

## GREEN SUPPLY CHAIN MANAGEMENT: CONCEPT AND CHALLENGES

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### ABSTRACT

Green Supply Chain Management (GSCM) or known as environmentally innovative supply chain, aims to consider environmental involvement in supply chain management. As a reason for sustainable environmental responsibility, most companies today believe that considering GSCM is a must. The application of green aspects principles in the technology adopt will provide significant benefits and positive impacts on the supply chain network, from the point of supply (suppliers) to the point of consumption (end customers). The purpose of this literature research is to analyze the implementation of the concept of Green Supply Chain Management (GSCM). The concept used in this writing is operations management. The method used in this study is content analysis. The initial contribution of this research was to first analyze the definition or concept of green supply chain management, then analyze the barriers found during GSCM practices. This journal produces proportions related to the concept of green supply chain management. The conclusion of this study is that green supply chain management has the same meaning, namely the supply chain of companies that pay attention to environmental sustainability, where GSCM is a development of the Supply Chain Management (SCM) Concept which is one of the ten important decisions in operational management that affect the increase in value and performance of the company. The drawback of this paper is the limited number of definitions (concepts) of green supply chain management analyzed, due to limited time and sources containing definitions of green supply chain management.

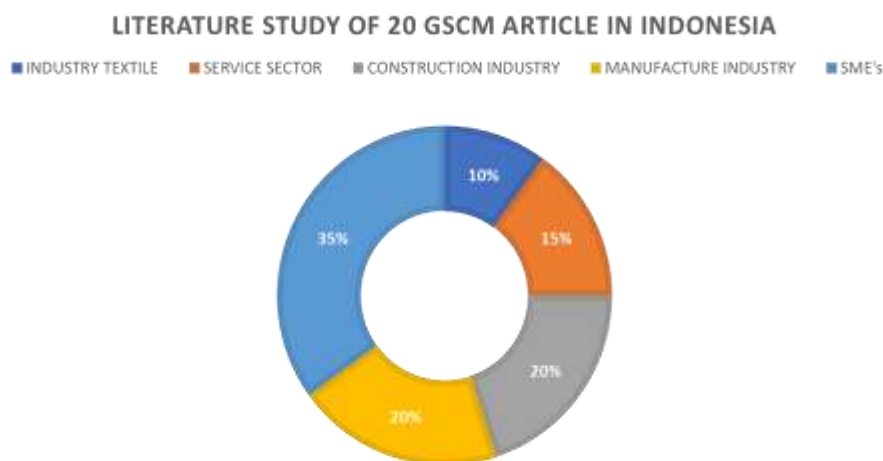
**Keywords:** Green supply chain management, Operations management, Enterprise performance, environment

**JEL Classification:**

### INTRODUCTION

“Operations and management chain supply is an interesting and vital field in the complex world of business moment This”. Roger G. and Susan Meyer in his book "Operations Management

in the Supply Chain". Study about green supply chain practices in Asia most started around in the 2000s (Abdolhossein et al., 2012; Mahmood et al., 2011; Tritos et al., 2013). A number of year later Currently, green supply chain (GSC) has appear as component important from environment and chain strategy supply a number company. The more Lots study about Green Supply Chain Management (GSCM), namely bring up G SCM concept, related practice, and relationships between GSCM and its operations and/ or performance economy. Fitrin Rawati Suganda (2018), GSCM aims For maximize profit for environment in a way whole with adopt The life cycle approach includes product design, material selection, manufacturing, sales and recovery, and so on help company For realize sustainable development and development. The GSCM concept is development from Supply Chain Management (SCM) concept. Study about GSCM no as much research on the concept of Supply Chain Management (SCM). Many studies are linked with green supply chain management, however No Lots research that contains draft or definition of green supply chain management Alone. A number of journal that will made literature study references that is from journal accessed abroad from science direct and Emerald insight, also Mendeley form articles international. But on occasion we are studying this or conduct literature study to research conducted in Indonesia only, in range time between from 2018 to 2023, there will be 20 articles. What we share based on type his business, like picture following This:



**Figure 1.1 Percentage distribution of GSCM in journals**

Source : personal data

## LITERATURE REVIEW

Green Supply Chain Management theory is an existing concepts in management operation. Definition Management Operation according to Heizer & Render (2011) is series creating activities mark goods and services through change from input become output. In management operation known the term Ten Critical Operation Management Decision, namely ten decision management supporting operations mission in implement strategies in the management area operation. From tenth decision management operation there is the later concept of supply chain management (SCM). develop become the concept of green supply chain management (GSCM). A number of The meaning of green supply chain management (GSCM) was put forward by several researcher previously, among others Hervani, Helms, & Sarkis (2005) "Management

Chain Green Supply (GSCM)= Green Purchasing + Green Manufacturing/ Material Management + Green Distribution / Marketing + Logistics Reverse". Support opinion Srivastava (2007) " defines GSCM as integration thinking environment in chain supplies, include design product, selection material raw materials and their sources, manufacturing processes, and delivery product to consumers, as well thinking environment about end of useful life products, incl management product after its useful life that is, logistics inverted". Carter and Rogers (2008) define GSCM " as [ . . . ] Strategic integration, transparency and achievement objective social, environmental and economic organization in coordination systemic business processes inter-organizational main For increase performance economy period long of each company and chain supply". Opinion Canito et al. (2012) " GSCM general understood as set practice integrating managerial issues environment to in management chain supply For ensure obedience environment as well as For push ability environment from all over chain supply ". Next definition according to Shi et al. (2012) "(GSCM) is seen by many as draft promising organization, which considers element environment when manage chain supply " Opinion other according to Zhu et al. (2007) "GSCM can defined as has range from purchase green until chain supply integrated start from supplier, to manufacturer, to customers, and logistics upside down, the "close circle" as defined by the literature management chain supply". "GSCM defined as ability strategic consisting from strategies, practices and policies that concentrate on management impact environment from operation chain supply" (Rauer and Kaufmann, 2015). While Kirchoff, Tate & Mollenkopf (2016) GSCM is a "This covers management cycle life chain integrated supply; design products, packaging and processes for environment; management environment chain supply upstream and downstream; and practice chain closed loop supply". Other GSCM definitions from Diabat & Govindan (2011) namely "[. . . ] A set policy management chain supplies procured, actions taken and relationships formed as response to related concerns with environment natural related with design, acquisition, production, distribution, use, use return and disposal goods and services company. Then Jabbour et al. (2013) "GSCM is effective way for manager chain supply For reduce risk environment, reduce waste and improve flexibility in respond condition environment new and requests customer ".

## METHOD

Method used in studies This is analysis content / content. Analysis content (content analysis) is nature research discussion deep to fill something information written or printed in mass media. Analysis This usually used in research qualitative. Using method analysis fill it in, then will obtain something understanding to various fill message communication delivered by mass media, or from other sources directly objective, systematic, and relevant.

A number of the method that we generally use in studies literature involve steps following:

1. Search: Researcher do search literature using databases such as, Google Scholar, Scopus, or academic databases other. Relevant keywords with topic dissertation used for get appropriate literature.
2. Selection: After results search obtained, researchers evaluate every article or source literature For determine its relevance with topic study. Election can base on criteria certain like year publication, accuracy, and relevance.

3. Evaluation: Researcher evaluate quality methodology and findings from every source selected literature. This includes evaluate validity research, methodology used, and data reliability.
4. Synthesis: Evaluation results used for synthesise literature. Researcher try identify pattern, theme, or emerging trends from literature that has chosen. Synthesis help in build base theoretical For dissertation.

