MARKETING

THE ROLE OF ECOLOGICAL INNOVATION AND ECOLOGICAL MARKETING TOWARDS GREEN MARKETING PERFORMANCE IMPROVEMENT

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Abstract. This research **contributes to** efforts to improve marketing performance in batik small and medium enterprises that care about the sustainability of the ecosystem through ecological innovation and ecological marketing. This paper discusses the results of a study of the relationship between marketing and the willingness to support environmentally friendly among small-scale 'batik' (Indonesian traditional clothing) producers in Central Java. The study was conducted on natural color batik SMEs in Central Java with a total sample of 120 respondents obtained through non-probability sampling to test the relationship between variables that developed in this study, using SEM-PLS modeling. The **findings** suggest that the performance of green marketing can be enhanced by ecological innovation through intervening variables of ecological marketing. The **study found that** operators with higher marketing performance measured by customer growth, market share and sales volume were more willing to replace synthetic dyes with more environmentally friendly natural dyes, even though the price of batik products was more expensive. The increased performance of green marketing in this study, it is expected to be able to encourage batik SMEs who use synthetic dyes to switch to natural dyes to reduce environmental pollution and protect the world from degradation through sustainable consumption and production.

Keywords: green marketing performance, ecological innovation, ecological marketing, sustainability.

JEL Classification: Z1, K3, L5, L8.

INTRODUCTION

Sustainability becomes a strategic issue in realizing the goals of sustainable development, although the idea of sustainability is not new to organizations, green businesses are still concerned about the subsequent benefits that will be generated (Hassini, Surti and Searcy, 2012), which only sporadically pay attention to sustainability issues (Leonidou and Leonidou, 2011; Seuring and Müller, 2008). To integrate sustainability into organizations is still a challenge and difficult for

many people (Millar et al., 2012). Current ecological challenges require managers to formulate green marketing strategies to achieve marketing performance. This conceptual paper is intended to investigate the impact of green marketing strategies on the marketing performance of companies doing green business through the analysis of green innovation.

Green marketing performance is a managerial perception of a company's ability to pay attention to environmental impacts in carrying out its production processes to achieve market share, sales growth, increase profitability, brand equity, customer satisfaction, and loyalty. However, research related to past marketing performance measurement has not touched and contributed to economic sustainability in the future. In previous studies, marketing performance measures can be obtained through marketing function activities consisting of market share, customer satisfaction, customer loyalty/retention, brand equity, and innovation (Gao, 2010). There are eight variables to measure organizational performance consisting of customer satisfaction, employee morale, sales growth, profitability, productivity, quality cost reduction, financial performance and environmental performance (Padma, Ganesh and Rajendran, 2008).

There is still very little research that reflects sustainable marketing strategies (Kumar, Rahman and Kazmi, 2013), so this area can be explored further. Current ecological challenges require managers to formulate strategies that control pollution and conserve natural resources (Millar et al., 2012). Marketing plays an important role in directing companies to improve performance (Chabowski, Mena and Gonzalez-Padron, 2011). Some strategic policies and product consequences from the adoption of green initiatives as marketing strategies were also carried out by (Sharma, Iyer, Mehrotra and Krishnan, 2010). Therefore, this implies that the involvement of green marketing is very important and cannot be avoided to improve marketing performance. Measurement of green marketing performance includes: improving a good corporate image, reducing waste, minimizing costs, increasing customer satisfaction, increasing productivity, increasing market share, and of course profitability (X. Chen, Zou and Wang, 2009). This research refers to the aim to ensure production patterns through sustainable management of natural resources, reduce environmental pollution, and improve green marketing performance. This study will analyze the relationship between ecological innovation and the role of ecological marketing as an intervening variable on the green marketing performance.

Relationship between Ecological Innovation and Green Marketing Performance

Ecological innovation is considered as a new product or process that adds value to businesses and customers, significantly reducing environmental impact (Fussler, 1996). Ecological innovation can be divided into green products and processes, including innovations in technologies involved in the design of green products, using energy savings, waste recycling, and technology to prevent pollution (Y. S. Chen, Lai and Wen, 2006). Ecological innovation is divided into the process, product and organizational innovation (OECD, 2009). All technologies and innovations developed for new products or services that provide positive benefits to the environment are key factors for sustainability for the company (Ar, 2012). Many companies are willing to invest and put more effort into developing ecological innovation, therefore, developing ecological innovation is a win-win solution for resolving conflicts between economic development and environmental protection (Chang and Taylor, 2016).

