

# Green Innovation as a Determinant of Competitive Advantage in Creative Industry in Indonesia

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**Abstract**—This research aims to analyze the effect of Green innovation on the competitive advantage of the West Sumatera-Indonesia creative industries. The sample is 213 creative industry business managers in West Sumatera-Indonesia. The sampling technique uses a sampling area, the samples obtained are allocated proportionally in potential areas of creative industry businesses include: Sawah Lunto Sijunjung district, Tanah Datar, 50 Kota, Agam, Bukittinggi, Padang, Padang Panjang, and Pariaman. The research method is a survey and the data collection techniques using a questionnaire. Data analysis technique is simple regression. The result shows that green innovation has a positive and significant effect on the competitive advantage of the West Sumatera-Indonesia creative industries.

**Keywords**—green innovation; competitive advantage; creative industry

## I. INTRODUCTION

The obligation to maintain the balance of the environment is the focus attention in the development of the global economy to minimize environmental damage. Creating technology products and processes that are environmentally sound is one of the efforts to increase environmental awareness [1]. Green innovation is the application of the production of goods, services, production processes, organizational structures or management or business methods that can reduce environmental damage, pollution, and negative impacts of the use of energy resources [2]. Green innovation will be useful in improving the innovation system by taking into account the ecological and economic aspects so that it will create a sustainable economic process [3]. By applying green innovation, the company will obtain cost advantages and get the consumers' attention who are concerned with environmental issues. Green innovation will make the company's strategy different from the others, so that Green innovation will not only improve business performance, but will also gain competitive advantage [4]. The importance of this study was carried out because the green innovation study referred from international journal data bases such as Scielo, Science Direct, Springer, Wiley, Web of Science, Scopus, JSTOR, and Scholar Google from 1995-2015 showed that 62% of the paper was written in 2010 -2015, it means the concept of green innovation even though it was proclaimed from 1972 by the United Nations, but attention to this issue began to be hotly discussed from 2010-2015. The concept of green innovation is

still the initial stage and is a new issue that still must be studied conceptually or empirically. The approach method used is 77.7% in the form of a qualitative approach and only 11.1% in the form of quantitative studies. 48.8% used the case method, and only 27.7% is the survey method [5]. It means that the concept of green innovation in the form of empirical studies with qualitative approaches and international survey methods are still few, so it is necessary to conduct empirical research in the form of quantitative approaches and survey methods.

Small and Medium Enterprises in Indonesia have not made green innovation a matter that needs special attention, this is due to: lack of knowledge about environmental sustainability, weak management, unsupported technical aspect, and the unavailability of environmentally friendly financing sources [6]. The research that examines about green innovation in Indonesia is still few, there are only a few authors who are interested in this study. Not only in Indonesia, research conducted in Mexico also shows the same thing, green innovation for Small and Medium Enterprises (SMEs) is neglected because SMEs focus more on how to create, market the products, and obtain financing sources, so they forget to think about environmental sustainability, as a result, research on environmental issues is more directed to large and medium-sized industries [7]. This research will complement the scarcity of literature on green innovation, especially in the West Sumatra-Indonesia creative industries.

Green innovation is defined as the application of the production of goods, services, production processes, organizational structures or management or business methods that can reduce environmental damage, pollution, and negative impacts of the use of energy resources [8]. Green innovation is part of innovation that aims to improve ecological balance, which is developed through new products and services that contribute positively to the environment such as energy savings, CO<sub>2</sub> reduction, emissions, water savings, increased recycling, increasing biodiversity, and reducing environmental pollution [1]. Green innovation will reduce the environmental burden of at least one area, thus contributing to improve the state of the natural environment. Green innovation is defined as the production, application or exploration of goods, services, production processes, organizations or managerial structures or new business methods for consumers [9]. The results of innovation reduce risks to the environment, reduce pollution,

and have fewer negative impacts on the environment in using resources [10]. The process of green innovation is not only due to regulations but also from market inspiration and health, the environment, and ethical issues [5].

