The Effects of Leanness and Product Price on Supply Chain Sustainability in Oil and Gas Industry

Andry, Jhon Afri Cryman, and Rezha Rizqi Romadhon
Master Program, BINUS Business School
Bina Nusantara University
Jakarta, Indonesia
andry001@binus.ac.id, jhon.cryman@binus.ac.id, rezha.romadhon@binus.ac.id

Sambudi Hamali
Management Department, BINUS Business School Undergraduate Program
Bina Nusantara University, Jakarta, Indonesia
Sambudi_hamali@binus.ac.id

Abstract

This research aims to examine the effect of leanness and product price on the supply chain in Oil & Gas Industry by examining the role of local content policy. The data collection technique used questionnaires distributed to Supply Chain Management (SCM) organizations from 70 out of 82 companies under Satuan Kerja Khusus (SKK) Migas. We received 194 valid responses representing SCM organizations and other organizations strongly related to SCM in those companies. The method of data analysis used Structural Equation Modeling-Partial Least Square. This research shows that leanness in supply chain and price positively affected social performance, economic performance, and environmental performance in supply chain sustainability. The study also shows that local content policy moderated the relationship between price and economic performance positively. Social performance is proven to have a non-linear effect on economic performance. Environmental performance is also affected positively on economic performance. The conclusion of this research suggests that the oil & gas industry should maintain and support local content policy to have sustainability in the supply chain.

Keywords
Leanness, Local Content Policy, Product Price, Supply Chain

1. Introduction

In current global development, the issues of sustainability due to unprecedented changes in human and environmental systems is one of the biggest challenges for society (Bastas & Liyanage, 2019,de Haan-Hoek et al., 2020, Aray et al., 2020, Wijethilake & Upadhaya 2020). This condition certainly raises stakeholder concerns over the sustainability of the organization or company, because after all, the development of human and environmental systems has forced businesses to integrate the company's sustainable strategy, including the sustainable strategy implemented in their supply chain (de Haan-Hoek et al., 2020, Carter & Washispack, 2018, Bellisario & Pavlov, 2018, Kusi-Sarpong et al., 2019). Traditional supply chain management practices are primarily on the economic and financial performance of companies. The sustainable supply chain practices emphasize effective management of supply chain functions to facilitate the welfare of stakeholders, social communities, and the state and minimize environmental damage, which will ultimately improve company sustainability performance (Kusi-Sarpong et al., 2019). Organizations that have a proactive sustainability approach always tend to apply management best practices, such as lean manufacturing, as a means of responding to evolving sustainability challenges (Wijethilake & Upadhaya, 2020). Lean manufacturing is an excellent example of the application of leanness in an industry.

According to Yao et al. (2008), if price sensitivity is high, factory profits will decrease as the demand variable increases. In practice, the decision about price is a factor to consider. In some cases, prices usually depend on the elasticity of demand. In some cases, prices often depend on the elasticity of demand (Petruzzi and Dada, 1999). Currently, the oil and gas industry still uses imported products or raw materials or services related to high

technology. As one of the vital industries, countries in the world implement Local Content Policies (LCP). The implementation of LCP has succeeded in reviving a community's economy in several countries such as Malaysia and Saudi Arabia (Masood, 2017). In Indonesia, the LCP is stated in regulation regarding the Tingkat Kandungan Dalam Negeri (TKDN) to protect domestic companies. This government regulation regarding TKDN in the oil and gas industry is stated in the Minister of Energy and Mineral Resources Regulation No. 15 of 2013 concerning the Use of Domestic Products in Upstream Oil and Gas Business activities which were later applied in the WORKING GUIDELINES Number: PTK-007/SKKMA0000/2017/S0 (Revision 04) starting in 2017 to empower LCP in the business of oil and gas companies in Indonesia. In practice, LCP can moderate the relationship between the price of a product and economic performance in supply chain sustainability.