The Diffusion of Innovation Theory applies to support the relationship between ecological innovation and corporate marketing performance. This theory explains how to increase the rate of adoption of green products, services, and processes to help companies gain a competitive advantage (Vaccaro, 2009). Therefore, ecological innovation can be considered as a unique resource that is owned by the business that allows companies to gain competitive advantage and simultaneously improve the performance of environmentally friendly marketing. Green marketing performance is reflected in the perceived and expected benefits of the integration of environmental management in their business operations (Psomas, Fotopoulos and Kafetzopoulos, 2011).

Ecological innovation for Small and Medium Enterprises (SMEs), including in new developments that include environmentally friendly products and change processes or environmentally friendly production methods (Oxborrow and Brindley, 2013). In Indonesia, ecological innovation can be found in natural color batik UKM that was developed in 2004, through socialization and training to batik UKM, in order to use natural dyes. However, the development of natural color batik SMEs is felt to be very slow, due to the difficult production process, high costs and the resultant coloring of batik products that are not bright enough, making it less attractive to the market. Therefore, through the analysis of the relationship between ecological innovations on the performance of environmentally friendly marketing, it is hoped that the results of this study can increase the number of natural color batik SMEs.

H1: There is a positive relationship between ecological innovation and the performance of environmentally friendly marketing

Relationship between Ecological Innovation and Ecological Marketing

Ecological innovation is the creation of new and competitive efforts from products, processes, systems, services, and procedures that are designed to meet human needs and provide better quality of life for ecosystems, with a minimum utilization of the life cycle of natural resources and a minimum release of toxic substances (Reid and Miedzinski, 2008). Ecological innovation is the production, assimilation or exploration of a product, production process, service or management method or business that is new to the organization (developing or adopting it). It is resulted throughout its entire life cycle, in an environment with fewer risks, less pollution and impacts other negatives of resource use, power inclusive, compared to relevant alternatives (Kemp and Pearson, 2007). Ecological innovation is a systemic process, technology, and / or social change, which consists of the discovery of ideas and their application in environmental improvement practices (Carrillo-Hermosilla, del Río González and Könnölä, 2009).

Ecological marketing addresses the needs of consumers with high environmental and social awareness. Green marketing influences how companies manage their business and interact with all stakeholders who might be affected by their environmental and social practices (Ottoman, 2008). Green marketing is a process that includes: operations management, marketing ethics, consumption ethics, corporate social responsibility, sustainable consumption, economic and consumer policies, socially responsible investment and materialism (Chamorro-Premuzic, Furnham and Lewis, 2007). Effective green marketing strategies must be further developed on green branding, packaging, labeling, and advertising to create demand for environmentally friendly products (Juwaheer, Pudaruth and Monique, 2012). The goal of ecological marketing is to reduce the impact on the natural environment during the process of planning and implementing products or services, prices, places, and promotions. Green marketing covers from production to post-purchase services with the aim of balancing corporate profits and protecting the environment (Gordon, Carrigan and Hastings, 2011). Green marketing covers a variety of activities, including product modification, changes in the production process, packaging changes, renovations, and styling and modifying green advertisements (Sarkar, 2012). The goal of green marketing is to create profits and maintain social responsibility (Mourad and Ahmed, 2012). This can be achieved if the company continues to carry out ecological innovation.

H 2: Ecological innovation positively influences ecological marketing

Relationship between Ecological Marketing and Green Marketing Performance

As global markets continue to evolve, the pillars of sustainability (i.e., environment, economy and social justice) are increasing, as part of marketing decision making (Huang and Rust, 2011). Ecological marketing is a process that includes: operations management, marketing ethics, consumption ethics, corporate social responsibility, sustainable consumption, economic and consumer policies, socially responsible investment and materialism (Chamorro-Premuzic et al.,

2007). Green marketing influences how companies manage their business and interact with all stakeholders who might be affected by their environmental and social practices (Ottman, 2014). Developing an environmentally friendly marketing (eco-marketing) strategy, which includes efforts to produce, promote, package, and reclaim products in a way that is sensitive or responsive to ecological problems, has received great attention. An environmentally friendly marketing strategy will follow the attention of consumer consumption (Sheng, Zhou and Li, 2010).