Competitive advantage is the result of strategy implementation that utilizes various resources owned by the company. Unique expertise and assets are seen as a source of competitive advantage [11]. Resource-based view is a method for analyzing and identifying a company's strategic advantages based on a review of a combination of tangible assets, intangible assets and capabilities [12]. Competitive advantage exploits internal forces by responding to opportunities from the environment by neutralizing external threats and preventing internal weaknesses. Most research sources of competitive advantage only focus on one such as opportunities and threats or opportunities, describe strengths and weaknesses or analyze how to choose appropriate strategies. Barney categorizes organizational resources into three parts: physical capital, human capital and organizational capital [13].

The main substance of resource-based view is a resource that is able to produce sustainable competitive advantages, namely resources that are valuable, rare or unique, difficult to replicate, and have no substitution. Company resources are stated to be valuable when these resources are used for strategy implementation to produce effectiveness and efficiency. Resources are said to be scarce if these resources are not owned by other companies, especially competitors. With these resources, the company can implement its strategy, and competitors will not be able to do the same, because they do not have the resources to implement the strategy. This shows that scarce and valuable resources will be a source of sustainable competitive advantage if competing companies that do not have these resources are unable to obtain these resources. There are three main factors that make a company have resources that are difficult to imitate, namely unique historical conditions, causal ambiguities, and complex social systems. Resources that produce sustainable competitive advantage must also have characteristics that have no substitute. That is, competitors do not have equivalent resources as a substitute in implementing their strategy. Although the company has valuable, unique and difficult to imitate resources, but if competitors have equivalent substitutes, then those resources are no longer a source of sustainable competitive advantage [14].

#### *A. The effect of Green Innovation on Competitive Advantage*

The purpose of the company in competitive competition are getting new customers, increasing productivity and profitability, getting new markets and market share, for that innovation is needed [1]. Personal creativity, knowledge, skills and abilities are sources of innovation that will make the company achieve competitive advantage. For example, with the knowledge or skills, new goods and services are produced in new ways and apply new methods, processes and structures [15], so competitors have difficulty imitating what the company does, the impact of products produced is different from competitors, goods / services produced with low cost and good quality [16]. In a dynamic business environment, the organization needs to develop new competitive advantages

through accelerating technological changes, consumer demand and global competition, therefore an innovation strategy is needed so that companies can be optimistic in achieving performance and efficiency [17].

Green product innovation has a positive and significant effect on competitive advantage, this research also claims that the influence of green product innovation is stronger than competitive advantage over performance [1]. Technology and innovation to develop new products and services should make a positive and beneficial contribution to the environment. These benefits include: saving energy, reducing CO2 emissions, saving water, increasing recycling, increasing biodiversity, and reducing environmental pollution, thereby increasing competitiveness, productivity and welfare.

Environmental-oriented innovation is very supportive to obtain competitive advantage with low costs, because companies that adopt environmental-oriented innovations use less raw materials and raw materials used are also environmentally friendly so companies can reduce energy and material consumption [18].

Based on a resource-based view (RBV), competitive advantage is generated from the company's valuable resources and capabilities [14]. The RBV emphasizes that social environmental responsibility can be a key capability that can produce sustainable competitive advantage [19].

From the related literature review can be obtained a hypothesis:

H1: Green Innovation effects toward the competitive advantage in West Sumatera creative industries.

## II. METHOD

The object of this research is green innovation as an independent variable while the dependent variable is competitive advantage. The unit of observation is the head of the creative industry in the handicraft sector, among others: leather, wood, metal, earthenware and plaiting in West Sumatera-Province. This type of verification research is used to determine the magnitude of the influence of green innovation on the competitive advantage of West Sumatra craft business. The data collection used a questionnaire with a Likert Scale, with Gradations 1 to 5. (Strongly Agree, Agree, Hesitate, Disagree, and Strongly Disagree).

The sampling technique used is the sampling area. The area sampled in this study was the province of West Sumatra-Indonesia including Agam district, 50 Kota district, Padang Pariaman district, Tanah Datar district, Sijunjung district, Bukittinggi, Padang and Padang Panjang. The samples are 200 people, the samples are allocated proportionally in each research area.

