the country. Therefore,
673 future studies should include producers from different areas. The use of
674 intentions instead of actual behaviour is another limitation of this study,
675 thus future studies need to investigate the impacts of factors in the model
676 on natural dyes batik production implementations. The results on the
677 difference and characterization of the demographic variables such as
678 gender, age, domicile, education level, experience in batik production as
679 well as the annual capacity of batik production should be taken into
680 account that how they impact the intention toward natural dyes batik
681 production in the next studies.

682

683 **Declarations**

684 **Ethical Approval**

685 This material is the authors' own original work, which has not been
686 previously published elsewhere. This manuscript is not currently being
687 considered for publication elsewhere. The manuscript reflects the authors'
688 own research and analysis in a truthful and complete manner. All sources
689 used are properly disclosed with correct citation and gave proper
690 reference.

691

692 **Consent to Participate**

693 All panellists have read and understand the provided information and
694 have had the opportunity to ask questions. All panellists understand that
695 their participation is voluntary and that they are free to withdraw at any
696 time, without giving a reason and without cost.

697

698 **Consent to Publish**

699 All panellists understand that in any report on the results of this research,
700 their identities will remain anonymous

701

702 **Author Contributions**

703 Author Contributions: Conceptualization and methodology, A.K.,
704 T.A.A., K.P. and A.N.H.; data collection, A.K. and A.A.; data analysis,
705 A.K., T.A.A. and A.N.H., writing—original draft preparation, A.K., K.P.,
706 and A.N.H.; writing—review and editing, A.K. and A.A.; supervision,
707 A.K., K.P. and A.N.H.; funding acquisition, A.K. All authors have read
708 and agreed to the published version of the manuscript.

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714

715 **Conflicts of Interest**

716 The authors declare no conflict of interest

717

718 **Data Availability Statement**

719 Data sharing is not applicable to this article

720

721 **Reference**

722

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From: Philippe Garrigues (em@editorialmanager.com)

To: adhi_kusumastuti@mail.unnes.ac.id

Date: Sunday, 25 September 2022 at 02:13 am GMT+7

Ref.:

Ms. No. ESPR-D-22-02442R2

Assessment of Producer's Perspective on the Production of Environmentally Friendly Fashion Products: A Case Study in Indonesian Natural Dyes Batik Craftsmen
Environmental Science and Pollution Research

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If you have any question, please contact Dennis Villahermosa + dennis.villahermosa@springer.com

Thank you for submitting your work to this journal.

With kind regards,

Dr. Philippe Garrigues

Managing Editor

Environmental Science and Pollution Research

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