The positive relationship is between the performance of green product development and the two antecedents of green dynamic capabilities and green transformational leadership. That is partly mediated by green creativity shows that green dynamic capabilities and green transformational leadership cannot only directly affect the performance of green product development positively but also indirectly directly influence it positively through green creativity (Y. S. Chen, 2013). In applying ecological marketing in business, it is necessary to consider the extent to which managers know and apply ecological marketing as a long-term strategy (Funaru, 2014). Ecological marketing brings together a variety of activities including modifying products, changing production processes, changes in packaging and advertising (Popescu, Corbos, Comănescu and Bunea, 2017).

H3: Ecological marketing has a positive influence on green marketing performance

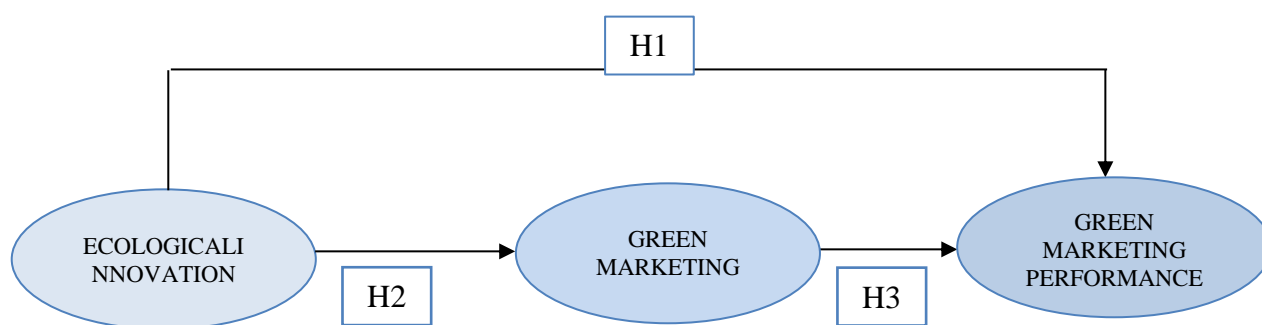Based on the research hypothesis, the empirical research model is projected in the following diagram model:

Figure 1. Research Model

Source: Own compilation

This study examines the direct effect of ecological innovation on the performance of green marketing and the indirect effect through ecological marketing.

Several previous studies related to the effect of ecological innovation on organizations produce value in defining innovations that are able to attract green revenues in the market, reduce environmental impacts while creating value for organizations (Foxon and Andersen, 2009). Ecological innovation is involved in creating and spreading the benefits of new products called environmental innovation varieties (Galliano, Magrini, Tardy and Triboulet, 2018). This involves creating new spaces in markets, products and services or processes that involve social, environmental, or sustainability. Other studies using three dimensions of performance include environmental performance, economic performance, and marketing performance (Fraj-Andrés, Martínez-Salinas and Matute-Vallejo, 2009). Environmental performance is defined when organizations carry out operations at low cost, reduce energy consumption, use recycled waste to preserve and protect the environment (Gholami, Sulaiman, Ramayah and Molla, 2013). Environmental performance, economic performance, and intangible performance are used to measure the overall appearance of the organization (Laosirihongthong, Adebanjo and Tan, 2013). Thus, it is hoped that green marketing is able to mediate the relationship between green innovation and green marketing performance. In general, the research model directly links green innovation to

green marketing performance. In addition, green innovation is indirectly related to marketing performance through green marketing.

Table 1

Sampling Frame

Variable	Indicator	Code	Source
Green Marketing Performance	Raw material efficiency	Y2.1	(Gao, 2010)
	Waste reduction	Y2.2	(Kotler and Armstrong, 2011)
	HR Enhancement	Y2.3	(Orlitzky, Siegel and Waldman,
	Sales growth	Y2.4	2015)
	Customer growth	Y2.5	
	Profitability	Y2.6	
	Customer satisfaction	Y2.7	
	Customer loyalty	Y2.8	
Eco-Innovation	Process Innovation	X1.1	(Publishing and Assessment, 2010)
	Product Innovation	X1.2	(Atalay, Anafarta and Sarvan, 2013)
	Organizational Innovation	X1.3	(Hojnik, Ruzzier and Manolova,
	Information Technology Innovations	X1.4	2018)
Ecological Marketing	Ecological Product	Y1.1	(Dalstrom, 2013)
	Ecological Price	Y1..2	
	Ecological Promotion	Y1..3	
	Ecological Distribution	Y1.4	

