

Factors Affecting The Implementation of Green Procurement: Empirical Evidence from Indonesian Educational Institution

Ilyas Masudin^{1a}♦, Bangalie Summah^{1b}, Fien Zulfikarijah^{1c}, Dian Palupi Restuputri^{1d}

Abstract. *This paper reported the factors affecting the adoption of green procurement in Indonesian educational institutions. A quantitative method is used to understand the effects between variables on green procurement implementation. Data from respondents working on the procurement divisions from higher degree institutions in the province of East Java, Indonesia, are collected in this study. The results indicated no significant effects on middle management staff, awareness, and corporate responsibility on the implementation of green procurement in educational institutions. At the same time, there is a significant impact of green supply approaches such as ISO certification and eco-design product strategy on adopting green procurement.*

Keywords: *Green procurement, awareness, educational institutions, purchasing*

I. INTRODUCTION

Over the past period, procurement activities' role has developed towards a more strategic approach because of increasing demand to concentrate on main processes while subcontracting most non-key ones (Giunipero and Percy, 2000, Lawson et al., 2009). This approach has caused a paradigm shift of a significant part of the production activities beyond firms' borders. That procurement function contributes to a growing effect on the natural environment (Zsidisin and Siferd, 2001). Green procurement originates from the notion of preventing pollution-related principles and activities. Green products or services use fewer resources, and that they are developed to serve a lengthy duration to lessen their effect on the environment from life a cycle to disposal (Min and Galle, 1997).

According to Min & Galle (1997), green procurement is defined as the buying of eco-friendly goods and services as well as selecting contractors and establishing environmental prerequisites in a contract. Zsidisin & Siferd (2001) provided a comprehensive definition of green procurement as "Environmental purchasing for an individual firm is the set of purchasing policies held, actions taken, and relationships formed in response to concerns associated with the natural environment. These concerns are related to the acquisition of raw materials, including supplier selection, evaluation, and development; suppliers' operations; inbound distribution; packaging; recycling; reuse; resource reduction; and final disposal of the firm's products. Green purchase compares price, technology, quality, and the environmental effect of the goods, services, or contract. Green procurement rules can be applied to every company regardless of sizes, such as small, medium, and large companies. Its activities can be as easy as purchasing renewable energy or recycled office papers or exclusively concerned with establishing environmental regulations for suppliers and contractors. Therefore, green goods and services contain common effects on people's health and might have increased safety standards. Whereas some "green" products or services may have a massive upfront cost, yet they save revenue over the life of the goods or services (Min and Galle, 1997).

¹ Industrial Engineering Department, Faculty of Engineering, Universitas Muhammadiyah Malang, Jalan Raya Tlogomas 246, Malang 65145, Indonesia

^a email: masudin@umm.ac.id

^b email: bangaliesumah@gmail.com

^c email: fzulfikarijah@yahoo.com

^d email: restuputri@umm.ac.id

♦ corresponding author

Submitted: 18-04-2020 Revised: 24-09-2020

Accepted: 13-12-2020

Meanwhile, green procurement is significant because top international organizations such as the United Nations (UN), African Development Bank (AfDB), and International Bank for Reconstruction and Development (IBRD) have incorporated issues of the environment into their procurement guidelines. Green procurement programs can minimize costs, waste, increase resource efficiency, impact manufacturing business, prices, available services, and company's attitude. It also enables countries to meet multi-lateral agreements like the Kyoto Protocol and Rotterdam Convention (NyachombaMachira and Juma, 2016). Stock (1992) confirmed that green procurement could improve an organization's financial position through waste reduction and liability expenses, preserving resources, and improving the overall public image of a company. Zhu and Sarkis (2004) posited that suppliers' pressure significantly influences implementing the green supply chain through research. In effect, close collaboration between suppliers and buyers can promote the effective implementation of green procurement activities. In procurement activities, suppliers must consider the critical disposition of materials and components brought into the company. That heads of procurement should search for upstream partners of the supply network to minimize waste and offer environmentally friendly goods. For instance, suppliers such as transport services and goods suppliers can positively impact the company's green procurement activities and drive green supply network management (Walker and Devine-Wright, 2008).

Thus, organizations are gradually managing their suppliers' eco-friendly performance to ensure that they supply goods and equipment that are eco-friendly and are manufactured using green activities (Dubey et al., 2013). Min & Galle (1997) investigated a study on "green purchasing" to determine significant factors affecting suppliers' business selection and the main obstacles to green procurement ideas. They discovered that the extremely rated barriers to effective green procurement implementation were cost and revenue. In another study, Hsu and Hu (2008) used the fuzzy analytic hierarchy

process method to prioritize the relative importance of dimensions. Their result discovered that supplier management performance is vital in implementing green procurement management. This implies that calling for suppliers to abide by specific environmental standards may encourage them to innovate and, within that process, also improve their products' quality, features and reduce costs (Chiou et al., 2011).