From that Lots journal international, selected 20 journals with object study varies among companies in Indonesia range time between 2018-2023. Inside it load about definition of Supply Chain Management, Green Supply Chain Management, and barriers in its implementation. Journal Green Supply Chain Management concept, such as served in Table 1 following:

**TABLE 1 Journal GSCM concept.**

NO.	TITLE	YEARS	AUTHOR
1	Building green supply chain management in pharmaceutical companies in Indonesia	2021	Prasadja Ricardianto, Amrulloh Ibnu Kholdun Khalil Ridhonudzon Fachreya, Nofrisela, Lira Agusintaa, Edhie Budi Setiawana, Zaenal Abidina, Okin Ringan Purbaa, Erni Pratiwi Perwitasaria, Endri Endrib
2	The role of green supply chain management practices on environmental performance: A case of Indonesian small and medium enterprises	2023	Muhammad Akbar Dzikriansyah, Ilyas Masudin, Fien Zulfikarijah, Muhammad Jihadi, Rohmat Dwi Jatmiko
3	Green supply chain management and firm performance: the mediating effect of green innovation.	2021	Novitasari, M., & Agustia, D.
4	Green supply chain management and green marketing strategy on green purchase intention: SMEs cases	2020	Sugandini, D., Muafi, M., Susilowati, C., Siswanti, Y., & Syafri, W.
5.	Analysis of green supply chain management performance with green supply chain operation reference at the batik enterprise	2022	Hafidh Munawir, daughter of Rona Mabrukah, Suranto
6	Factors for implementing green supply chain management in the construction industry	2018	Mochamad Agung Wibowo, Naniek Utami Handayani, Anita Mustikasari
7	Management operations of multinational companies	2021	Sultan Shaummil Faiq, Muhamad Rizal, Rusdin Tahir
8	Development Green Construction, Green Recycling and Green Activities Warehousing as Part of Green Supply Chain Management in Projects Construction	2023	Larashati B'tari Setyaning

9	Approach Holistic in Identify Obstacles to Implementing Green Construction in Indonesia	2019	Mohamad Rizal P, Mia Wimala, Anton Soekiman
10	A Framework for Green Supply Chain Management in the Construction Sector: A Case Study in Indonesia	2021	I. Putu Artama Wiguna, Farida Rachmawati , M. Arif Rohman, Larashati B'tari Setyaning
11	Green Supply Chain Integration and Technology Innovation Performance in SMEs: A Case Study in Indonesia	2021	Mohamad irhas effendi, Hendro widjanarko, Dyah sugandini
12	The effect of managerial intention and initiation green supply chain management adoption in Indonesian manufacturing performance	2018	Ilyas Masudin, Tri Wastono, Fien Zulfikarijah
13	Assessing the Benefit of Adopting ERP Technology and Practicing Green Supply Chain Management toward Operational Performance: An Evidence from Indonesia	2022	Ruben Wahyu Santoso, Hotlan Siagian, Zeplin Jiwa Husada Tarigan and Ferry Jie
14	Determining the Environmental Performance of Indonesian SMEs influence by Green Supply Chain Practices with Moderating Role of Green HR Practices	2019	Kittisak Jernsittiparsert, Parinya Siriattakul, Samanan Wattanapongphasuk
15	A Literature Review on Green Supply Chain Management Adoption Drivers	2019	Ilyas Masudin
16	The Role of Green Supply Chain Management in Predicting Indonesian Firms' Performance: Competitive Advantage and Board Size Influence	2020	Maya Novitasari, Ali Saleh Alshebami, M. Agus Sudrajat
17	The Mediating Role of Operational and Environmental Performance in the Relationship between Green Supply Chain Management and Financial Performance	2019	Chairit Thongrawd, Pipat Pichetsiraprapa, Narintorn Somthong, Kittiampol Sudprasert
18	The green supply chain and sustainability performance in emerging country	2021	Amrie Firmansyah, Resi Ariyasa Qadri, Zef Arfiansyah
19	The role of green innovation and green supply chain management on the sustainability of the performance of SMEs	2022	Agus Purwantoa , Khaerul Fahmia , Irwansyaha , Rastanto Hadinegoroa , Add Rochmada , Syahrila and Eva Sulastri

20	Implementation of Green Supply Chain Management for Supply Chicken Eggs Using the Fuzzy AHP Method	2023	Agung Prayudha Hidayat, Husen Santosa Fault, Derry Dardanella
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Source: personal data