Green innovation consists of green product innovation and green process innovation. Green innovation indicators include: Using non-polluting / environmentally friendly materials / raw materials, designing environmentally friendly packaging, reducing plastic and paper usage in packaging, using / recycling raw materials, waste and water to reduce soil pollution, water and air [1]. Green Process Innovation

indicators include: Using eco-labeling certificates, not wasteful in using raw materials, reducing fuel consumption in the production process, reducing water consumption in the production process, reducing electricity consumption in the production process, using technology that reduces pollution, using raw materials that produce less pollution [1].

Indicators of competitive advantage include: Costs that are lower than competitors, better product quality than competitors, better innovation than competitors, better managerial capabilities than competitors, better profitability than competitors, company growth that exceeds competitors, the company is first mover, better company image [20].

The data analysis method used is Simple Regression, using the SPSS program. Before the data is processed, first the validity and reliability tests are performed, the result of the validity test shows that for the green innovation variable and competitive advantage for all items are valid. The reliability value of 0.760 is in the medium category.

### III. RESULTS

To see the correlation between green innovation and competitive advantage, Pearson (Product Moment) correlation is used by calculating the correlation between variables from the total score for each variable X and Y. The value of the correlation coefficient shows the closeness of the relationship between the variables studied and arranged in table 1 correlation of X1 and Y1.

TABLE I. CORRELATION OF X1 AND Y

	Y	X <sub>1</sub>
Y	1.000	0.585
X <sub>1</sub>	0.585	1.000

The correlation coefficient in the table 1 correlation of X1 and Y1 can be interpreted the closeness of the relationship between green innovation with a competitive advantage of 0.585 with the direction of a positive relationship. It means that the better the Green Innovation, the better the Competitive Advantage will be.

#### A. Hypothesis Test

After the correlation coefficient is known, the next step is to test the hypothesis. The hypothesis is:

$$H_0: \rho_{YX_i} = 0, i = 1$$

There is no Green innovation effect toward competitive advantage in the West Sumatera-Indonesia creative industries.

$$H_1: \rho_{YX_i} \neq 0, i = 1$$

There is Green innovation effect toward Competitive advantage in the West Sumatera-Indonesia creative industries.

Testing the hypothesis is shown by the table of Coefficients. The test results with SPSS 12 can be seen in table 2 coefficient.

TABLE II. COEFFICIENT

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	26.262	2.222		11.821	.000
VAR0002	.117	.056	.143	2.106	.036

a. Dependent Variable: VAR00003

The amount of green innovation's influence on competitive advantage can be seen from table 3 summary model.

TABLE III. SUMMARY MODEL

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.143 <sup>a</sup>	.021	.016	5.40327

a. Predictors: (Constant), VAR00002

### IV. DISCUSSION

From table 2 coefficient can be concluded that the coefficient of creation from X1 to Y is significant. Determination is significant or cannot be seen by looking at the sign value. If the sign value  $\leq \alpha$ , it means Ho is rejected. From the table 2 coefficient can be seen that  $t = 2,106$  sign value = 0,036 (sign < 0,05). It means Ho is rejected. In conclusion, Green innovation has an effect toward competitive advantage of West Sumatera creative industries. Table 2 coefficient also informs the size of the regression coefficient that can be seen from the Standardized Coefficients (Beta). The magnitude of the regression coefficient is 0.117.

From the table 3 summary model can be seen that green innovation affects competitive advantage by 2,1%.

The regression equation is:

$$Y = 0.143X + \epsilon \tag{1}$$

Green innovation (X) has a positive effect on high and low of Competitive Advantage in the West Sumatera-Indonesia creative industries. The higher Green innovation is, the better the Competitive Excellence level. The result of this research support the research [1]. Green innovation deals with green products and processes innovation, including innovations in the field of technology that involves energy-saving, pollution prevention, waste recycling, green product design or corporate environmental management / corporate environmental management [21]. If the company implements green innovation seriously, then companies can implement different strategies that will achieve competitive advantages [22]. Environmental-oriented innovation is very supportive to obtain competitive advantage at low costs. The reasons are: first companies that adopt environmental-oriented innovations use less raw materials and raw materials used are also environmentally friendly so that companies can reduce energy and material consumption. Second, in the context of the current tight policy environment, companies face the costs of disposal of pollutants, sanctions, and other problems. One of the main characteristics of environmental innovation is the reduction in wastage of wastewater, discarded waste and waste materials,