However, several studies on green procurement, such as Yen & Yen (2012); Min & Galle (1997); Bjorklund (2011), focused their researches on manufacturing and found different results. But there is no study on the analysis of factors of green procurement implementation in an educational institution. Therefore, this paper seeks to contribute to the existing literature and fill the knowledge gap on green procurement implementation elements in educational institutions. This study will consider four key factors: top management support, awareness, corporate social responsibility (CSR), and approach to green suppliers in implementing green procurement in educational institutions. The rationale is to examine how these factors can lead to a successful implementation of green procurement in Indonesian educational institutions. Following this introduction, section two of this paper will review significant literatures on green procurement. This literature review helps to develop one hypothesis and a theoretical framework. Section three describes the research method, and section four describes data analysis and the results from testing the hypotheses. Finally, section five concludes the paper and makes a recommendation for future research.

II. LITERATURE REVIEW ON GREEN PROCUREMENT

Wallace & Omachar (2016) conducted a study on the effects of green procurement practices on operational efficiency at an airways organization. Using descriptive research, the results of their findings indicated that an organization procures environmentally compatible products that are sourced from credible suppliers that provide quality goods of green manufacturing enhanced

environmental consciousness through reuse, recycle and refurbish. The result also established a strong relationship between suppliers and the company. This is because both parties' production efficiency engages the green procurement practices to offer their customer's environmentally friendly goods by green packaging practices, waste prevention, and energy savings on low energy-consuming goods. In another study, Nadeem et al. (2017) examined driving indicators for implementing sustainable procurement behavior and practices in the Pakistan public procurement department. Employing a descriptive research design revealed that awareness and organizational commitment to change and approach to green supplier and products were positively related to sustainable public procurement implementation.

Moreover, Khidir et al. (2010) investigated a study on the examination of four drivers, such as regulation, customer pressures, social responsibility, and expected business benefits for green purchasing adoption among environmental management system (EMS) 14001 certified companies in the Malaysian manufacturing sector. Using a mail survey technique, the result of their findings asserted that green procurement is explicitly affected by drivers such as regulation, customer pressures, expected business benefits, and firm ownership. The result further states that, though the Malaysian firms show a high social responsibility level, it does not constitute a genuine driver for these firms to adopt green procurement. In a similar study, Nderitu & Ngugi (2014) researched the effect of green procurement practices on organization performance in the manufacturing industry, citing the case of East African Breweries Limited. Adopting descriptive, inferential statistics, the results discovered that the manufacturing industry's performance contributes to more than one factor and that green procurement attributes contribute to performance. Also, the staff members' competence in green procurement concepts was an essential contributor to the effects of green procurement attributes to organization performance. Furthermore, East African Breweries Limited had already established

an information communication infrastructure system that allows suppliers to participate, which increased their contribution to 29% of organizational performance.

Yang & Zhang (2012), in a survey of 144 Chinese companies, researched factors of green purchasing practices of Chinese using factor analysis, SPSS software, and regression analysis. The results revealed that leaders' support would boost green purchasing practices, and environmental management costs will hinder Chinese enterprises' green purchasing practices.

Top Management Support

Top management participation in green procurement means an increased motivation on collaboration as an essential requirement for supply network coordination. They must recognize the essence of collaboration (Ireland & Bruce, 2000) and approve supply chain management principles by providing the needed resources (Marien, 2000); and be actively involved in the collaboration. Stuart (1993) states that supplier partnership development relies on top management support. Increase the level of support in knowing key supplier activities and materials can be useful in influencing suppliers' activities (Walton et al., 1998). External collaboration can be achievable through competent leadership (Andraski, 1998). Thus, top management support is a significant driver that is very powerful and very positive for the implementation of green procurement practices (Sandberg, 2007).

Awareness

A critical factor that can drive efficient implementation of green procurement practices is awareness and acquaintance with guidelines, policies, and laws linked to green purchasing sustainability (Nadeem et al., 2017). According to Sun et al. (2012), green procurement awareness may influence its implementation in a sustainable way for both companies and states. Environmental awareness has often been a key factor of green sustainable performance, which has the potency to better implement green procurement (Zuo & Zhao, 2014). Accordingly, availability and awareness of green procurement

guidelines and documents are a pathway towards improving and applying sustainable measures (Testa et al., 2016).

Procurement officers of companies are expected to abreast themselves with the laws, guidelines, and policies connected to contracting and tendering for sustainable procurement (Lin et al., 2015). They must also follow governmental regulations to enhance sustainability needed by governance authorities (Amann et al., 2014). However, the violation of procurement laws can lead to heavy fines imposed by government stakeholders. In effect, to increase compliance with sustainability, procurement officers' awareness training may serve as a vital influence on sustainable green procurement implementation (Geldermann et al., 2007). Thus, awareness of green procurement practices can transform procurement officers' mindset, which can impact the speed of sustainable implementation behavior (Tsipouri, 2015), specifically in educational institutions.