## RESULT AND DISCUSSION

### RESULT

#### OVERVIEW LITERATURE ABOUT DEFINITION GREEN SUPPLY CHAIN MANAGEMENT CONCEPT

Based on study literature The concept of Green Supply Chain Management, written by 20 researchers For defines connected green supply chain management with the object under study, namely according to Prasadja et al. (2021), Muhammad Akbar et al. (2023, Novitasari et al. (2021), Sugandini D. et al. (2020), Hafidh Munawir et al. (2022), Mochamad Agung Wibowo et al. (2013), also Larashati (2023), and researchers other stated like following:

1. Prasada, et.al., in title "Building green supply chain management in pharmaceutical companies in Indonesia", that in building and implementing GSCM, a strong contribution originate from Green Manufacturing, Green Distribution, and Logistics green.
2. Muhammad Akbar Dzikriansyah, Ilyas Masudin, Fien Zulfikarijah, Muhammad Jihadi, Rohmat Dwi Jatmiko, in entitled "The role of green supply chain management practices on environmental performance: A case of Indonesian small and medium enterprises". That regulation government play role important in influence practice chain supply green among Indonesian SMEs.
3. Novitasari, M., & Agustia, D. in title "Green supply chain management and firm performance: the mediating effect of green innovation". That Green recycling, green warehousing and green construction practices are very important For implemented, because can improve the company image construction as responsible company answer to environment.
4. Sugandini, D., Muafi, M., Susilowati, C., Siswanti, Y., & Syafri, W. " Green supply chain management and green marketing strategy on green purchase intention: SMEs cases". That with implementing GSCM can increase performance organization in context marketing green and business strategy.
5. Hafidh Munawir, daughter of Rona Mabrukah, Suranto. In the title "Analysis of green supply chain management performance with green supply chain operation reference at the batik enterprise". That GSCM performance is influential to results production and satisfaction consumer.
6. Mochamad Agung Wibowo, Naniek Utami Handayani, Anita Mustikasari. In the title "Factors for implementing green supply chain management in the construction industry". That For cultivate and improve performance project construction must Study GSCM concept.
7. Sultan Shaummil Faiq, Muhamad Rizal, Rusdin Tahir, in title " Management operations of multinational companies ". That management operational required For give birth to innovation new and change towards more OK, without forget impact to environment around from all over Company activities.