METHODOLOGY

This research is included in the type of explanatory research with a quantitative approach to look for explanations in the form of a causal relationship between several variables through testing one hypothesis with another variable. The populations in this study were natural color batik businesses in Central Java. The sample selection uses a nonprobability sampling technique with a judgment sampling technique, which is a sample determination technique with certain considerations for natural color batik businesspersons and natural color batik incorporated in UKM so that 120 samples are determined. Sources of data came from natural color batik businesspersons and natural color batik in MSMEs and data collection was carried out through questionnaires to respondents.

Validity and Reliability Testing

Validity testing is done to find out how well an instrument measures the concept or what should be measured using the loading factor value of each question item. A valid research instrument is required to have a loading factor of more than 0.5 (Ghozali, 2011). While reliability testing uses Cronbach's Alpha method in which one questionnaire is considered reliable if Cronbach's Alpha> 0.6 (Ghozali, 2011).

Analysis Techniques

To test the model and connectedness developed in this research, an analytical technique is needed. The analysis technique used in this research is Structural Equation Modeling (SEM) with the PLS program. This technique is intended as a group of statistical testing techniques that make it possible to examine a relatively complex set of relationships/models (Ferdinand, 2014).

RESULTS AND DISCUSSION

According to factor analysis of confirmatory on an exogenous construct includes variable of ecology innovation and ecology marketing can be known that all of indicators have been value of *Standardized Regression Weights* > 0,5 with significance < 0,05 can be known from table below:

Table 2

Standardized Regression Weights

			Estimate	Estimate	S.E.	C.R.	P	Label
IEK1	<---	Ecology Innovation	,820	1,000				
IEK2	<---	Ecology Innovation	,846	1,076	,102	10,520	***	par_1
IEK3	<---	Ecology Innovation	,797	1,001	,083	11,993	***	par_2
IEK4	<---	Ecology Innovation	,868	1,030	,098	10,469	***	par_3
PEK4	<---	Ecology Marketing	,865	1,000				
PEK3	<---	Ecology Marketing	,855	,968	,082	11,778	***	par_6
PEK2	<---	Ecology Marketing	,756	,897	,090	9,935	***	par_7
PEK1	<---	Ecology Marketing	,896	1,027	,082	12,486	***	par_8

Source: Primary Data Primer Managed, 2019

Moreover, the measurement of exogenous construct of ecology innovation and ecology marketing will be executed by applying each indicator that has been decided.

Analysis of Outer Model (Measurement Model)

The outer model analysis is conducted to ensure that the indicators used are feasible (valid and reliable) to be used as a measure of the variables studied. The Outer model defines the relationship between latent variables and their indicators. Outer model analysis can be seen from several indicators, namely convergent validity, discriminant validity, and un-dimensionality.

Convergent Validity

The value of discriminant validity is the value of the loading factor in the latent variable with its indicators. The value of the loading factor is expected to be 0.70, but a value between 0.5 0 can still be tolerated as long as the model is still in the development stage. The results of data processing indicate a loading factor:

Table 3

Convergent Validity

Indicators	*Loading Factor*
1	2
X1.1	0.773
X1.2	0.808
X1.3	0.842
X1.4	0.848
Y1.1	0.546
Y1.2	0.761
Y1.3	0.785
Y1.4	0.804

Table 3 continuation

1	2
Y2.1	0.778
Y2.2	0.735
Y2.3	0.692
Y2.4	0.819
Y2.5	0.784
Y2.6	0.759
Y2.7	0.782
Y2.8	0.529

Source: calculated by authors

In addition to the value of the loading factor, convergent validity can also be seen from the Average Variance Extracted (AVE). The expected AVE value is > 0.5. In the study of AVE values, each construct is above 0.5. Therefore, there is no problem of convergent validity in the model under test. The results of the data processing show the AVE value of construct:

Table 4

Average Variance Extracted (AVE)

Construct	AVE
X1	0.535
Y1	0.547
Y2	0.669

Source: calculated by authors

Discriminant validity can be seen from the value of the cross-loading factor.