Corporate Social Responsibility (CSR)

Today, corporate social responsibility (CSR) has not only become a popular research discipline, but it is now evident in many companies' corporate mission and value statements (Cruz, 2013). Regardless of its long-time presence, CSR application as a sustainability approach in supply chain management has only been visible in the last five years. In effect, there has been persistent pressure on companies from stakeholders, consumers government, non-governmental organizations (NGOs), and local communities to implement CSR across their supply chain (Ciliberti et al., 2008).

CSR involves a variety of things such as ethics, environment, sustainability, equality, and fairness. It is something that, in recent years, has come to

the forefront of public awareness and has become a must-have or hygiene factor for most, if not all, organizations. In another context, the Commission of the European Communities (2001) states that CSR is "the voluntary integration, by organizations, of social and environmental concerns in their commercial operations and their relationships with interested parties." Companies very well understand that their procurement and supply chain activities profoundly affect their reputation and long-time success. Conversely, they are often held responsible for promoting and protecting the environment, health, and safety rules of employees who manufacture their goods despite whether they are direct workers or work for their suppliers (Cruz & Wakolbinger, 2008). CSR has received more comprehensive research coverage in the recent past; for instance, Carroll (1991) stated that CSR includes economic, legal, ethical, and humanitarian expectation tied to companies by the society at a certain point in time. Therefore, organizations are obliged to improve their environmental performance to respond to the community's requirements.

Approach to Green Suppliers

To effectively adopt green procurement, access to green goods and services is a significant component in the implementation process (Nadeem et al., 2017). Certification obligations like ISO 9000 and ISO 14001 drive businesses to adopt sustainability measures to manufacture sustainable goods and services (Zhu et al., 2012, Zhu et al., 2013). This standardized environmental management systems (ISO 14001) certification contains regulations on product life cycle assessments, environmental labeling of products, carbon disclosure projects, and sustainability reporting schemes (Srivastava, 2007, Büyüközkan and Çifçi, 2011).

In a survey study conducted by Zhu, Geng & Sarkis (2013) on 193 Chinese government officials, their result findings revealed that regulations and incentives motivate the implementation of sustainable green procurement practices. Manufacturing firms are required to implement sustainable environmental practices in response to environmental policies set by regulatory organizations such as states or international institutions (Scott, 2008). Such rules and regulations about environmental sustainability can force companies to ensure required transformations into their production structure and activities by offering green products and services (Powell and DiMaggio, 2012). Besides, suppliers' awareness about the laws and guidelines of contracting and tendering of sustainable products also plays an essential part in implementing sustainable procurement because eco-friendly companies will encourage their suppliers to have environmental certifications (Nadeem et al., 2017). According to Vermeir & Verbeke (2004), purchasers may sometimes be willing to procure sustainable products, but due to the inadequate accessibility of green products, they cannot translate into buying behavior. Nadeem et al. (2017) argued that to inspire suppliers for green products, and regulatory organizations can offer an inducement to suppliers and producers who follow standard guidelines like tax exemptions, follow standard guidelines like tax exemptions, import duties exemptions, discount in sales tax, and investment tax allowances to boost sustainability.

Based on the above discussions on top management support, awareness, CSR, and approach to green suppliers, the researchers hypothesized that:

- H1:** top management support affects significantly green procurement implementation on the educational institution
- H2:** awareness affects significantly green procurement implementation on the educational institution
- H3:** CSR affects significantly green procurement implementation on the educational institution

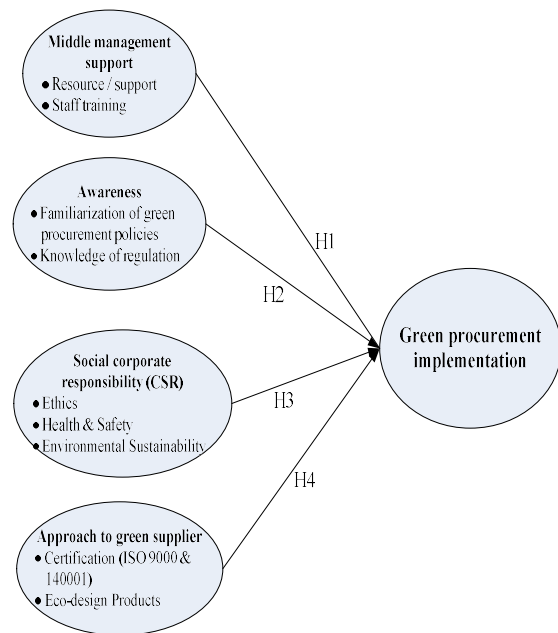


Figure 1. Research Framework

H4: Green suppliers significantly affect green procurement implementation in the educational institution.