8. Larashati., et.al ., "Green Supply-Chain Management (GSCM) is a concept that integrates environmental factors into traditional SCM, starting from the design process to management of products after their service life." That Practice green recycling, green warehousing, and green construction as part from GSCM is very relevant for implemented, because can improve the company image construction as responsible company answer to environment.
9. Mohamad Rizal P, Mia Wimala, Anton Soekiman, in title "Approach Holistic in Identifying Obstacles to Implementing Green Construction in Indonesia". That support party management own very important role. Motivation and commitment self is key for bring change in behavior.
10. I. Putu Artama Wiguna, Farida Rachmawati, M. Arif Rohman, Larashati B'tari Setyaning, in entitled "A Framework for Green Supply Chain Management in the Construction Sector: A Case Study in Indonesia", that Framework nice work can connect benchmarking concept with application practical Because framework the can guide organization in adopt and implement benchmarking activities more systematic, comprehensive and precise time.
11. Mohamad Irhas Effendi, Hendro Widjanarko, Dyah sugandini, in entitled "Green Supply Chain Integration and Technology Innovation Performance in SMEs: A Case Study in Indonesia". That the Company is also encouraged for maintain and improve integration chain supply friendly environment and sharing knowledge chain more supply Good.
12. Ilyas Masudin, Tri Wastono & Fien Zulfikarijah, in entitled "The effect of managerial intention and initiative green supply chain management adoption in Indonesian manufacturing performance". That Study was conducted in the industry Indonesian manufacturing shows connection between intention, behavior initiative and trust to performance GSCM intertwined in various method.
13. Ruben Wahyu Santoso, Hotlan Siagian, Zeplin Jiwa Husada Tarigan, and Ferry Jie. In the title "Assessing the Benefits of Adopting ERP Technology and Practicing Green Supply Chain Management toward Operational Performance: An Evidence from Indonesia". That important For explore role mediation practice chain supply friendly environment to influence ERP adoption towards performance operational.
14. Kittisak Jermstittiparsert, Parinya Siriattakul, Samanan Wattanapongphasuk in entitled "Determining the Environmental Performance of Indonesian SMEs influenced by Green Supply Chain Practices with Moderating Role of Green HR Practices". that the Environmental Performance of Indonesian SMEs is influenced by Green Supply Chain Practices with a Moderate Role from Green HR Practices.
15. Ilyas Masudin in title "A Literature Review on Green Supply Chain Management Adoption Drivers". That Most researcher agree that implementation of GSCM has an impact positive to performance company. Important For dig factors pusher in adopting GSCM, especially in the fourth aspect.
16. Maya Novitasari, Ali Saleh Alshebami, M. Agus Sudrajat, in entitled "The Role of Green Supply Chain Management in Predicting Indonesian Firms' Performance: Competitive Advantage and Board Size Influence". That superiority competitive can created If managerial strengthen implementation of GSCM within the Company.
17. Chairit Thongrawd, Pipat Pichetsiraprapa, Narintorn Somthong, Kittiampol Sudprasert in entitled "The Mediating Role of Operational and Environmental Performance in the Relationship between Green Supply Chain Management and Financial Performance". That Management chain supply green (GSCM) consists from inter & intra- organizational,

downstream and upstream SC management, using purposeful external and internal GSCM practices For reduce impact environment in a way the whole that arises from flux reverse and forward.

18. Amrie Firmansyah, Resi Ariyasa Qadri, Zef Arfiansyah, in entitled "The green supply chain and sustainability performance in emerging countries". That GSCM covers seven dimensions: purchase friendly environment, production friendly environment, distribution friendly environment, packaging friendly environment, management internal environment, marketing friendly environment, and education friendly environment.
19. Agus Purwantoa, Khaerul Fahmia, Irwansyaha, Rastanto Hadinegoro, Add Rochmada, Syahrila and Eva Sulastri, in entitled "The role of green innovation and green supply chain management on the sustainability of the performance of SMEs". That GSCM practices are influential positive EI, GI, GI influence towards EP and finally GI mediates connection between GSCM and EP.
20. Agung Prayudha Hidayat, Husen Santosa Fault, Deep Derry Dardanella title " Implementation of Green Supply Chain Management for Supply Chicken Eggs Using the Fuzzy AHP Method". That criteria main used in egg GSCM practice chicken that is support management peak in apply activity operational chain supply that is through environmental programs.

That from application the concept of green supply chain management above there is the term "environmental" or "environment", that the term "environmental" from 20 articles the that is refers to understanding that the concept of green supply chain management is integration from draft environment and concept chain supply to the company. and the term "green" is attached to the word which is stages in chain supply namely Green Purchasing, Green Manufacturing/Materials Management, and Green Distribution/Marketing.

In this GSCM definition too, Prasadja et al. (2021), wear the term "building", Muhammad Akbar et al. (2023) use the term "role", Novitasari et al. (2021) wear the term "innovation", Sugandini D. et al. (2020) and Hafidh Munawir et al. (2022), wear the term "process", Mochamad Agung Wibowo et al. (2018) use the term "implementing", temporary Larashati B'tari Setyaning bring up the term "development". Mohamad Irhas Effendi, Hendro Widjanarko, Dyah sugandini, uses the words "Integration and Innovation". Meanwhile Ilyas and Ruben use the word "adoption".

Terms raised by researchers the if concluded refers to the meaning of "way manage" or set and or something done or built by the company in create capability company in chain supply in effort increase performance economy company in a way period long.

With thereby that the definition of green supply chain management is draft chain supply (supply, manufacturing , distribution until product arrive to consumers), however no forget impact to environment around from all over Company activities.