Research by Rupasinghe & Wijethilake (2021) examines the impact of leanness on the supply chain, which contains just-in-time delivery, quality management, environmental management practices, and employee involvement which are proven to have a positive influence on supply chain sustainability. The research conducted in Sri Lanka, based on the phenomenon that traditional or previous supply chains have always focused on the economic aspect only, while the current global demands must also meet social and environmental aspects. On the other side, found by Huo et al. (2019) in their research conducted in China, that there is a part of the leanness process on the supply chain, especially in terms of lean process suppliers, which does not affect social performance and environmental performance. Based on the differences in the results of researches conducted in Sri Lanka and China, we are interested in conducting a study similar to that conducted by Rupasinghe and Wijethilake (2021) to prove the effectiveness of the leanness process on supply chain on supply chain sustainability in the oil and gas industry in Indonesia. Besides that, we are also interested in seeing the moderating impact of LCP regulations on product prices in supply chain sustainability in the oil and gas industry in Indonesia. Based on research by Warner (2011) that local content in the oil, gas, and mining industry can essentially bring benefits to the local economy. For companies, implementing local content specifically can have an impact on the cost structure and affect company profits. Research also shows that there is an increase of companies to build and enhance mutually beneficial cooperation with local suppliers. Another important point is that until now, there has not been much research on the influence of LCP in the oil and gas industry in Indonesia.

Based on the discussion above, the purpose of this study is to investigate the effect of leanness in the supply chain on supply chain sustainability and to investigate the effect of LCP in moderating the relationship between product prices and the economic performance of the supply chain in the oil and gas industry.

1.1 Objectives

The objectives of this research are:

1. To investigate the effect of leanness in the supply chain on supply chain sustainability in the oil and gas industry
2. To investigate the effect of local content policies in moderating the relationship between product/service prices and the economic performance of the supply chain in the oil and gas industry.

2. Literature Review

2.1. Supply Chain Sustainability

Whitten et al. (2004) defines Supply Chain Management (SCM) as an approach that optimizes business processes from the procurement of raw materials to the distribution of finished goods by directly integrating the logistics information system managed by the organization with existing systems at suppliers and distributors. According to Arora et al. (2016), the principle of sustainability can be explained by a triple bottom line approach, which generally defines the principle of sustainability as having three pillars: economic welfare, environmental quality, and social justice. The triple bottom line has become a common tool for assessing a company's sustainability focus (Samaidar, 2014). This assessment reflects a company's capability to face several contemporary challenges in three dimensions, where the three sustainability pillars are not mutually exclusive and can reinforce each other (Adams & Ghal, 2006). In line with this, Tseng et al. (2015) also describe a sustainable supply chain (supply chain sustainability) which consists of economic performance, social performance, and environmental performance.

2.2. Leanness in Supply Chain

Lean Manufacturing has been recognized as a strategy to increase productivity through waste elimination, inventory control, capacity building, improvement, and operational performance (Rupasinghe & Wijethilake, 2021, Kaufmann,

2020, Nawanir et al., 2020a, Nawanir et al., 2020b). Although there are so many benefits from lean manufacturing practices, sometimes organizations face many difficulties to implement this lean strategy (Nawanir et al., 2020b, Netland & Aspelund, 2014, Netland et al., 2015). Senior management has to approach this lean strategy from a holistic perspective, not only as an isolated operation (Fullerton et al., 2013, Fullerton et al., 2014). However, a growing body of research highlights the failure of organizations to integrate operational and financial functions substantially impairs predictions of operational achievement (Netland et al., 2015, Fullerton et al., 2014) and leads to a refusal to implement a lean manufacturing strategy (Nawanir et al., 2020b, Meade et al., 2010). In Rupasinghe & Wijethilake (2021) research, the impact of leanness on supply chain sustainability which contains just in time delivery, quality management, environmental management practices, employee involvement, has been shown to have a positive influence on supply chain sustainability.

2.3. Product Price

They are generally known that to maintain continuity, an organization or company, in addition to paying attention to social and environmental aspects, must also consider the company's profit. One of the variables that influence, of course, is the price of the material/commodity or service that will be purchased and used in the business process. According to Yao et al. (2008), if price sensitivity is high, factory profits will decrease as the demand variable increases. In practice, the decision about price is a factor that is often considered. In some cases, prices often depend on the elasticity of demand (Petruzzi & Dada,1999). According to Zhang & Zhou (2019), The green product with environmental quality always has a higher price because the cost coefficient of the green product is always higher than the traditional product. As a result, manufacturers will always increase wholesaler prices; on the other hand, retailers with an uncertain need for green products will feel that their profits will be unfairly eroded and may react badly to manufacturers.