III. RESEARCH METHOD

This green procurement implementation study's research objects are the universities located in Malang, East Java Province, Indonesia, with more than 100 employees. The top and middle management in the University are selected for this study. This study's population is 108 staff comprised of top and middle management employees working in the higher degree educational institutions. A sample of 60 respondents was targeted for this study from both staff and middle management levels.

A quantitative approach is used in this study with instruments of statistics package for social sciences (SPSS 20) and using Exploratory Factor Analysis (EFA) to examine whether the factors derived from the EFA fitted the drivers as analyzing theoretically in the literature on the analysis of factors that influence green procurement implementation in educational institutions. The quantitative approach involves generating numerical form data, which can be

Table 1. Variable operating definitions

Variables	Indicators
<p>Top management support: These denote the degree to which senior management understands green procurement's critical role and is personally involved in its activities.</p>	<ul style="list-style-type: none"> • Resource/support: tools that aid green procurement implementation • Staff training: given skills on green procurement implementation and sustainability
<p>Awareness: the knowledge that something exists or understanding a situation or subject is now based on information or experience. In brief, it is the state of being conscious of something.</p>	<ul style="list-style-type: none"> • Familiarization of green procurement policies: an acquaintance of green procurement processes • Knowledge of regulation: understanding the laws governing procurement activities either from government stakeholders or purchasing organization
<p>CSR: involves a variety of things such as ethics, environment, sustainability, equality, and fairness (Fairtrade, 2009).</p>	<ul style="list-style-type: none"> • Ethics: moral conduct or behavior acceptable to society • Health and safety: denote the wellbeing of either an organization's employees or the people of a community in which an organization operates. • Environmental sustainability:
<p>Approach to green suppliers: this involves suppliers' integration of green strategy in their supply chain activities.</p>	<ul style="list-style-type: none"> • Certification (ISO 9000 & ISO 14000, EMS): accreditation of companies with environmental management systems (EMS) certificate • Eco-design: Design of products for reduced consumption of material/energy, design of products for reuse, recycle, recovery of material, design of products to avoid or minimize the use of hazardous materials

subjected to rigorous quantitative analysis accurately and rigidly (Kothari, 2004). There are four green procurement implementation factors, such as top management support, awareness, corporate social responsibility, and approach to green suppliers. The use of self-administered questionnaires collects data from the target respondents. In this study, ten questions about green procurement implementation questioned to the respondents, and scale items will be measured on a 5-point Likert scale, where one denotes Strongly Disagree, 2 Disagree, 3 Less Agree, 4 Agree, and 5 Strongly Agree. Questions in this term are focused on the factors of green procurement implementation. These questions involve top management, awareness, corporate social responsibility, and approach to green suppliers in implementing green procurement. One hypothesis was developed based on the research model plan framework.

Theoretical framework

The research investigates the analysis of four identified factors of green procurement (Top management support, Awareness, CSR, and

Approach to green suppliers'). The definitions of variables and framework of the study are shown in Table 1 and Figure 1.

IV. RESULT AND DISCUSSION

Quantitative Data Analysis: Descriptive Statistics

The 60 respondents who were selected in this study are working in the educational institutions in Indonesia. Most respondents are working at higher degree university with the middle management of positions such as the head of school, head of a department, superintendent, and staff supervisor. The mean values for each dimension of the variables ranged from 3.50 to 4.06 on the Likert scale of 1 to 5. In general, these results indicate that the questions in the questionnaires related to the factors of the adoption of green procurement in their institution have been responded to positively. The first dimension of middle management support gets an average score of 3.63, which proves that most staff working in the educational institution agree that middle management's support is critical for

green procurement adoption in their workplace. The support should be regular staff training and facility (resources) related to green procurement activities. Furthermore, the dimension of awareness in implementing green procurement, the average value obtained by this dimension of 3.84 indicates that the staff believes that they should be familiar with the knowledge and current green procurement regulation.

The dimension of corporate social responsibility (CSR), which has an average value of 3.97, shows that the CSR dimensions are perceived in a positive mind by respondents that impact the implementation of green procurement.

Moreover, the variable of the approach used as a standard when applying green procurement such as ISO certification and eco-design has the highest mean value than the other variables (4.03), which justifies that most staff understand that those dimensions would impact significantly on the application.

