ESIC2024 Posted: 16/04/2024 DOI: 10.70082/esic/8.1.047

Sustainable Supply Chain Management in Enhancing Circular Economy Performance: Study Case in Indonesia

Nursery Alfaridi Nasution, Idris Gautama So, Asnan Furinto, Rini Setiowati

Management Department, BINUS Business School Doctor of Research in Management,
Bina Nusantara University, Indonesia

Abstract

The concept of circular economy entails the reduction of resource inputs and the reclamation of waste in order to tackle the environmental, economic, and social challenges that sprang from the persistence of the linear economic model. Implementing a circular economy certainly has its own challenges. One of which is to find a sustainable supply chain. Sustainable supply chains are designed and man¬aged by combining practices responsible for the environment and society throughout the life cycle of a product or service. This is possible to achieve through good collaboration between supply chains and having a supply chain design with a sustainable concept. Thus, this research discusses the effect of sustainable supply chain management on circular economy performance mediated by circular economy capability. The objects of this research are 82 courier service companies on Java Island. This research employed quantitative design. The data collection method involved distributing online questionnaires to middle – top managers as respondents. The results show that sustainable supply chain management has a positive effect on environmental performance, then sustainable supply chain management has a positive effect on financial performance. Furthermore, circular economy capability partially mediates the correlation between sustainable supply chain management and environmental performance, and partially mediates the correlation between sustainable supply chain management and financial performance. This research conveys the direction of further research in the same re¬search context.

Keywords: circular economy capability; circular economy performance; sustainable supply chain management.

In recent years, global warming issue has drawn great attention. Not only does it impact the environment, but it also affects various economic sectors. As a result, it may spoil raw materials, hamper the distribution system, and damage the supply chain and value chain in the company. One of the causes of global warming is the increasing amount of unmanaged waste and exhaust emissions. Currently there is an increase in the amount of unmanaged waste, which is the result of the increasing number of deliveries. Moreover, it has a negative impact on the environment, starting from plastic, cardboard, and box waste. In addition, there is also an increase in the amount of emissions resulting from modes of transportation that contribute to the distribution process. The increase in waste was 96% [1]. This was also strengthened by the

McKinsey Global Institute in Katadata, in which it states that 37% of plastic waste in Indonesia consists of shipping sacks, shopping bags, and tapes [2].

Managing waste and emissions can be done through more efficient use of resources and mini¬mizing the amount of waste that will be produced. More ways to manage them include regenerating resources and waste, emissions, and energy leaks by slowing down, closing and narrowing the cycle of materials and energy. This is commonly referred to as cradle to cradle ,or laws of ecology, or looped and performance economy, or regenerative design, or industrial ecology, or biomimicry, or the blue economy [3]–[5]. It is closely related to planning, coordination, execution and collaboration and search opportunities for the use of renewable resources[6] in which it refers to a concept of circular economy.

The essence of circular economy is restorative and regenerative, meaning that circular economy minimizes the amount of input that comes in and maximizes output that can be processed and reused. In order to achieve the objective of circular economy, the role of a sustainable supply chain is very important, because when a company has a good sustainable supply chain, the company's environmen¬tal performance will be good as well [7]. However, to implement sustainable supply chain management, it requires the role of managers [8], who have in-depth knowledge regarding the circular economy, so that they can improve the performance of the circular economy. Apart from that, the supply chain is closely related to collaboration between parties. There¬fore, to achieve circular economic performance, internal and external collaboration should be orga¬nized in such a way that it is integrated with each other [8], [9].

Furthermore, companies also need to have the capability to implement the circular economy, in terms of implementing reuse, reduce and recycle. The company's ability to exploit resources properly will have a good impact on the company's performance, especially on the performance of the circular economy. Capabilities can be developed; companies are expected to have innovations for circular economy implementation so that implementation can be carried out throughout the supply chain. Unfortunately, there has not been much empirical research on circular economy performance. This research is conducted to fill the gap.

Literature Review and Hypotheses

Supply chain management is very complex, managing the movement of products from upstream to downstream, ensuring that products reach consumers in a timely manner so that consumers are satisfied. Nowadays, corporations are increasingly sourcing their supplies from global markets. Glob¬alization of the supply chain has compelled firms to seek more efficient methods to manage the move¬ment of materials in and out of the organization. An essential factor in achieving this coordination is having a focus on developing stronger relationships with suppliers. Moreover, firms, especially, and supply chains, in general, now primarily compete based on time and quality. Delivering a flawless product to customers quickly and consistently is now considered a need for staying competitive in the market, rather than a unique advantage. Customers are wanting things to be consistently delivered faster, precisely on time, and without any damage. Closer coordination with suppliers and distributors is required for each of them. The worldwide focus and heightened competitiveness based on perfor¬mance, along with quickly evolving technology and economic circumstances, all lead to uncertainty in the marketplace. Collaboration in the supply chain has a positive effect on financial performance [7], [10] and also has a positive effect on environmental per¬formance (Hussain & Malik, 2020). In addition, it is necessary to have a supply chain design to fa¬cilitate the integration. However, each company can have a different