2.4. Local content policy

In Indonesia, the government has set regulations on Local Content Policies to protect domestic companies. According to the Regulation of the Ministry of Industry of the Republic of Indonesia in 2011, LCP is defined as a limit or value that represents the level of local content in the country as a product of goods/services. According to Abdullah (2011), the benefits of increasing LCP include: (1) increased use of domestic production – this relates to the quality of the product or component produced during the production process; (2) increase/absorption of labor – if the quality of the product or component produced increases, the impact will be an increase in the use of the product or component, and (3) saving on foreign exchange – the use of the product or component that pays attention to the use of the resulting component domestic production means reducing the cost of supplying components abroad.

2.5. Hypothesis Statements and Theoretical Framework

In the research by Rupasinghe & Wijethilake (2021), the impact of supply chain leanness which contains just-in-time delivery, quality management, environmental management practices, and employee involvement, has been shown to have a positive impact on supply chain sustainability.

Therefore, we will examine the effect of leanness on the supply chain on sustainable supply chain performance.
H1. Leanness in Supply Chain has a positive impact on Social Performance in Supply Chain Sustainability.
H2. Leanness in Supply Chain has a positive impact on Economic Performance in Supply Chain Sustainability.
H3. Leanness in Supply Chain has a positive impact on Environmental Performance in Supply Chain Sustainability.

According to Munnukka (2005), price sensitivity is one of the main factors that determine the choice of price by a company. Shankar et al. (1999) stated there are two issues regarding the importance of price sensitivity, namely Price Importance and Price Search. Price Importance is the level of importance of a price influencing the decision to buy, while Price Search is the tendency of consumers to seek a better price. Therefore, we will examine the effect of product price sensitivity on supply chain sustainability performance.

H4. Price has a positive impact on Social Performance in Supply Chain Sustainability.
H5. Price has a positive impact on Economic Performance in Supply Chain Sustainability.
H6. Price has a positive impact on Environmental Performance in Supply Chain Sustainability.
Bowen et al. in Gotschol et al. (2014) stated that a positive impact of environmental performance on economic performance could not be achieved in a short period. Companies that implement a green supply chain will get outstanding performance in the long term. In addition, De Giovanni & Zaccour (2014) also emphasize that when

environmental performance is a short-term target, economic performance (profits) will be realized. Gotschol et al. (2014) show the positive impact of environmental performance on economic performance and economic competitiveness. Alsayegh et al. (2020) show that environmental performance and social performance are significantly positively related to economic sustainable performance. This research has added that social performance has a positive impact on economic performance.

H7. Social performance has a positive impact on economic performance in supply chain sustainability.
H8. Environmental performance has a positive impact on economic performance in Supply Chain sustainability.
According to Warner (2011), local content in the oil, gas, and mining industry can essentially bring benefits to the local economy. For companies, implementing local content specifically can have an impact on the cost structure and affect company profits. Research also shows that there is an increase of companies - companies to build and enhance mutually beneficial cooperation with local suppliers.
H9. Local Content Policy regulations positively moderate the relationship between product price and economic performance in Supply Chain Sustainability.
Base on the explanation above, the research model could be described as follows in Figure 1:

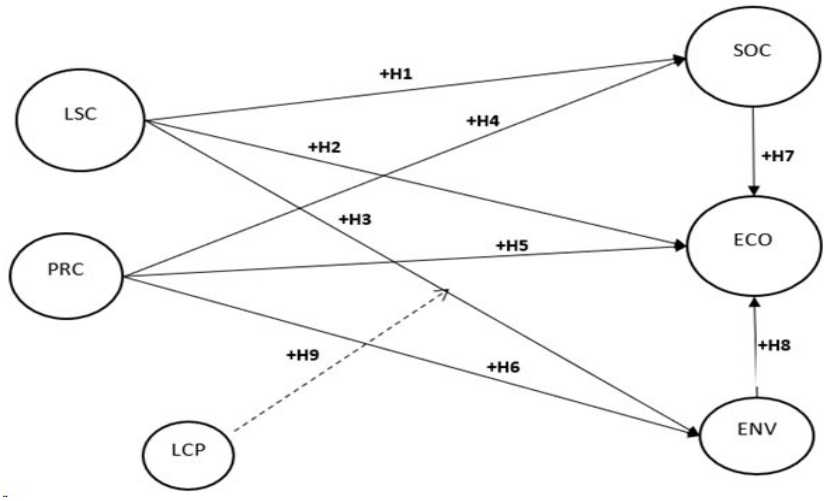

Figure 1. Research Model

Notes:
LSC = Leanness in Supply Chain; PRC = Price; LC = Local Content; SOC = Social Performance; ECO = Economic Performance; ENV = Environmental Performance (Figure 1)