Evaluation of Measurement Model

This research model consists of four latent variables, namely green procurement implementation, middle management support, awareness corporate, social responsibility, and approach to green suppliers'. Evaluation of the measurement model is a step to test the validity

Table 2. Statistics descriptive

Variable	Dimension	N	Mean value	Mean	St. Dev	Min	Max
Green procurement implementation	Green procurement implementation	60	3.91		0.94	2	5
Middle management support	Resources/support	60	3.76	3.63	0.99	1	5
	Staff training	60	3.50		0.87	1	5
Awareness	Familiarization with green procurement policies	60	3.70	3.84	0.88	1	5
	Knowledge of regulation	60	3.98		1.03	1	5
Corporate social responsibility (CSR)	Ethics	60	3.90	3.97	1.00	1	5
	Health & safety	60	4.06		0.93	2	5
	Environmental sustainability	60	3.96		1.01	2	5
Approach to green suppliers	Certification (ISO 9000 & ISO 140001 EMS)	60	4.00	4.03	1.28	1	5
	Eco-design product	60	4.06		0.95	2	5

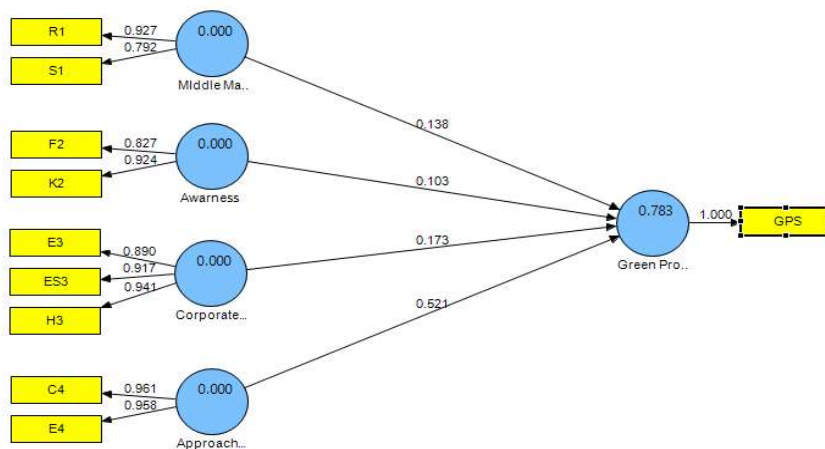


Figure 2. Path Diagram

and reliability of a latent variable.

Validity Testing

Validity testing, or better known as convergent validity, is used to determine whether an indicator is valid in measuring variables. The loading factor

Table 3. Convergent validity: Loading factor

Variable	Dimension	Loading factor
Green procurement implementation	GPS	1.000
Middle managements Support	R1 S1	0.927 0.792
Awareness	F2 K2	0.827 0.924
Corporate social responsibility	E3 H3 ES3	0.890 0.941 0.917
Approach to green suppliers	C4 E4	0.961 0.958

shows convergent testing validity. The indicator is said to be valid if the loading factor is more significant than 0.6. The concurrent validity test results are presented in Table 3.

Based on the table above, it can be seen that the green procurement implementation, middle management support, awareness, corporate social responsibility, and approach to green suppliers variables have a loading factor value greater than 0.6. It means that the indicator is declared valid in measuring variables. Next, convergent validity is performed using the Average Variance Extracted (AVE) value. For convergent validity, to be seen through loading factors, Average Variance Extracted (AVE) can also be known. An instrument is said to meet the convergent validity test if it has an Average Variance Extracted (AVE) above 0.5. The results of convergent validity testing are shown in Table 4.

Based on the table above, it can be seen that the green procurement implementation, middle management support, awareness, corporate social responsibility, and approach to green suppliers' variables produce an Average Variance Extracted (AVE) value greater than 0.5. Thus, the indicators measuring green procurement implementation, middle management support,

awareness, corporate social responsibility, and approach to green suppliers' variables are declared valid.

Table 4. Convergent validity: AVE

Variable	AVE
Green procurement implementation	1.000
Middle management support	0.743
Awareness	0.768
Corporate social responsibility	0.839
Approach to green suppliers	0.920

Table 5. Composite reliability and Cronbach Alpha

Variable latent	Composite reliability	Cronbach's alpha
Green Procurement Implementation	1.000	1.000
Middle Management Support	0.852	0.671
Awareness	0.868	0.708
Corporate Social Responsibility	0.940	0.904
Approach to Green Suppliers	0.958	0.913

Reliability Testing

Parameters that can be used to test the reliability of indicators in measuring latent variables are composite reliability and Cronbach's alpha. The test criteria state that if composite reliability is greater than 0.7, and if Cronbach's alpha is greater than 0.6, the variable is declared reliable. The calculation results of composite reliability and Cronbach's alpha can be seen through the summary presented in Table 5.

Based on the table above, it can be seen that the composite reliability and Cronbach's alpha values on the green procurement implementation, middle management support, awareness, corporate social responsibility, and approach to green suppliers' variables are greater than 0.7 and 0.6. Thus, based on the calculation of composite reliability and Cronbach's alpha, all indicators that measure green procurement implementation such as middle management support, awareness, corporate social responsibility, and approach to green suppliers' variables are declared reliable.