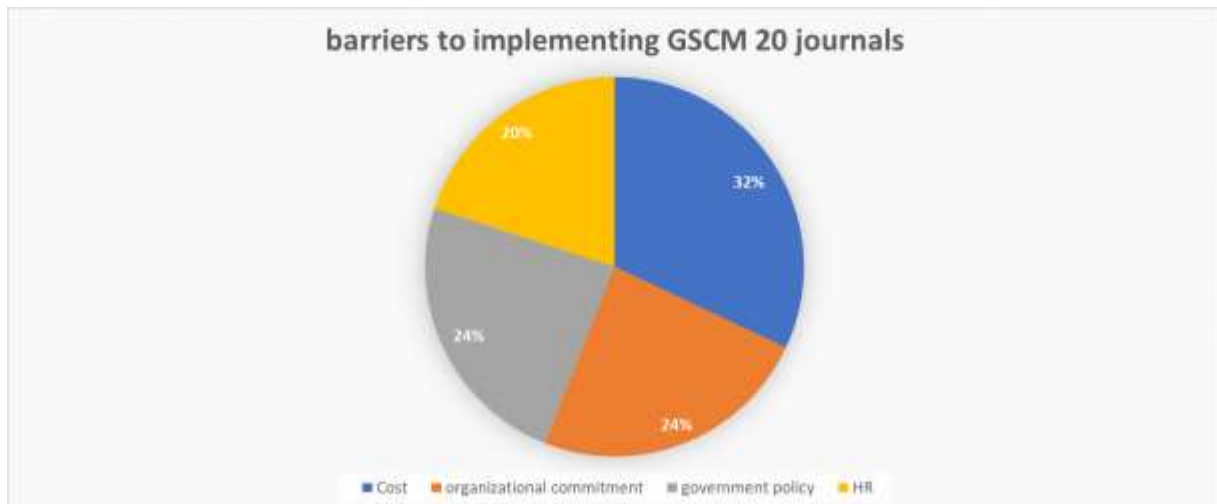
## **OVERVIEW LITERATURE ABOUT OBSTACLE IMPLEMENTATION GREEN SUPPLY CHAIN MANAGEMENT CONCEPT**

For obstacles faced during GSCM implementations are classified in five areas main: outsourcing, technology, knowledge, finance, participation and support (Govindan et al., 2014). and in the review literature that we do has revealed 20 types different obstacles in apply green



supply management practices, namely: no availability bank loans for finance product friendly environmentally, expensive cost transition to system friendly environmentally, expensive disposal ingredients risky and expensive cost friendly environmentally, expensive gather goods used, policies and regulations government.

Analysis Results about obstacle in applying GSCM, we present it in the figure following:



**Figure 1 Percentage obstacle GSCM implementation**

## DISCUSSION

Not yet firm, board of directors/ managers Not yet consistent in in practice, perpetrators interest Not yet aware, lack power experts, lack training and knowledge and others. The summary can seen in the table below This:

**TABLE 2 Barriers GSCM implementation**

NO.	TITLE	OBSTACLE
1	Building green supply chain management in pharmaceutical companies in Indonesia	It's expensive cost transition to system friendly environment and It's expensive collection product used . Prasadja Ricardiantoa, et al
2	The role of green supply chain management practices on environmental performance: A case of Indonesian small and medium enterprises	It's expensive cost friendly environment . Regulation government Not yet firm . Muhammad Akbar Dzikriansyah, et al
3	Green supply chain management and firm performance: the	It's expensive cost disposal ingredients risky . Not available bank loans for finance product friendly environment