supply chain design, depending on the products produced, customer profiles and demographics. By having a good supply chain de¬sign, the company can be more competitive [11]. However, in other research it was found that the design of sustainable supply has a negative effect on financial performance during the implementation of a circular economy [12], which means that if there is a design improvement in the supply chain related to circular economy practices, it does not affect company financial performance. Implementing a circular economy may require more costs initially. As a result, when the company implements it, it may impact on the company's financial performance. However, the good long-term impact can be felt after the comprehensive implementation is carried out.

The previous research used as a reference in this research was related to the effect of sustainable supply chain management on circular economy capability in eco industrial parks in China. The result stated that sustainable supply chain management is an antecedent of circular economy capability [13], [14]. This happens because the eco industrial park has a good supply chain strategy and design which also has a positive impact on circular economy performance. How¬ever, no similar research has been conducted in Indonesia, and the results from other countries re¬search may be different [13]. This research uses the logistics sector as the research object because similar research in the logistics sector only covers about 2.86% [15]–[17]. Therefore, the hypotheses in this research are:

H1: Sustainable supply chain management affects environmental performance.

H2: Sustainable supply chain management affects financial performance.

H3: Sustainable supply chain management affects circular economy capability.

On the other hand, a company's capability to implement the concept depends on the competen¬cies and the resources it has. Both of them will help the company to achieve good performance [18]. In the context of a circular economy, organizations need certain capabilities. They consist of the capability to reduce, reuse and the capability to recycle (3R). 3R is the main principle for the successful implementation of a circular economy. In order to improve circular economy capability, organizations must find suppliers who prioritize environmental aspects and demonstrate green behav¬ior [13] so that they can achieve good circular economy performance. This is in line with previous research findings that state that there is a positive effect between circular economy capability and circular economy performance [13], [19]–[22]. Other research that verifies the correlation between capabilities, but in terms of digital transformation capabilities and their cor¬relation to performance, also finds that these two variables have a positive effect [23]. However, capabilities do not always improve performance. Another previous research exam¬ines the correlation between capability in carrying out digital transformation and its effect on com¬pany performance. It is found that these two variables have a negative correlation, and in fact com¬panies that had capability in digital transformation experienced 60% - 85% experience failure in per¬formance. Thus, further research to discuss the role of circular economy capabilities on circular econ¬omy performance is needed. Therefore, the hypotheses in the research are:

H4: Circular economy capability affects environmental performance.

H5: Circular economy capability affects financial performance.

This research further examines the correlation between circular economy capability as a me¬diating variable between sustainable supply chains and circular economy performance. As a refer¬ence, in a previous research investigation focused on circular economy capability [24]–[26]. The hypothesis development of the circular economy capability as a mediating variable was taken in general by tracing the capability variable in general and its

correlation to performance. Based on previous research it is found that capability partially mediates the correlation between intellectual capital and employee performance as well as the correlation between relational capital and performance. In addition, It also fully mediates the correlation between structural capital and performance [27]. Another research con¬ducted in Korea also finds that marketing capability mediates between customer relationship management and organizational performance [28]. Other research uses capability as a mediating variable [29]–[31]. Meanwhile, in another research capability partially mediates the correlation between alliance experience and performance [32]. In addition, organizational learning capabilities is a mediating variable in the correlation between industry 4.0 adoption and company performance and it is found that organiza¬tional learning capabilities mediate this [33]. This research fills the gap in the previous research on circular economy capability as a mediating variable. The novelty in this research is that the research was conducted at a courier service company. Based on this description, the hy¬potheses in this research are:

H6: Circular economy capability mediates the correlation between sustainable supply chain manage¬ment on environmental performance.

H7: Circular economy capability mediates the correlation between sustainable supply chain manage¬ment on financial performance.

As indicated by the research model in Figure 1, the aim of this study is to ascertain how sustainable supply chain management affects the performance of the circular economy and how capability of the circular economy is influenced as a mediating variable.