3. Methods

The research method used is the mixed method, which combines quantitative and qualitative methods. First, we processed the results of the questionnaire using the WarpPLS software. Next, we conducted interviews with SCM experts to clarify the results of the data. The population of oil & gas company are 82 organizations, we used tables of Krejcie, and Morgan (1970) and Cohen (1969) taken from Sekaran & Bougie (2016), so the minimum sample of company required is 70 organizations. Required minimum two respondents from each organization so that 140 respondents are expected to answer the questionnaire. Furthermore, interviews were conducted with three experts, they are (DY, ES, and WS). DY as Supply Chain Manager with 18 years of work experience from KKKS A, ES as Supply Chain Manager with 20 years of work experience from KKKS B, and WS as SCM Senior Specialist with 13 years of work experience from KKKS C. Primary data are collected through a survey which is derived by directly distributing questionnaires to respondents, using a Likert scale with data intervals of 1 – 6.

Data analysis that will be used in this research is quantitative data analysis and qualitative data analysis. Firstly, for quantitative data analysis, researchers used WarpPLS 7.0 software and then analyzed qualitative data by conducting interviews with SCM experts to clarify the results of data processing.

4. Data Collection

Since oil and gas companies are spread geographically throughout Indonesia, and also with the ongoing COVID-19 pandemic, researchers considered the most appropriate data collection method is the self-administered type.In this case, using an electronic questionnaire from Google Form that sent as aweb link that will be distributed via e-mail, Whatapps, and Telegram. The advantages of this self-administered method are that it is the most efficient, so could cover a wide geographical area, and does not require a lot of research staff.

5. Results and Discussion

5.1. Measurement Model

In this research, the "Structural Equation Modeling-Partial Least Square (SEM-PLS)" technique has been used as conceptual framework testing. There are two measurement models in this SEM-PLS: the measurement model (outer model) and the structural model (inner model). The SEM-PLS analysis has been carried out using WarpPLS 7.0 software.

In the measurement model, every variable is tested using a validity and reliability test. The variable is valid if the loading value from each indicator in the construction is bigger than 0.7, p-value <0.05 (Hair etal.,2014). The Average Extracted Values (AVEs) is recommended at 0.5 (Kock, 2020), and the root square of AVEs is higher than the correlation, which involves the latent variable. Every latent variable is reliable if one of the composite reliabilities (CR) or Cronbach Alpha (CA) coefficient limit is 0.6 or higher (Kock, 2020). Table 1 shows the loading values, AVE, root square of AVE, CR, and CA of all variables.

Table 1. Validity and Reliability Construction

Variable	*Items*	*Loading factor*	*p-value*	**AVEs**	**sq. rts. Of**	**CR**	**CA**
LSC	1	0,811	<0,001				
	2	0,607	<0,001				
	3	0,503	<0,001				
	4	0,700	<0,001				
	5	0,727	<0,001				
	6	0,706	<0,001	0,496	0,704	0,926	0,913
	7	0,785	<0,001				
	8	0,707	<0,001				
	9	0,512	<0,001				
	10	0,782	<0,001				
	11	0,752	<0,001				
	12	0,718	<0,001				
	13	0,760	<0,001				
PRC	1	0,854	<0,001				
	2	0,743	<0,001	0,632	0,795	0,873	0,805
	3	0,768	<0,001				
	4	0,811	<0,001				
LC	1	0,829	<0,001				
	2	0,892	<0,001	0,725	0,852	0,929	0,905
	3	0,839	<0,001				
	4	0,838	<0,001				
	5	0,858	<0,001				
ECO	1	0,872	<0,001				
	2	0,869	<0,001	0,779	0,883	0,934	0,906
	3	0,900	<0,001				
	4	0,889	<0,001				
ENV	1	0,889	<0,001				
	2	0,883	<0,001	0,745	0,863	0,898	0,828
	3	0,816	<0,001				
SOC	1	0,752	<0,001				

	2	0,831	<0,001	0,720	0,848	0,911	0,868
	3	0,907	<0,001				
	4	0,894	<0,001				

Overall results of the Confirmatory Factor Analysis (CFA) study show that the models of LSC, PRC, LC, ECO, ENV and SOC have good fit and can be used for subsequent data processing.