If the correlation of the indicator with its construct has a higher value than the correlation of the indicator with another construct, it is said that the construct has high discriminant validity. The correlation of the indicator with the construct has a higher value than the correlation of the indicator with other constructs. Therefore, the construct has high discriminant validity.

Table 5

Discriminant Validity

	Innovation	Marketing Ecology	Green Marketing Performance
X1	0.731		
Y1	0.437	0.557	0.818
Y2	0.457	0.740	

Source: calculated by authors

Test for dimensionality

In dimensionality indicators are performed using composite reliability and Cronbach alpha. Data that has a value of composite reliability and Cronbach alpha > 0.7 means that the data has a value of reliability or high reliability. The results of the data processing show the Composite Reliability construct and Cronbach Alpha construct, it is known that all constructs have a high degree of reliability, because of the value of composite reliability and Cronbach alpha > 0.7.

Table 6

Composite Reliability Cronbach Alpha

	Composite Reliability	Cronbach's Alpha
X1	0.818	0.702
Y1	0.890	0.835
Y2	0.905	0.881

Source: calculated by authors

Inner Model Analysis (Structural Model)

The inner model describes the relationship between latent variables based on substantive theory. This analysis is done to ensure that structural models are built robust and accurate. Inner model evaluation can be seen from several indicators namely Coefficient of Determination (R2). The value of R2 is the coefficient of determination in endogenous constructs. The results of the data processing show the value (R2) of the Endogenous Variables

Table 7

R Square

Endogenous Variable	R Square	R Square Adjusted
Ecological Marketing	0.191	0.184
Green Marketing Performance	0.367	0.356

Source: calculated by authors

Hypothesis Testing

Hypothesis testing is done by looking at the probability value and t-count. The evaluation criteria are if p-value <0.05 or t-count> t-table then the hypothesis is accepted.

Table 8

SEM-PLS, Hypothesis Testing Results

Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	
ecological innovation -> green marketing performance	0.264	0.271	0.087	3.017	0.003
ecological innovation -> ecological marketing	0.437	0.447	0.075	5.832	0.000
ecological marketing -> green marketing performance	0.442	0.446	0.082	5.396	0.000

Source: own calculation

The results of hypothesis testing indicate that p-value <0.05, so it can be said that all three hypotheses can be accepted.

RESULT AND DISCUSSION

The test findings in hypothesis 1 state that ecological innovation has a positive and significant effect on the performance of green marketing. This means getting higher.

Ecological innovation can guarantee a marketing performance that is further improved. Ecological innovation is the ability of companies to turn new knowledge and ideas into products, processes, and organizations while maintaining the environment. Regarding organizational green innovation, several authors state that green innovation involves the implementation of several management activities aimed at reducing environmental impact (Triguero, Córcoles and Cuerva, 2014), although the study of ecological innovation in SMEs is not like that of large companies (Dahlander and Gann, 2010). In this study, ecological innovation in SMEs in natural color batik can affect marketing performance. The results of this study support previous research that was investigated by (Saunila, Ukko and Rantanen, 2014).

The test findings in hypothesis 2 state that ecological innovation has a positive and significant effect on ecological marketing. The findings of this study indicate that the higher the ecological innovation can influence its ecological marketing. The findings of this study supporting the relationship between various aspects of innovation have been empirically examined in detail, especially for green innovation (Noailly and Ryfisch, 2015).

Hypothesis 3 states that green marketing has a positive and significant effect on the performance of green marketing. This means that SMEs have higher ecological marketing associated with innovating regional unique motifs, designs with nuances of cultural diversity, symbols of local regional identity, and unique local cultural identities will enhance green marketing performance. Even so, SMEs having green marketing will take action to design products and mix marketing to create specific memories for customers, so customers from segmented target markets understand and understand the innovation of batik products of the company. The success of green marketing performance will still be an important managerial concern, because not only successful green marketing is also a major source of financial markets and performance development but they can also show undiscovered business opportunities (Wilkinson, Thomas and McNally, 2011).