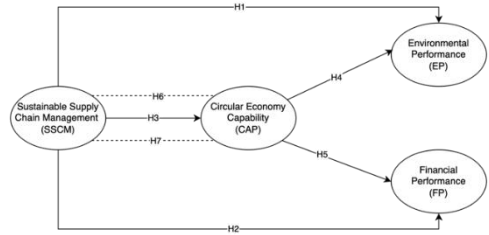

Figure 1 Research Model

Methodology

This research uses descriptive verification approach. It focuses on obtaining the description of tested variables as well as verifying the previous research's findings [34]. This research used courier service companies in Java Island as the objects. For collecting data, this research employed stratified random sampling method. This method is proven to be much better than random sampling method since each important segment within the population is well represented [34], [35]. The minimum number of samples in research is determined by the num¬ber of variables used in that research, in which it should be 10 times of the number of variables. Since the research employed 4 variables, the minimum sample size number is 40 respondents. In this study, there were 82 valid respondents. For most of research, an appropriate size of sample size should be greater than 30 and less than 500 [34]. PLS-SEM was employed to evaluate the data since it aims to predict the theoretical framework. PLS-SEM was employed to analyze the study since it is ex¬ploratory research with the goal of developing earlier theories. As previously said, the population in this study is limited because it is business-to-business research, hence using SEM is recommended [36].

This research used Microsoft Office Form to collect the data in the form of a survey with cross sectional approach. Cross sectional means data collected at a certain time to answer the research question [37]. The questionnaire applied the Likert Scale, with seven levels of assessment

(Lik¬ert). In this research, the range of the score starts from 1 to 7. 1 means strongly disagree while 7 means strongly agree. After the result of the survey was obtained, the author analyzed the findings, and then the author reconfirmed it to the respondents by doing an interview. After that, SMART PLS was used to analyze the data [38].

Result and Findings

An examination of the measurement model was undertaken before hypothesis testing to evaluate the reliability and validity of the constructs. First, reliability is examined. Manifest variable can measure latent variable when the loading factor (LF) value of each manifest variable has a value of > 0.700, and an average variance extracted (AVE) value of > 0.500. Furthermore, the outer model measure¬ment is internally consistent (reliability), which is composite reliability – CR (rho a) with CR value limit of ≥ 0.700.

Based on Table 1, it is seen that the loading factor value of the latent variable of sustainable supply chain management, circular economy capability, environmental performance and financial perfor¬mance produces a value of > 0.700. Furthermore, the AVE value for each latent variable has a value of > 0.500. This means that the manifest variable properly reflects the latent variable being measured. Furthermore, the composite reliability value for each latent variable is >0.700, so it can be concluded that all manifest variables consistently measure their latent variables.

Table 1 Convergent Validity and Reliability

Variables	Code	*Loading Factor*	*AVE*	*CR*
Circular economy capability	KAP1	**0.937**	0.865	0.962
	KAP2	**0.953**		
	KAP3	**0.946**		
	KAP4	**0.883**		
Sustainable Supply Chain	DSN1	**0.877**	0.793	0.977
	DSN2	**0.863**		
	DSN3	**0.884**		
Management	DSN4	**0.905**		
	DSN5	**0.850**		
	DSN6	**0.894**		
	DSN7	**0.904**		
	DSN8	**0.862**		
	KOL1	**0.913**		
	KOL2	**0.920**		
	KOL3	**0.921**		
Financial performance	KK1	**0.864**	0.804	0.954
	KK2	**0.899**		
	KK3	**0.920**		
	KK4	**0.927**		
	KK5	**0.873**		
Environmental performance	KL1	**0.915**	0.880	0.957
	KL2	**0.937**		
	KL3	**0.962**		

Discriminant validity is a measure of a construct that is different from other constructs. Dis¬criminant validity testing uses the Fornell Lacker Criterion (FLC) approach. Based on Table 3, the AVE root value for each construct is greater than the correlation value between variables. In other words, the ratio of the square root value of AVE and the correlation value of the latent variable with its own latent is greater than the correlation value of that latent with other latent variables. For exam¬ple, the SSCM latent variable has an AVE square root of 0.891 > and is greater than the correlation value of the SSCM latent variable with other latent variables.

Table 2 Fornell Lacker Criterion (FLC)

Variable	CAP	EP	FP	SSCM
CAP	**0.930**			
EP	0.909	**0.938**		
FP	0.881	0.880	**0.897**	
SSCM	0.920	0.889	0.883	**0.891**

Measuring inner model does not only apply to testing hypothesis, but it also applies to struc¬tural model evaluation. Structural model evaluation refers to R-Square (R2) value, F-Square-effect size (F2), and PLS-predict predictive ability. Hypothesis testing involves T-test (T-statistic) with boot¬strapping method.

This refers to the two-tail test t-table value of 1.96 and the significance level of 0.05. Furthermore, the t-table value (1.96) is used as the cut off value for accepting or rejecting the hypothesis.