	mediating effect of green innovation.	Novitasari, M., & Agustia, D.
4	Green supply chain management and green marketing strategy on green purchase intention: SMEs cases	Policy government not enough adequate , and Lack of awareness about impact environment to business . Sugandini, D., et al
5.	Analysis of green supply chain management performance with green supply chain operation reference at the batik enterprise	Lack of activity training For application product friendly environment Hafidh Munawir, daughter of Rona Mabrukah, Suranto
6	Factors for implementing green supply chain management in the construction industry	Lack of power expert in the field procurement friendly environment Mochamad Agung Wibowo, Naniek Utami Handayani, Anita Mustikasari
7	Management operations of multinational companies	Lack of knowledge about issue environment, Lack awareness about impact environment to business. Sultan Shaummil Faiq, Muhamad Rizal, et al
8	Development Green Construction, Green Recycling and Green Warehousing Activities as Part of Green Supply Chain Management in Construction Projects	Restrictive Company Policy. It's expensive transition going to system friendly environment , and need cost high start  Larashati B'tari Setyaning
9.	Approach Holistic in Identifying Obstacles to Implementing Green Construction in Indonesia	Lack of commitment organization  Mohamad Rizal P, Mia Wimala, Anton Soekiman
10	A Framework for Green Supply Chain Management in the Construction Sector: A Case Study in Indonesia	Study This No enter other GSCM performance as criteria, such as performance operations and logistics. I. Putu Artama Wiguna, Farida Rachmawati, M. Arif Rohman, Larashati B'tari Setyaning
11	Green Supply Chain Integration and Technology Innovation Performance in SMEs: A Case Study in Indonesia	Lack of knowledge chain supply and implementation integration chain supply friendly environment. Mohamad Irhas Effendi, Hendro Widjanarko, Dyah sugandini
12	The effect of managerial intention and initiative green supply chain management adoption in Indonesian manufacturing performance	Lack of initiative organizations and stakeholders interest For adopt gscm into the company performance. Ilyas Masudin, Tri Wastono & Fien Zulfikarijah

13	Assessing the Benefits of Adopting ERP Technology and Practicing Green Supply Chain Management toward Operational Performance: An Evidence from Indonesia	It's expensive cost adopt friendly environment and products friendly environment to performance operational. Ruben Wahyu Santoso, Hotlan Siagian, Zeplin Jiwa Husada Tarigan, Ferry Jie
14	Determining the Environmental Performance of Indonesian SMEs influenced by Green Supply Chain Practices with Moderating Role of Green HR Practices	Lack of internal HR awareness do practice friendly environment. It's expensive friendly logistics costs environment. Kittisak Jermsittiparsert, Parinya Siriattakul, Samanan Wattanapongphasuk
15	A Literature Review on Green Supply Chain Management Adoption Drivers	Practice management chain supply friendly environment has develop in a way progressive along with the more the complex consideration For adopt GSCM.
16	The Role of Green Supply Chain Management in Predicting Indonesian Firms' Performance: Competitive Advantage and Board Size Influence	Culture organization and rules and commitment as a moderating variable showing not enough role in implementing "green" SCM. Maya Novitasari, Ali Saleh Alshebami, M. Agus Sudrajat
17	The Mediating Role of Operational and Environmental Performance in the Relationship between Green Supply Chain Management and Financial Performance	that matter This show permanent SC manager doubtful benefit economic gain from GSCM practices. Chairit Thongrawd, Pipat Pichetsiraprapa, Narintorn Somthong, Kittiampol Sudprasert
18	The green supply chain and sustainability performance in emerging countries	Policy government and socialization as well as Company guidelines are not yet optimal. Amrie Firmansyah, Resi Ariyasa Qadri, Zef Arfiansyah
19	The role of green innovation and green supply chain management on the sustainability of the performance of SMEs	Raw materials / Friendly materials expensive environment. Agus Purwantoa, Khaerul Fahmia, Irwansyaha, Rastanto Hadinegoro, Add Rochmada, Syahrila and Eva Sulastri
20	Implementation of Green Supply Chain Management for Supply Chicken Eggs Using the Fuzzy AHP Method	Government programs , Lack awareness and Friendly material expensive environment (energy, materials chemistry, house gas emissions glass, and waste). Agung Prayudha Hidayat, Husen Santosa Fault, Derry Dardanella

## CONCLUSION

Based on study Green Supply Chain Management literature, from 20 articles the almost everything own the same meaning, viz bring up the term 'way management', then 'stages chain supply' and 'environment'. So that the definition of Green Supply Chain Management can be concluded that is management company in chain supply (supply, manufacturing, distribution so that product until to consumers) who integrate with issues environment, or in a way implicit covers philosophy ecosystem in effort increase performance company in a way period long and sustainable.