4.2. Structural Model

The structural model is used to examine the ability in model prediction and the relationship between construction. The structural model is examined using the significance of the path coefficient, the effect size (f^2), and the value of R^2. The effect size usually recommended are small (0.02), medium (0.15), and large (0.35) respectively (Kock, 2020).

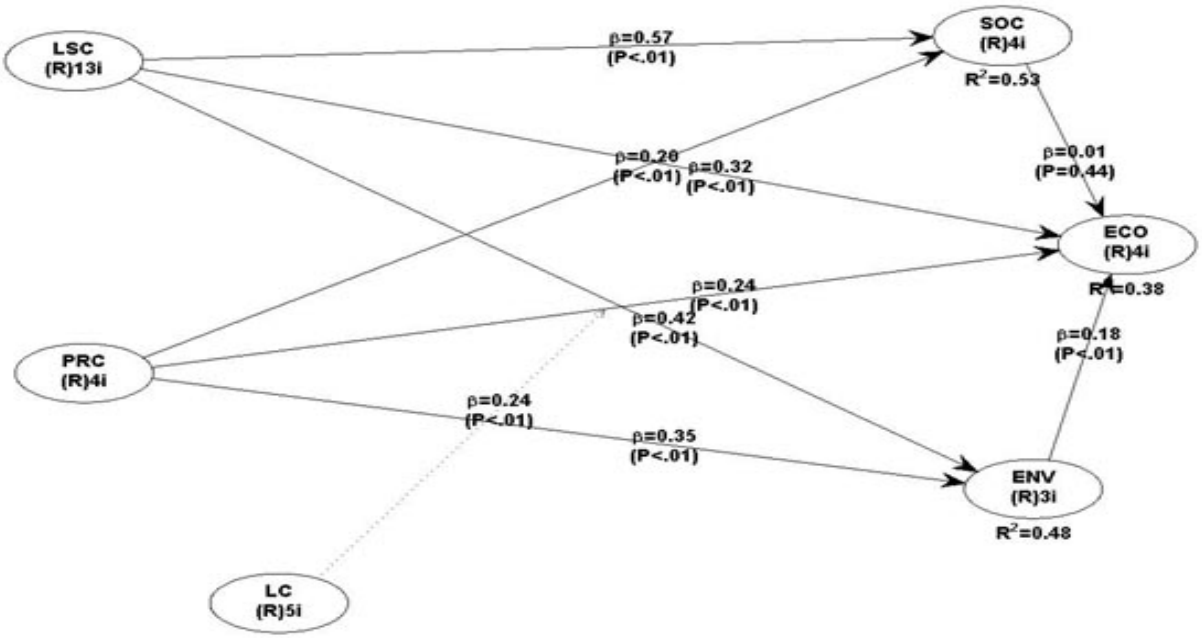

Figure 2. Structural Model Result

Table 2. Structural Model Analysis Result

Hypothesis	Path	Coefficient	*p*-value	Effect Size (f^2)	Result
H-1	LSC – SOC	0.574	< 0.001	0.407	H_0 rejected
H-2	LSC – ECO	0.324	< 0.001	0.215	H_0 rejected
H-3	LSC – ENV	0.415	< 0.001	0.269	H_0 rejected
H-4	PRC – SOC	0.200	0.002	0.118	H_0 rejected
H-5	PRC – ECO	0.244	< 0.001	0.173	H_0 rejected
H-6	PRC – ENV	0.345	< 0.001	0.216	H_0 rejected
H-7	SOC – ECO	0.011	0.438	0.006	H_0 accepted
H-8	ENV – ECO	0.180	0.005	0.108	H_0 rejected
H-9	PRC * LC – ECO	0.236	< 0.001	0.125	H_0 rejected

In hypotheses 1–3, the LSC variable has significantly influenced SOC, ECO, and ENV variables. This means that highly Leanness in Supply Chain (LSC) can help to achieve high Social (SOC), Economic (ECO), and Environmental (ENV) performance levels. This result is in line with Rupasinghe and Wijethilake (2021) that the

leanness of the supply chain (i.e., just-in-time delivery, quality management, environmental management practices, and employee involvement) has a positive impact on social performance, economic influence and environmental performance in the supply chain sustainability. Based on the effect size, LSC has a large influence category (> 0.35) against SOC, and medium against ECO, and ENV (> 0.15).