Sustainable supply chain management has a positive effect on environmental performance with t-stats of 2.519 > 1.96 and p-value of 0.012 < 0.05. Next, sustainable supply chain management has a positive effect on financial performance with t-stats of 2.908 > 1.96 and p-value that shows 0.004 < 0.05. Sustainable supply chain management has a positive effect on circular economy capa¬bility with t-stats of 46.921 > 1.96 and p-value of 0.000 < 0.05. Circular economy capability has a positive and significant effect on environmental performance with a t-value of 4.197 > 1.96 and the p-value of 0.000 < 0.05. Furthermore, circular economy capability has a positive effect on financial performance with a t-value of 2.679 > 1.96 and a p-value of 0.008 < 0.05. Table 3 explains in detail the results of the bootstrapping analysis.

Table 3 The Result of Direct Hypothesis Testing

Path	T Stats	P Values	Hypothesis Testing Result
Sustainable supply chain management affects envi-ronmental performance	2.519	0.012	Accepted
Sustainable supply chain management affects financial performance	2.908	0.004	Accepted
Sustainable supply chain management affects circular economy capability	46.921	0.000	Accepted
Circular economy capability affects environmental performance	4.197	0.000	Accepted
Circular economy capability affects financial perfor-mance	2.679	0.008	Accepted

Table 4 presents indirect hypothesis testing result in structural model. The result shows that cir¬cular economy capability (CAP) partially mediates the correlation between sustainable supply chain management and environmental performance with the t-value of 4.166 and p value of 0.000. In addi¬tion, it also partially mediates the correlation between sustainable supply chain management and fi¬nancial performance with the t-value of 2.676 dan p-value of 0.008. The test resulted as partially mediated since both the result of the hypothesis test of the direct correlation between sustainable supply chain management and environmental performance and the result of the hypothesis test of the direct correlation between sustainable supply chain management and financial performance are pos¬itive.

Table 4 Indirect Hypothesis Testing Result

Path	T Values	P Values	Test result
Circular economy capability mediates the correlation between sustainable supply chain management on environmental per-formance	4.166	0.000	Partially mediate
Circular economy capability mediates the correlation between sustainable supply chain management on financial perfor-mance	2.676	0.008	Partially mediate

The next structural model evaluation is the R-Square test result, which shown in table 5. It is the contribution and explanations of the exogenous latent variables to endogenous latent variables at the structural model level. The R-Square assessment criteria in the structural model refer to the theory by (Joseph F. Hair, 2021), which is an R-Square value ≥ 0.75. It means that the exogenous latent variable makes a strong contribution to the endogenous latent

variable at the structural model level. Therefore, it can be concluded that the R-square value in this study belongs to the "strong" category.

Table 5 R-Square

Path	R Square	Criteria
Sustainable supply chain management - Circular economy capability	0.846	Strong
Sustainable supply chain management – Environmental performance	0.844	Strong
Circular economy capability - Environmental performance		
Sustainable supply chain management – Financial performance	0.810	Strong
Circular economy capability - Financial performance		

F-Square is the magnitude of the partial effect of exogenous latent variables on endogenous latent variables [39]. There is a score range in interpreting the F-Square value. The F-Square value of 0.020 – 0.149 means that the effect between variables is weak. An F-Square value of 0.150 – 0.349 means that the effect between variables is moderate and an F-Square value ≥ 0.35 means that the effect between variables is strong. Table 6 provides information that partially, circular economy capability has a moderate effect on environmental performance because the F-square value is 0.347, and then circular economy capability has a moderate effect on financial performance since the F-square value is 0.161. Meanwhile, sustainable supply chain management has a strong effect on circular economy capability because the F-square value is 5.512. Moreover, sustainable supply chain management has a weak effect on environmental performance because the F-square value is 0.116, and finally sustainable supply chain management has a moderate effect on financial performance due to the fact that the F-square value is 0.182.

Table 6 F-Square

Path	F-Square	Notes
Circular economy capability - Environmental performance	0.347	Moderate
Circular economy capability - Financial performance	0.161	Moderate
Sustainable supply chain management - Circular economy capability	5.512	Strong
Sustainable supply chain management – Environmental perfor-mance	0.116	Weak
Sustainable supply chain management – Financial performance	0.182	Moderate

Statistic Upsilon (v), having similarity to F-Square, was used to test Total effect size testing from the indirect correlation. Upsilon (v) value is obtained from:

$v=(\beta 1)^2\times(\beta 2)^2$

$\beta 1$ = Beta coefficient of the direct path of X → Z (mediated)

$\beta 2$ = Beta coefficient of the direct path of X → Y

The Upsilon scoring criteria refer to the F-Square and Rule of Thumb by Cohen, which was mod-ified by [40]. It states that v = 0.175 (strong mediating effect); 0.075 (moderate mediating effect); and 0.01 (weak mediating effect). Based on table 8, it is seen that circular economy capability (CAP) has strong effect on the correlation between sustainable passport chain management and environmental performance, in addition circular economy capability (CAP) has a strong effect on the correlation between sustainable passport chain management and financial performance.