Most of the researcher agree that implementation of GSCM has an impact positive to performance company. However in our practices analyze that obstacles that become obstacle green supply chain practices in each company from referenced articles that as much as 32% is caused Because it's expensive costs will be issued by interested parties, starting from cost transition to friendly environment, purchasing product friendly environment, costs disposal waste risky and so on. 24% because policy government that hasn't evenly and also 24% of commitment organizations that have not consistent implementing this green supply chain, and 20 % is caused by inadequate Human Resources trained and have sufficient knowledge cause level awareness Still not enough.

## RESEARCH IMPLICATIONS

Findings from study This own a number of implications, is give insights and materials reference about further green supply chain management research. Understanding to Green supply chain management concepts will be very helpful For recognize very complex aspects inherent in green supply chain management, which will form variables new in study next.

For can minimize impact bad caused from series of business processes industry to environment, really important For apply framework Work GSCM concept and required enhancement obedience will existing regulations set government about plan action national aspect environment live, as well needed source Power skilled and consistent human being apply GSCM concept.

## REFERENCES

- Hafid Munawir. "Analysis of green supply chain management performance with green supply chain operation reference at the batik enterprise". *Economic Annals-XXI*, 187(1-2), 139-145. doi: <https://doi.org/10.21003/ea.V187-14>
- I. Putu Artama Wiguna, Farida Rachmawati, M. Arif Rohman, Larashati B'tari Setyaning, "A Framework for Green Supply Chain Management in the Construction Sector: A Case Study in Indonesia"
- Larashati B'tari Setyaning ."Development Green Construction, Green Recycling and Green Warehousing Activities as Part of Green Supply Chain Management in Projects Construction". *Universe Teknika* Vol. 26, no. 1, 21-27, May 2023 DOI: <https://doi.org/10.18196/st.v26i1.16490>.

- Mochamad Agung Wibowo. “Factors for implementing green supply chain management in the construction industry”. *Journal of Industrial Engineering and Management* (2018)  
DOI: 10.3926/jiem.2637
- Muhammad Akbar Dzikriansyah., et.al. “The role of green supply chain management practice on environmental performance: a case of Indonesian small and medium enterprises”. *Cleaner Logistics and Supply Chain*. (6) (2023)100100. By Elsevier
- Mohamad Rizal P, Mia Wimala, Anton Soekiman . " Approach Holistic in Identifying Obstacles to Implementing Green Construction in Indonesia” . *Institute Online Journal National Technology no.2 vol.5* (2019).
- Novitasari , et.al. Green supply chain management and firm performance: the mediating effect of green innovation. *Journal of Industrial Engineering and Management* (2021)
- Nanik Utami Handayani. “Factors for implementing green supply chain management in the construction industry”. *Journal of Industrial Engineering and Management* (2018)
- Prasadja Ricardianto., et.al. “Building green supply chain management in pharmaceutical companies in Indonesia.” *Uncertain Supply Chain Management*. 10 (2022) 453–462
- Rogers & Susan. “Operations Management in the supply chain”. Decision and cases, eighth edition. ISBN 978-1-260-36810-9 (bound edition)
- Sugandini. “Green supply chain management and green marketing strategy on green purchase intention: SMEs cases”. *Journal of Industrial Engineering and Management* (2020)
- Sultan Shaummil Faiq, Muhamad Rizal, Rusdin Tahir. " Analysis Management operations of multinational companies ” *Journal Management* (2021)
- Seuring , S. and Muller , M. ( 2008 ), “ From a literature review to a conceptual framework for sustainable supply chain management ”, *Journal of Cleaner Production* , Vol. 16 No. 15, pp. 1699-710.