In hypotheses 4-6, the PRC variable has shown significant influence on SOC, ECO, and ENV variables. This means that if the price level is higher, the SOC, ECO, and ENV performance levels will be higher also in Supply Chain Sustainability. Based on the effect size, the price has a medium influence category (> 0.15) against ECO and ENV, and small against SOC (> 0.02). Based on the interview with the SCM expert in Oil & Gas company, they have suggested that price is one of the considerations when the company decides to buy a product or service. But Oil &Gas industry is just more risky than other operations. When the industry decides to buy a product, they will consider many factors, including the quality of the product, the global regulation on the environmental impact, and the price.

In hypothesis 7, H0 is accepted since Social Performance (SOC) has no significant influence on Economic performance (ECO). This is aligned with Ibida&Emeka (2019), there is no significant influence between economic performance and social performance in Oil & Gas industry in Nigeria.

In hypothesis 8, the ENV variable has significantly influenced ECO. This means that if the Environmental (ENV) performance level is higher, the Economic (ECO) performance levels will be higher also in Supply Chain Sustainability. This result is aligned with De Giovanni & Zaccour (2014), when environmental performance is a short-term goal, so economic performance (profits) will be realized. This is also confirmed by Gotschol et al. (2014) and Alsayegh et al. (2020), which show the positive impact of environmental performance on economic performance.

In hypothesis 9, it's found that the moderating variable local content (LC) has significantly influenced price (PRC) and economic performance (ECO). From the results of data analysis, there is a positive moderating effect or strengthening the relationship between PRC and ECO. This is aligned with Warner (2011), where local content in the Oil, Gas, and Mining industries can essentially bring benefits to the local economy. For companies, implementing local content specifically can have an impact on the cost structure and affect company profits. Research also shows that there is an increasing number of companies that build and enhance mutually beneficial partnerships with local suppliers. Based on an interview with an SCM expert, they have suggested LCP has simplified and shortened the process of supplier selection since suppliers have been selected and registered in a supplier database that meets LCP, thus shortening the supplier selection time. Local suppliers which have been registered in the LCP supplier database will be able to provide faster after-sales support compared to suppliers from overseas who may not have representatives in Indonesia. In this case, LCP encouraged better economic performance. Moreover, Oil & Gas companies are aware of their responsibility to support the Indonesian economy. The implementation of this LCP will have a multiplier effect on the progress of the country's economy.

The R^2 values of the SOC, ENV and ECO presented in Figure 2 are, respectively, 0.53, 0.48, and 0.38. These values indicate that 53% of the endogenous variable SOC can be described by LSC, and PRC as the exogenous variables, while the remaining 47% can be explained by other factors outside the model. Similarly, 48% of the ENV variable can be described by LSC, and PRC variables, and 38% of the ECO variable can be described by LSC, PRC, SOC, and ENV variables. From Table 2, LSC has a greater impact on SOC, ECO, and ENV than PRC. This means that companies should improve leanness in the supply chain instead of increasing prices. Based on research of Rupasinghe& Wijethilake (2021), supply chain leanness which contains just-in-time delivery, quality management, environmental management practices, and employee involvement, has been shown to have a positive impact on supply chain sustainability. In addition, according to Cherrafi etal.(2018), Lean practices such as JIT (just in time), set-up time reduction, cellular manufacturing, and waste elimination can significantly contribute to improve GSC (green supply chain) performance.

6. Conclusion

Results of this research show leanness in the supply chain (LSC) and price (PRC) affected positively social performance (SOC), economic performance (ECO), and environmental performance (ENV). For environmental

performance (ENV) to economic performance (ECO), a significant relationship was found. The research also shows that local content policy (LC) moderated the relationship between price and economic performance positively. For social performance (SOC) on economic performance (ECO), no significant effect was found.

By the results of this study concluded that the oil and gas industry in Indonesia should continue to apply lean in its supply chain process to achieve a sustainable supply chain and also support the government in implementing Local Content Policy so that the company's economic performance can be improved.