Table 7 Upsilon (v)

Path	Upsilon (*v*)	Note
Sustainable supply chain management – Circular economy capability - Environmental performance	0.099854828	Strong
Sustainable supply chain management - Circular economy capability - Financial performance	0.189824467	Strong

Blindfolding/cross validation testing is used to test the reliability of the structural model with the condition that $Q^2 > 0$. Based on the blindfolding test in table 8, it is shown that the predictive relevance for the circular economy capability, environmental performance and financial performance variables is greater than 0 (zero). Therefore, the structural model is considered reliable.

Table 8 Blindfolding

	Q^2	Note
Circular economy capability	0.725	Reliable
Environmental performance	0.731	Reliable
Financial performance	0,636	Reliable

Discussion

This study examines the impact of sustainable supply chain management on enhancing the efficiency of the circular economy. This study validated the impact of sustainable supply chain management on environmental performance. The result of the calculation shows that a t-value of 2.519 > 1.96 and a p-value of 0.012 < 0.05, so hypothesis 1 (H1) is accepted. Thus, if a courier service company has good sustainable supply chain management, the company's environmental performance will also be good. This refers to a situation where the implementation of sustainable practices in supply chain management makes a positive contribution to environmental performance. Sustainable supply chain management encompasses implementing strategies aimed at incorporating environmen¬tally friendly practices throughout the supply chain, starting from suppliers, factories, distributors, warehouses, to the consumers. The result of this research confirms the result of the previous one which discusses the effect of sustainable supply chain management on environmental performance [7]–[9]. In addition, this research fills the gap in previous research which stated that there is still a few research that discusses sustainable supply chain management [13], specifically in courier service companies. However, the find¬ings in this research differ from the previous one, which was conducted in the furniture industry in Indonesia, states that there is a negative effect between supply chain design on circular economy performance [10].

Environmentally friendly sustainable practices that can be applied to improve environmental performance include optimizing the use of energy and resources through the use of renewable energy and resources and minimizing waste thereby reducing negative impacts on the environment. Moreo¬ver, companies should have a sustainable strategy in the supply chain. One of the strategies is by reducing greenhouse gas emissions, which can be done by starting to use sustainable transportation modes, thus minimizing the use of fossil fuels. Another feasible strategy is to find suppliers with a lower carbon trace. This is important to do, considering that courier service companies use transpor¬tation modes a lot during their service.

Furthermore, the companies should prioritize the use of sustainably managed raw materials. Therefore, it is necessary to build a sustainable partnership with suppliers by involving them in envi¬ronmentally friendly practices that will have an impact on increasing environmental performance throughout the supply chain. For example, by ensuring that all parties in the

supply chain have strat¬egies for effective recycling and waste management, so that they can help reducing the impact of waste on the environment. After that, companies need to monitor and report environmental perfor-mance to maintain transparency and accountability, thus encouraging continuous improvement. How¬ever, it should be noted that the companies need supports from the top management to ensure a suc¬cessful implementation, so this should be included in company's business plans [8]. Therefore, not only can a sustainable supply chain help organizations fulfill social and environmental responsibilities, but also provide long-term benefits in terms of operational efficiency, brand reputa¬tion, and overall environmental performance.

Moreover, this study examines the impact of sustainable supply chain management on financial performance, and shows that sustainable supply chain management has a positive effect on financial performance with a t-value of 2.908 > 1.96 and a p-value of 0.004 < 0.05, so hypothesis 2 (H2) is accepted. This research fills the gap in previous research regarding the correlation between sustainable supply chain management and financial performance [7]. To im¬prove the relationship, operational efficiency and waste reduction should be taken into account since it could reduce production and waste management costs. This might as well contribute to financial performance by increasing profit margins. Reducing waste in courier service companies can be car¬ried out by reducing the use of materials that are difficult to recycle/take a long time to recycle, such as plastic used for packaging, and by prioritizing the use of renewable materials and raw materials. However, this also requires top-level management's support to succeed [8]. In addition, a fairly large initial investment may be required for complete implementation, but the cost spent shall be retained the next few years when all parties in the supply chain totally implement it.