The goodness of Fit Model

The goodness of fit model is used to determine the magnitude of the ability of exogenous variables to explain the diversity of endogenous variables, or in other words, to determine the extent of the contribution of exogenous variables to endogenous variables. The goodness of fit

Table 6. The goodness of fit Model

Variable	R-square
Green procurement implementation	0.783
$Q^2 = 1 - (1 - (R \text{ square})^2)$	
$Q^2 = 1 - (1 - (0.783)^2) = 0.613$	

model in PLS analysis is performed using the coefficient of determination (R-Square) and Q-Square. predictive relevance (Q^2).

R-square value from the analysis using SmartPLS software obtained a value of 0.782. This can show that the formation of a model from green procurement implementation research can be explained well by the middle management support, awareness, corporate social responsibility, and approach to green suppliers' variables with a value of 78.3%. In comparison, 21.7% is contributed by other factors that are not discussed in this study.

Q-Square predictive relevance (Q^2) is 0.613 or 61.3%. This can indicate that the middle management support, awareness, corporate social responsibility, and approach to green suppliers' variables have an overall contribution to green procurement implementation of 61.3%. In contrast, the remaining 38.7% is contributed by other variables not discussed in the study.

Hypothesis Testing Direct Effects

Testing the direct influence hypothesis is used to test whether there is a direct influence of exogenous variables on endogenous variables. The test criteria state that if T statistics > T table (1.96), then the significant impact of exogenous variables on endogenous variables is stated. The results of hypothesis testing can be known in Table 7.

The influence of middle management support on green procurement implementation produces T statistics of 1.533. The test results show that T-statistics < T-table (1.533 < 1.96). This means that there is no significant influence of middle management support on green procurement implementation. This result is relevant to the findings of the study by Carter and Jennings (2004) and Blome et al. (2014). They found that top management is more significantly and directly related to the green procurement application instead of middle management. This is because the procurement activity is a logistics activity that must be decided by top management. After all, it involves a large investment for a long time horizon. In addition, procurement will also include a strategic decision to award the type of contract to the supplier, whether long, medium, or short term, which can only be decided by top management (Reck and Long, 1988, Walker and Brammer, 2016).

The effect of awareness on green procurement implementation yields T-statistics of 0.808. The test results show that T statistics < T table (0.808 < 1.96). This means that there is no significant effect of awareness on green procurement implementation. Moreover, the influence of

Table 7. Hypotheses testing

Variable exogen	Variable endogen	Path Coefficient	T statistic
Middle management support	Green procurement implementation	0.138	1.533
Awareness	Green procurement implementation	0.103	0.808
Corporate social responsibility	Green procurement implementation	0.173	1.542
Approach to green suppliers	Green procurement implementation	0.520	4.960

corporate social responsibility on green procurement implementation produces T statistics of 1.542. The test results show that T statistics < T table (1.542 < 1.96). This means that there is no significant effect of corporate social responsibility on green procurement implementation. The findings of this study are in line with the results of Carter and Jennings (2004). They found that there is no significant relationship between individual values of purchasing staff on purchasing social responsibility. It is likely due to the capability of the organization in implementing green procurement. Large institutions tend to have the capability and ability to implement green procurement policies to their procurement staff divisions (Michelsen and de Boer, 2009).

The effect of approach to green suppliers' on green procurement implementation resulted in T statistics of 4.960. The test results show that T statistics > T table (1.96). This means that there is a significant influence of approach to green suppliers' on green procurement implementation. The result of this study is supported by Blome et al. (2014), which indicated that there is a supportive relationship between green procurement and the development of green suppliers. The adoption of green procurement would ensure other environmental practices such as eco-production, eco-design, and green supply. The green procurement adoption policy also builds trust between buyers and suppliers to consider environmental issues in their activities (Bag, 2016). Other investigations on an organization with ISO certification by de Sousa Jabbour et al. (2014) found that green procurement and green supply from a supplier would together directly affect the organization's green performance adoption.

V. CONCLUSION

This study investigates the factors that affected the adoption of green procurement in the Indonesian educational institution. The variables such as middle management support, awareness, corporate social responsibility, and approach to green suppliers are tested to find their effects on

the adoption of green procurement. The results show that top management should take more responsibility for the adoption of green procurement rather than imposing it on middle management. The involvement of top management in strategic decisions such as green procurement would affect the staff initiative (awareness) on their consciousness of green procurement implementation. The relationship between the variable of corporate social responsibility on green procurement has indicated no significant correlation. This finding is affected by the size of the institution. The large size of the institutions would have more capabilities to develop procurement staff's consciousness on the adoption of green procurement. Finally, the adoption of green procurement in educational institutions would affect other processes and stakeholders ethically to consider environmental issues in their activities. For further study, firm size as a separate variable that affects green procurement would help academics and practitioners understand the problems in more detail and complex.