This research is only limited to the LCP factor as a moderating factor that plays a role in the relationship between price and economic performance. Suggestions for further research could also include additional variables to examine environmental performance and social performance. In addition, this research is only limited to the Oil & Gas industry in Indonesia. Suggestions for further research can also be made in other industries that apply LCP regulations, such as the mining and energy industries

References

Abdullah, G. TKDN (Tingkat Komponen Dalam Negeri) dalam Pengadaan Barang dan Jasa di Sektor Hulu Migas: Sebuah Interview. Available from: http: //tkdnonline.blogspot.com /2011/04/tkdn-tingkat-komponen-dalam-negeri.html. 2011.

Adams, M. and Ghaly, A., An integral framework for sustainability assessment in agro-industries: application to the Costa Rican coffee industry. *The International Journal of Sustainable Development and World Ecology* 13(2) pp 83-102, 2006.

Alsayegh, M., Abdul Rahman, R.and Homayoun, S. Corporate economic, environmental, and social sustainability performance transformation through ESG disclosure. *Sustainability,* 12(9) pp 1-20, 2020.

Aray, Y., Anna, V., Dmitri, K.and Anna, L., Drivers for adoption of sustainability initiatives in supply chains of large Russian firms under environmental uncertainty.*Corporate Governance***21(2)** pp 322-38, 2020.

Arora, P., Peterson, N., Bert, F., & Podesta, G 2016 Managing the triple bottom line for sustainability: a case study of Argentine agribusinesses. Sustainability: Science, Practice and Policy 12(1) pp 60-75.

Bastas, A. and Liyanage, K., Integrated quality and supply chain management business diagnostics for organizational sustainability improvement, *Sustainable Production and Consumption***17** pp 11-30, 2019.

Bellisario, A.and Pavlov, A. Performance management practices in lean manufacturing organizations: a systematic review of research evidence. Production Planning & Control 29(5) pp 367-85, 2018.

Carter, C. andWashispack, S. Mapping the path forward for sustainable supply chain management: a review of reviews. *Journal of Business Logistics* 39(4) pp 242-47, 2018.

Cherrafi, A., Garza-Reyes, J., Kumar, V., Mishra, N., Ghobadian, A.and Elfezazi, S., Lean, green practices and process innovation: A model for green supply chain performance. *International Journal of Production Economics* 206 pp 79-92, 2018.

De Giovanni, P.and Zaccour, G. A two-period game of a closed-loop supply chain. *European Journal of Operational Research* 232(1) pp 22-40, 2014.

de Haan-Hoek, J., Lambrechts, W., Semeijn, J.and Caniels, M., Levers of control for supply chain sustainability: control and governance mechanisms in a cross-boundary setting.*Sustainability***12(8)** pp 1-22, 2020.

Fullerton, R., Kennedy, F.and Widener, S., Management accounting and control practices in a lean manufacturing environment. Accounting, Organizations and Society 38 pp. 50-71, 2013.

Fullerton, R., Kennedy, F.and Widener, S., Lean manufacturing and firm performance: the incremental contribution of lean manufacturing accounting practices. *Journal of Operations Management* 32(7-8) pp 414-28, 2014.

Gotschol, A., De Giovanni, P.and Vinzi, V., Is environmental management an economically sustainable business?. *Journal of environmental management*, 144 pp 73-82, 2014.

Hair, J., Hult, G., Ringle, C.and Sarstedt, M. A primer on partial least squares structural equation modeling (PLS-SEM) (California: SAGE Publications, Inc), 2014.

Huo, B., Gu, M., and Wang, Z. Green or lean? A supply chain approach to sustainable performance. Journal of cleaner production 216 pp 152-66, 2019.

Ibida, N.and Emeka-Nwokeji, N. Effect of corporate social responsibility (csr) on the financial performance of oil and gas companies in Nigeria. *Journal of Accounting, Business and Social Sciences* 2(1) pp 56-73, 2019.

Kaufmann, G., Aligning lean and value-based management: operations and financial functions at the system level (Cham: Springer Nature), 2020.

Kock, N.,*WarpPLS User Manual: Version 7.0* (Texas: ScriptWarp System), 2020.

Kusi-Sarpong, S., Gupta, H. and Sarkis, J. A supply chain sustainability innovation framework and evaluation methodology. *International Journal of Production Research* 57(7) pp 1990-2008, 2019.