Next hypothesis states that sustainable supply chain management has a positive effect on cir¬cular economy capability, and the result shows that sustainable supply chain management has a pos¬itive effect on circular economy capability with a t-value of 46.921 > 1.96 and a p-value of 0.000 < 0.05, which means that hypothesis 3 (H3) is accepted. People, profit, and planet are pillars of sustain¬ability. By having a good sustainable supply chain management strategy, companies have the poten¬tial to increase their profits [41], [42]. Successful implemen-tation of circular economy may result on a company having good reverse logistics, good product design, an integrated business model, and the increase of awareness of stakeholders [43]. One of the indicators in sustainable supply chain management success is that com¬panies have a business plan and procedures to reuse, reduce the use of materials and raw materials, and recycling. When companies are able to implement them, that will impact on circular economy capability. The capabilities that can improve the circular economy may consist of having initiatives in reusing materials used for the packaging process, reusing cleaning tools, and being committed to making efficient use of raw materials. The courier service companies that have not implemented a circular economy at all, further development is needed to have environmentally friendly products which will affect the capability to implement a circular economy [21].

Hypothesis 4 (H4) is that circular economy capability has a positive effect on environmental performance, and this study shows that circular economy capability has a positive effect on environ¬mental performance with a t-value of 4.197 > 1.96 and a p-value of 0.000 < 0.05, so hypothesis 4 (H4) is accepted. One indicator of circular economy capability is the company's ability to efficiently use raw materials, fuel, and also implement 3R (reuse, reduce and recycle). In other words, when a company successfully implements this, it will contribute to the environments since the efficient use of raw

materials, fuel and environmentally friendly materials will have a good impact on the envi¬ronment. Integration in increasing circular economy capability can support companies to achieve en¬vironmental performance, and in terms of long-term benefits in the future it may also improve finan¬cial performance. Although in the initial phase the transition to more environmentally friendly raw materials requires large costs, in the future it might have immensely-rewarding effect on financial performance [19]. Increasing circular economy capability can be supported by having an integrated system so that it can ensure that the raw materials and materials used are environmen-tally friendly [23].

Hypothesis 5 (H5) on this study is circular economy capability has a positive effect on finan¬cial performance, and the result shows that circular economy capability has a positive effect on fi¬nancial performance with a t-value of 2.679 > 1.96 and a p-value of 0.008 < 0.05, so hypothesis 5 (H5) is accepted. In the initial stages of implementation, it requires large costs to improve capabilities. Moreover, companies need to establish the standards for selecting vendors and raw materials and inform all stakeholders that the company is implementing a circular economy. However, financial performance can increase in the future. Support from all stakeholders is also necessary for this im-plementation. The implementation of a circular economy is not only carried out by employees, but also all parties that are part of the supply chain. Should all of those be done properly, circular economy capability will improve, and implementation will be easier. Future research can look at changes in financial elements by comparing financial statements before and after the circular economy was implemented, in order to acquire a true view of the situation.

In this research, circular economy capability is a mediator variable. In addition, there are two mediation hypotheses. Hypothesis 6 (H6) states circular economy capability mediates the correlation between sustainable supply chain management and environmental performance, and it is found that circular economy capability partially mediates the correlation between sustainable supply chain man¬agement and environmental performance. Thus, sustainable supply chain management has a positive effect on environmental performance both directly and through the mediating variable, which is cir¬cular economy capability. In this case, companies still need to have a good sustainable supply chain and good circular economy capability in order to achieve good environmental performance.

Hypothesis 7 (H7) states that circular economy capability mediates the correlation between sustainable supply chain management and financial performance. The result shows that circular econ¬omy capability partially mediates the correlation between sustainable supply chain management and financial performance. Partial mediation means that the effect of the exogenous variable on the en¬dogenous variable is positive either through the mediating variable or by directly. Thus, sustainable supply chain management has a positive effect on financial performance both directly and through the mediating variable, which is circular economy capability. In this case, companies still need to have a good sustainable supply chain and good circular economy capability in order to achieve good financial performance.

Conclusion

The research question focuses on the elements affecting the circular economy's performance, spe¬cifically examining how sustainable supply chain management impacts the circular economy's per¬formance. This research confirms that there is a positive effect between sustainable supply chain management on environmental performance (H1 is accepted). Next, there is a positive effect between sustainable supply chain management on financial performance (H2 is accepted).

Moreover, it is also confirmed that there is a positive effect between sustainable supply chain management on circular economy capability (H3 is accepted). As for H4, it is also accepted since there is a positive effect between circular economy capability on environmental performance. In addition, it is also confirmed that there is a positive effect between circular economy capability on financial performance (H5 is accepted). H6 is also accepted since circular economy capability mediates sustainable supply chain management and environmental performance, and it is a partial mediation. Finally, circular economy capability mediates sustainable supply chain management on financial performance (H7 is accepted), and the mediation is partial as well.