REFERENCES

- Amann, M., K. Roehrich, J., Eßig, M., Harland, C. (2014). "Driving Sustainable Supply Chain Management In The Public Sector: The Importance Of Public Procurement In The European Union." *Supply Chain Management: An International Journal*, 19, 351-366.
- Andraski, J. C. (1998). "Leadership And The Realization Of Supply Chain Collaboration." *Journal of Business Logistics*, 19, 9.
- Bag, S. (2016). "Green Strategy, Supplier Relationship Building And Supply Chain Performance: Total Interpretive Structural Modelling Approach." *International Journal Of Procurement Management*, 9, 398-426.
- Björklund, M. (2011). "Influence From The Business Environment on Environmental Purchasing—Drivers And Hinders of Purchasing Green Transportation Services." *Journal of Purchasing and Supply Management*, 17, 11-22.
- Blome, C., Hollos, D., Paulraj, A. (2014). "Green Procurement and Green Supplier Development: Antecedents and Effects on Supplier Performance." *International Journal of Production Research*, 52, 32-49.

- Büyüközkan, G., Çifçi, G. (2011). "A Novel Fuzzy Multi-Criteria Decision Framework for Sustainable Supplier Selection with Incomplete Information." *Computers in Industry*, 62, 164-174.
- Carroll, A. B. (1991). "The Pyramid of Corporate Social Responsibility: Toward The Moral Management of Organizational Stakeholders." *Business Horizons*, 34, 39-48.
- Carter, C.R., Jennings, M.M. (2004). "The Role of Purchasing in Corporate Social Responsibility: A Structural Equation Analysis." *Journal of Business Logistics*, 25, 145-186.
- Chiou, T.-Y., Chan, H. K., Lettice, F., Chung, S.H. (2011). "The Influence of Greening The Suppliers and Green Innovation on Environmental Performance and Competitive Advantage in Taiwan." *Transportation Research Part E: Logistics and Transportation Review*, 47, 822-836.
- Ciliberti, F., Pontrandolfo, P., Scozzi, B. (2008). "Investigating Corporate Social Responsibility in Supply Chains: A SME Perspective." *Journal of Cleaner Production*, 16, 1579-1588.
- Cruz, J.M. (2013). "Modeling The Relationship of Globalized Supply Chains and Corporate Social Responsibility." *Journal of Cleaner Production*, 56, 73-85.
- Cruz, J.M., Wakolbinger, T. (2008). "Multiperiod Effects of Corporate Social Responsibility on Supply Chain Networks, Transaction Costs, Emissions, and Risk." *International Journal of Production Economics*, 116, 61-74.
- De Sousa Jabbour, A.B.L., Jabbour, C.J.C., Latan, H., Teixeira, A.A., De Oliveira, J.H.C. (2014). "Quality Management, Environmental Management Maturity, Green Supply Chain Practices and Green Performance of Brazilian Companies with ISO 14001 Certification: Direct and Indirect Effects". *Transportation Research Part E: Logistics And Transportation Review*, 67, 39-51.
- Dubey, R., Bag, S., Ali, S. S., Venkatesh, V. (2013). "Green Purchasing is Key to Superior Performance: An Empirical Study." *International Journal of Procurement Management*, 6, 187-210.
- Geldermann, J., Treitz, M., Rentz, O. (2007). "Towards Sustainable Production Networks." *International Journal of Production Research*, 45, 4207-4224.
- Giunipero, L.C., Pearcy, D.H. (2000). "World-Class Purchasing Skills: An Empirical Investigation." *Journal of Supply Chain Management*, 36, 4-13.
- Hsu, C.-W., Hu, A.H. (2008). "Green Supply Chain Management in The Electronic Industry." *International Journal of Environmental Science & Technology*, 5, 205-216.
- Ireland, R., Bruce, R. (2000). Cpfr. *Supply Chain Management Review*, 1, 80-88.
- Khidir Eltayeb, T., Zailani, S., Jayaraman, K. (2010). "The Examination on The Drivers for Green Purchasing Adoption Among EMS 14001 Certified Companies in Malaysia". *Journal of Manufacturing Technology Management*, 21, 206-225.
- Kothari, C. R. (2004). *Research Methodology: Methods and Techniques*, New Age International.
- Lawson, B., Cousins, P. D., Handfield, R.B., Petersen, K.J. (2009). "Strategic Purchasing, Supply Management Practices, and Buyer Performance Improvement: An Empirical Study of UK Manufacturing Organisations." *International Journal of Production Research*, 47, 2649-2667.
- Lin, C., Madu, C.N., Kuei, C.-H., Tsai, H.-L., Wang, K.-N. (2015). "Developing an Assessment Framework for Managing Sustainability Programs: A Analytic Network Process Approach." *Expert Systems with Applications*, 42, 2488-2501.
- Marien, E. J. (2000). "The Four Supply Chain Enablers." *Supply Chain Management Review*, 2. (3), (Fall 1998), 60-68: III.
- Michelsen, O., De Boer, L. (2009). "Green Procurement In Norway; A Survey of Practices at The Municipal and County Level." *Journal of Environmental Management*, 91, 160-167.
- Min, H., Galle, W. P. (1997). "Green Purchasing Strategies: Trends and Implications." *International Journal of Purchasing and Materials Management*, 33, 10-17.
- Nadeem, S., Mohamad, M.H.B., Abdullah, N. (2017). *Driving Indicators for Implementation of Sustainable Procurement Behavior and Practices*.
- Nderitu, K., Ngugi, K. (2014). "Effects of Green Procurement Practices on An Organization Performance in Manufacturing Industry: Case Study of East African Breweries Limited." *European Journal of Business Management*, 2, 341-352.
- Nyachombamachira, T., Juma, D. (2016). "Factors Affecting Implementation of Green Procurement Kenya: A Case Study Of Coca-Cola Bottling Limited Nairobi."
- Powell, W.W., Dimaggio, P.J. (2012). *The New Institutionalism in Organizational Analysis*, University of Chicago Press.
- Reck, R.F., Long, B.G. (1988). "Purchasing: A Competitive Weapon." *Journal of Purchasing and Materials Management*, 24, 2-8.
- Sandberg, E. (2007). "Logistics Collaboration In Supply Chains: Practice vs Theory." *The International Journal of Logistics Management*, 18, 274-293.