Masood, A., International Oil Companies Contributions to Yemen's Local Content Development: A Supply Chain Perspective.*The Business School University of Roehampton London*, 2017.

Meade, D., Kumar, S.and White, B. Analyzing the impact of the implementation of lean manufacturing strategies on profitability. *Journal of the Operational Research Society* 61(5) pp. 858-71, 2010.

Munnukka, J. Dynamics of price sensitivity among mobile service customers. *Journal of Product & Brand Management 14*(1) pp 65-73, 2005.

Nawanir, G., Lim, K., Lee, K., Okfalisa, O., Moshood, T.and Ahmad, A., Less for more: the structural effects of lean manufacturing practices on sustainability of manufacturing SMEs in Malaysia. *International Journal of Supply Chain Management 2*(2) pp 961-75, 2020a.

Nawanir, G., Lim, K., Ramayah, T., Mahmud, F., Lee, K. and Maarof, M., Synergistic effect of lean practices on lead time reduction: mediating role of manufacturing flexibility. *Benchmarking: An International Journal* 27(5) pp 1815-42, 2020b.

Netland, T.and Aspelund, A., Multi-plant improvement programmes: a literature review and research agenda. *International Journal of Operations & Production Management* 34(3) pp 390-418, 2014.

Netland, T., Schloetzer, J.and Ferdows, K. Implementing corporate lean programs: the effect of management control practices. *Journal of Operations Management* 36 pp 90-102, 2015.

Petruzzi, N.and Dada, M.Pricing and the Newsvendor Problem: A Review with Extensions. *Operations Research* 47(2) pp 183-94,2008.

Rupasinghe,H.and Wijethilake, C. The Impact of Leanness on Supply Chain Sustainability: Examining the Role of Sustainability Control Systems. *Corporate Governance* 21(3) pp 410-32, 2021.

Samajdar, C. Triple bottom line strategy for the sustainable steel industry. *In 2014 2nd International Conference on Business and Information Management (ICBIM)* pp. 101-03. IEEE, 2014.

Sekaran, U.and Bougie, R.*Research methods for business (7th ed.)* (Sussex: John Wiley & Sons), 2016.

Shankar, V., Rangaswamy, A. and Pusateri, M. The Online Medium and Customer Price Sensitivity,*eBusiness Research Center Working Paper* 04-199, 1999.

Tseng, M., Lim, M.and Wong, W., Sustainable supply chain management: A closed-loop network hierarchical approach. *Industrial Management & Data Systems***115(3)** pp 436-61, 2015.

Warner, M. Local Content Solutions: Participation of Domestic Industry in Procurement for Oil, Gas and Mining Projects, *Greenleaf Publishing*, 2011.

Whitten, J., Bentley, L., Dittman, K. Systems Analysis and Design Methods. (Indianapolis: McGraw-Hill Education), 2004.

Wijethilake, C.andUpadhaya, B., Market drivers of sustainability and sustainability learning capabilities: the moderating role of sustainability control systems.*Business Strategy and the Environment* **29(6)**pp 2297-2309, 2020.

Yao, Z., Leung, S., and Lai, K., Analysis of the impact of price-sensitivity factors on the returns policy in coordinating supply chain. *European Journal of Operational Research*, 187(1) pp 275-282, 2008.

Zhang, L.and Zhou, H., The optimal green product design with cost constraints and sustainable policies for the manufacturer. *Mathematical Problems in Engineering 2019*,2019.

Biographies

Sambudi Hamali is a lecturer in Management Department at Binus University since 2014. He is graduated with Doctoral Degree in Management Science from Padjadjaran University. He has experience in various industries, not only in education but also in the construction and services industry.

Andry isastudent fromMaster of ManagementProgram, BINUS Business School,Bina Nusantara University. He is graduatedwith Bachelor Degree in Chemical EngineeringProgram from Gadjah Mada University

Jhon Afri Cryman is a student from Master of Management Program, BINUS Business School, Bina Nusantara University. He is graduated with Bachelor Degree in Physicsmajoring in Instrumentation & Electronicsfrom University of Indonesia.

Rezha Rizqi Romadhon is a student from Master of Management Program, BINUS Business School, Bina Nusantara University. He is graduated with Bachelor Degree in Business Management Program from Bina Nusantara University.