Courier service companies should apply sustainable supply chain management. This could start from collaboration between supply chains, selection of supply chain providers that comply with en¬vironmentally friendly criteria and practices. Furthermore, companies need to evaluate the parties involved in the supply chain in terms of the implementation of a circular economy. Companies also need to consider obtaining ISO 14001 certificate regarding Environmental Management Systems and recommend all parties in the supply chain to obtain it as well.

The impact of global warming is widely known to the public. Therefore, when companies try to reduce it by implementing a circular economy, through the use of environmentally friendly raw ma¬terials, renewable energy, and implementing the 3R principle (reuse, reduce and recycle), courier service companies need to ensure that customers are well informed, so that customers know which side the company is on. Thus, further research needs to discuss aspects of environmental concern from the customer side that focuses on company performance. In addition, further research that dis¬cusses other factors that affect circular economy performance, such as the effect of digitalization on circular economy performance is also required. Finally, further researchers can also consider similar research, but it should be on different objects, industries, or demographics.

WORKS CITED

LIPI, "Peningkatan Sampah Plastik dari Belanja Online dan Delivery Selama PSBB," 2020.

Katadata, "Bahaya Lingkungan di Balik Maraknya Belanja Online," 2021. [Online]. Available: https://katadata.co.id/ariayudhistira/analisisdata/6143540c50b02/bahaya-lingkungan-di-balik-maraknya-belanja-online

M. Geissdoerfer, P. Savaget, N. M. P. Bocken, and E. J. Hultink, "The Circular Economy – A new sustainability paradigm?," J. Clean. Prod., vol. 143, pp. 757–768, 2017, doi: 10.1016/j.jclepro.2016.12.048.

W. R. Stahel, "The circular economy," Nature, vol. 531, no. 7595, pp. 435–438, 2016, doi: 10.1038/531435a.

N. A. S. Nasution and V. Utami Tjhin, "Circular Economy and Product-Service Systems in Customer Perspective: a Systematic Literature Review," Adv. Transp. Logist. Res., vol. 3, no. 0, pp. 820–827, 2020, doi: https://doi.org/10.25292/atlr.v3i0.344.

M. Saroha, D. Garg, and S. Luthra, "Key Issues and Challenges in Circular Supply Chain Management Implementation- A SystematicReview," Int. J. Appl. Eng. Res., vol. 13, no. 9, pp. 91–104, 2018.

C. Gimenez and V. Sierra, "Sustainable Supply Chains: Governance Mechanisms to Greening Suppliers," J. Bus. Ethics, vol. 116, no. 1, pp. 189–203, 2013, doi: 10.1007/s10551-012-1458-4.

Y. Qu, Y. Liu, R. R. Nayak, and M. Li, "Sustainable development of eco-industrial parks in China: Effects of managers' environmental awareness on the relationships between practice and performance," J. Clean. Prod., vol. 87, no. 1, pp. 328–338, 2015, doi: 10.1016/j.jclepro.2014.09.015.