CONCLUSION

The first research finding is the direct influence of ecological innovation on the performance of green marketing is potential because it has a significant influence on the measurement results. The direct influence of this ecological innovation shows that the ability of innovation to develop products, processes, and organizations that favor sustainability can improve green marketing performance.

The second research finding is the indirect effect of ecological innovation on the performance of green marketing through ecological marketing. The direct effect on the first pathway between ecological innovation and green marketing performance shows significant results, the alternative second pathway has great potential in improving marketing performance. This means that ecological innovation also has an indirect effect on marketing performance through the development of green marketing. Thus, it can be said that ecological innovation can and can improve marketing performance, another way can be done, namely by creating ecological marketing development.

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ACKNOWLEDGMENT

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РОЛЬ ЕКОЛОГІЧНИХ ІННОВАЦІЙ У ВДОСКОНАЛЕННІ ПРОЦЕСУ ВПРОВАДЖЕННЯ ЕКОЛОГІЧНОГО МАРКЕТИНГУ

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Дане дослідження сприяє покращенню маркетингових показників малих та середніх підприємств легкої промисловості, які піклуються про стійкість екосистеми шляхом впровадження екологічних інновацій та екологічного маркетингу. У статті розглядаються результати дослідження взаємозв'язку між маркетингом та готовністю підтримувати екологічно чисте виробництво серед дрібних виробників «батиків» (індонезійський традиційний одяг) у Центральній Яві. Дослідження було проведено на малих і середніх підприємствах з вироблення батиків природного кольору у центральній Яві, загальною вибіркою з 120 респондентів, залучених за допомогою випадкового відбору проб для перевірки взаємозв'язку між змінними, які були розроблені в цьому дослідженні, за допомогою моделювання SEM-PLS. Отримані результати свідчать про те, що ефективність екологічного маркетингу може бути підвищена за рахунок екологічних інновацій через впровадження змінних екологічного маркетингу. Дослідження виявило, що оператори з більш високими показниками маркетингової діяльності, які вимірюються зростанням споживачів, часткою ринку та обсягом продажів, готові були замінити синтетичні барвники на більш екологічні природні барвники, хоча ціна батикових виробів була дорожчою. Досліджені шляхи підвищення ефективності зеленого маркетингу, зможе заохотити батикові МСП, які використовують синтетичні барвники, перейти на природні барвники, щоб зменшити забруднення навколишнього середовища та захистити глобальний світ від деградації за рахунок сталого споживання та виробництва.

Ключові слова: екологічна ефективність маркетингу, екологічні інновації, екологічний маркетинг, стійкість.

РОЛЬ ЭКОЛОГИЧЕСКИХ ИННОВАЦИЙ В СОВЕРШЕНСТВОВАНИИ ПРОЦЕССА ВНЕДРЕНИЯ ЭКОЛОГИЧЕСКОГО МАРКЕТИНГА

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Данное исследование способствует улучшению маркетинговых показателей малых и средних предприятий легкой промышленности, которые заботятся об устойчивости экосистемы путем внедрения экологических инноваций и экологического маркетинга. В статье рассматриваются результаты исследования взаимосвязи между маркетингом и готовностью поддерживать экологически чистое производство среди мелких производителей «батиков» (индонезийская традиционная одежда) в Центральной Яве. Исследование было проведено на малых и средних предприятиях по выработке батиков естественного цвета в центральной Яве, общей выборкой из 120 респондентов, привлеченных с помощью случайного отбора проб для проверки взаимосвязи между переменными, которые были разработаны в этом исследовании с помощью моделирования SEM-PLS. Полученные результаты свидетельствуют о том, что эффективность экологического маркетинга может быть повышена за счет экологических инноваций через внедрение переменных экологического маркетинга. Исследование показало, что операторы с более высокими показателями маркетинговой деятельности, которые измеряются ростом потребителей, долей рынка и объемом продаж, готовы были заменить синтетические красители на более экологичные природные красители, хотя цена батиковых изделий была дороже. Исследованные способы повышения эффективности зеленого маркетинга, как ожидается, смогут привлечь МСП по производству батиков, которые используют синтетические красители, перейти на природные красители, чтобы уменьшить загрязнение окружающей среды и защитить глобальный мир от деградации за счет устойчивого потребления и производства.

Ключевые слова: экологическая эффективность маркетинга, экологические инновации, экологический маркетинг, устойчивость.