which gives companies the possibility of reducing pollutants to levels below requirements, in turn reducing the company's costs associated with compliance and environmental responsibility [23,24]. Green innovation can increase the value of products, and thus offset the costs of environmental investment. Finally, environmental-oriented innovation can improve company image and make companies more successful. Therefore, developing green innovation is a win-win solution for companies facing conflicts between economic development and environmental protection.

So green innovation is an important element of company strategy, and is considered a unique ability in the RBV perspective [21]. Green innovation involves improving a product or energy saving process, pollution prevention, waste recycling, green product design and corporate environmental management in the field of environmental management [21]. In addition, green innovation can realize the concept of environmental protection into design and product packages to increase differentiation advantage [18,21,24]. Green innovation is the best way to improve the performance of environmental management to meet environmental protection regulations [21]. Companies that adopt green innovation will lead new business models and change competition to generate business opportunities [25].

This research was carried out in the craft sector of the creative industry in West Sumatra. The craft sector includes: pottery crafts, wood carvings, plaits, precious metals, leather and rattan. Actors in this sector act as producers and sellers of products. This sector will have a serious impact on environmental damage if it is not managed well throughout the production process. Because some of the processing process uses material that is not friendly and causes problems for the environment. For example, the precious metal smelting process uses chemicals, such as mercury, chloride acid, nitric acid and others. Likewise, leather craft which in the production process also uses chemicals that damage the environment

From the results of the study it was proven that with green innovation the company had an impact on competitive advantage. With the attention to the environment in process innovation or product innovation in the West Sumatra creative industry, the company gets a competitive advantage, because the company is able to minimize costs and do something different from other companies.

The emergence of awareness of the responsibility of protecting the environment is a positive behavior, where companies do not only pursue profits but also strive to preserve the environment. The act of saving energy, saving raw materials, attention to waste has been carried out by West Sumatra creative industry players, thus damage to the environment, the consequences of the production process can be minimized.

We Hope, that there will be attention from the local government to support the environmental awareness movement, for example in the form of regulations on the responsibility of protecting the environment, then the regulation is well and properly socialized. There is also a need for rewards given to creative industry players who have paid attention to environmental sustainability in their production

processes, so that there is motivation to maintain environmental sustainability.

Besides that, attention from the local government is needed to support the environmental awareness movement. Such support can be in the form of regulations regarding the responsibility of protecting the environment. The regulation was socialized so that it was applied properly. There is also a need for rewards given to creative industry players who have paid attention to environmental sustainability in the production process, so that there is motivation to maintain environmental sustainability. Inviting advertisements are also designed to introduce a culture of innovation to the community.

## V. CONCLUSION AND SUGGESTION

Maintaining environmental sustainability is not only the responsibility of large companies, but also the responsibility of SMEs in minimizing the effects of environmental damage. The large number of SMEs will produce large amounts of waste, so that if it does not implement the concept of environmental insight, it will contribute greatly to environmental pollution. The actions that can be done include: using materials / raw materials that do not cause pollution / environmentally friendly, design packaging environmentally friendly, reducing plastic and paper usage in packaging, using / recycling raw materials, waste and water to reduce soil, water and air pollution, using eco-labeling certificates, not wasteful in using raw materials, reducing fuel consumption in the production process, reducing water consumption in the production process, reducing electricity consumption in the production process, using technology that reduces pollution, using raw materials that produce less pollution. The results of research on the West Sumatera-Indonesia Creative Industry handicraft sector show that green innovation has an effect on competitive advantage. By applying the concept of green innovation will make the company different from the others, because not all companies apply this concept. Starting from the emergence of consumer awareness to consume environmentally friendly products, will increase the value and image of products in the eyes of consumers, this is the source of the company's competitive advantage. This research fills the gap of empirical research in Small Businesses, especially the creative industries. Further study is needed on green innovation antecedents such as knowledge and government support.

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