- Scott, W. R. (2008). *Institutions and Organizations: Ideas And Interests*, Sage.
- Srivastava, S.K. (2007). "Green Supply-Chain Management: A State-Of-The-Art Literature Review." *International Journal of Management Reviews*, 9, 53-80.
- Stock, J.R. (1992). *Reverse Logistics*. White Paper, Council Of Logistics Management.
- Stuart, F. I. (1993). "Supplier Partnerships: Influencing Factors and Strategic Benefits." *International Journal of Purchasing and Materials Management*, 29, 21-29.
- Sun, B., Zhang, L., Yang, L., Zhang, F., Norse, D., Zhu, Z. (2012). "Agricultural Non-Point Source Pollution In China: Causes and Mitigation Measures." *Ambio*, 41, 370-379.
- Testa, F., Annunziata, E., Iraldo, F., Frey, M. (2016). "Drawbacks and Opportunities of Green Public Procurement: An Effective Tool for Sustainable Production." *Journal of Cleaner Production*, 112, 1893-1900.
- Tsipouri, L. (2015). *Public Procurement of Innovation*. Ec Innovation For Growth-Policy Brief.
- Vermeir, I., Verbeke, W. (2004). *Sustainable Food Consumption: Exploring The Consumer Attitude-Behaviour Gap*. Ghent University, Wp, 4, 268.
- Walker, G., Devine-Wright, P. (2008). "Community Renewable Energy: What Should It Mean?" *Energy Policy*, 36, 497-500.
- Walker, H., Brammer, S. (2016). *Sustainable Procurement, Institutional Context, and Top Management Commitment: An International Public Sector Study*. Sustainable Value Chain Management. Routledge.
- Wallace, A., Omachar, A.E. (2016). "Effects of Green Procurement Practices on Operational Efficiency At Kenya Airways Limited, Kenya." *Imperial Journal of Interdisciplinary Research*, 2, 69-88.
- Walton, S. V., Handfield, R.B., Melnyk, S.A. (1998). "The Green Supply Chain: Integrating Suppliers Into Environmental Management Processes." *International Journal of Purchasing and Materials Management*, 34, 2-11.
- Yang, W., Zhang, Y. (2012). "Research on Factors of Green Purchasing Practices of Chinese." *Journal of Business Management and Economics*, 3, 222-231.
- Yen, Y.-X., Yen, S.-Y. (2012). "Top-Management's Role In Adopting Green Purchasing Standards In High-Tech Industrial Firms." *Journal of Business Research*, 65, 951-959.
- Zhu, Q., Geng, Y., Sarkis, J. (2013). "Motivating Green Public Procurement In China: An Individual Level Perspective." *Journal of Environmental Management*, 126, 85-95.
- Zhu, Q., Sarkis, J. (2004). "Relationships Between Operational Practices and Performance Among Early Adopters of Green Supply Chain Management Practices In Chinese Manufacturing Enterprises." *Journal of Operations Management*, 22, 265-289.
- Zhu, Q., Sarkis, J., Lai, K.-H. (2012). "Green Supply Chain Management Innovation Diffusion and Its Relationship to Organizational Improvement: An Ecological Modernization Perspective." *Journal of Engineering and Technology Management*, 29, 168-185.
- Zsidisin, G.A., Siferd, S.P. (2001). "Environmental Purchasing: A Framework for Theory Development." *European Journal of Purchasing & Supply Management*, 7, 61-73.
- Zuo, J., Zhao, Z.-Y. (2014). "Green Building Research-Current Status and Future Agenda: A Review." *Renewable and Sustainable Energy Reviews*, 30, 271-281.