M. Hussain and M. Malik, "Organizational enablers for circular economy in the context of sustainable supply chain management," J. Clean. Prod., vol. 256, 2020, doi: 10.1016/j.jclepro.2020.120375.
A. Susanty, B. Tjahjono, and R. E. Sulistyani, "An investigation into circular economy practices in the traditional wooden furniture industry," Prod. Plan. Control, vol. 0, no. 0, pp. 1–13, 2020, doi: 10.1080/09537287.2019.1707322.
T. Calzolari, A. Genovese, and A. Brint, "The adoption of circular economy practices in supply chains – An assessment of European Multi-National Enterprises," J. Clean. Prod., vol. 312, no. May, p. 127616, 2021, doi: 10.1016/j.jclepro.2021.127616.
Q. Zhu, J. Sarkis, and K. hung Lai, "Institutional-based antecedents and performance outcomes of internal and external green supply chain management practices," J. Purch. Supply Manag., vol. 19, no. 2, pp. 106–117, 2013, doi: 10.1016/j.pursup.2012.12.001.
H. Zeng, X. Chen, X. Xiao, and Z. Zhou, "Institutional pressures, sustainable supply chain management, and circular economy capability: Empirical evidence from Chinese eco-industrial park firms," J. Clean. Prod., vol. 155, pp. 54–65, 2017, doi: 10.1016/j.jclepro.2016.10.093.
Y. Zhang, H. Zheng, and B. D. Fath, "Ecological network analysis of an industrial symbiosis system: A case study of the Shandong Lubei eco-industrial park," Ecol. Modell., vol. 306, pp. 174–184, 2015, doi: 10.1016/j.ecolmodel.2014.05.005.
M. Farooque, A. Zhang, and Y. Liu, "Barriers to circular food supply chains in China," Supply Chain Manag., vol. 24, no. 5, pp. 677–696, 2019, doi: 10.1108/SCM-10-2018-0345.
G. Heyes, M. Sharmina, J. M. F. Mendoza, A. Gallego-Schmid, and A. Azapagic, "Developing and implementing circular economy business models in service-oriented technology companies," J. Clean. Prod., vol. 177, pp. 621–632, 2018, doi: 10.1016/j.jclepro.2017.12.168.
Q. Zhu, Y. Geng, and K. hung Lai, "Circular economy practices among Chinese manufacturers varying in environmental-oriented supply chain cooperation and the performance implications," J. Environ. Manage., vol. 91, no. 6, pp. 1324–1331, 2010, doi: 10.1016/j.jenvman.2010.02.013.
S. Hart, "A Natural-Resources Based View of the Firm," Acad. Manag. Rev., vol. 51, no. 3, pp. 49–51, 1995.
S. Bag, P. Dhamija, D. J. Bryde, and R. K. Singh, "Effect of eco-innovation on green supply chain management, circular economy capability, and performance of small and medium enterprises," J. Bus. Res., vol. 141, no. December 2021, pp. 60–72, 2022, doi: 10.1016/j.jbusres.2021.12.011.
M. Del Giudice, R. Chierici, A. Mazzucchelli, and F. Fiano, "Supply chain management in the era of circular economy: the moderating effect of big data," Int. J. Logist. Manag., vol. 32, no. 2, pp. 337–356, 2020, doi: 10.1108/IJLM-03-2020-0119.
J. C. Fernandez de Arroyabe, N. Arranz, M. Schumann, and M. F. Arroyabe, "The development of CE business models in firms: The role of circular economy capabilities," Technovation, vol. 106, no. February, p. 102292, 2021, doi: 10.1016/j.technovation.2021.102292.
Q. Zhu, J. Cordeiro, and J. Sarkis, "Institutional pressures, dynamic capabilities and environmental management systems: Investigating the ISO 9000 - Environmental management system implementation linkage," J. Environ. Manage., vol. 114, pp. 232–242, 2013, doi: 10.1016/j.jenvman.2012.10.006.
T. T. Sousa-Zomer, A. Neely, and V. Martinez, "Digital transforming capability and performance: a microfoundational perspective," Int. J. Oper. Prod. Manag., vol. 40, no. 7–8, pp. 1095–1128, 2020, doi: 10.1108/IJOPM-06-2019-0444.
S. Bag, J. H. C. Pretorius, S. Gupta, and Y. K. Dwivedi, "Role of institutional pressures and resources in the adoption of big data analytics powered artificial intelligence, sustainable manufacturing practices and circular economy capabilities," Technol. Forecast. Soc. Change, vol. 163, no. May 2020, p. 120420, 2021, doi: 10.1016/j.techfore.2020.120420.
S. Bag and J. H. C. Pretorius, "Relationships between industry 4.0, sustainable manufacturing and circular economy: proposal of a research framework," Int. J. Organ. Anal., 2020, doi: 10.1108/IJOA-04-2020-2120.
X. Xiao and H. Zeng, "Sustainable supply chain management and circular economy capability: Based on the perspective of institutional pressure," Xitong Gongcheng Lilun yu Shijian/System Eng. Theory Pract., vol. 37, pp. 1793–1804, Jul. 2017, doi: 10.12011/1000-6788(2017)07-1793-12.
L. C. Hsu and C. H. Wang, "Clarifying the Effect of Intellectual Capital on Performance: The Mediating Role of Dynamic Capability," Br. J. Manag., vol. 23, no. 2, pp. 179–205, 2012, doi: 10.1111/j.1467-8551.2010.00718.x.

W. Chang, J. E. Park, and S. Chaiy, “How does CRM technology transform into organizational performance? A mediating role of marketing capability,” J. Bus. Res., vol. 63, no. 8, pp. 849–855, 2010, doi: 10.1016/j.jbusres.2009.07.003.
N. Cao, J. Wang, Y. Wang, and L. Yu, “Towards Enterprise Sustainable Innovation Process: Through Boundary-Spanning Search and Capability Reconfiguration,” Processes, vol. 9, no. 11, pp. 1–16, 2021, doi: 10.3390/PR9112092.
P. Hu, Y. Wang, T. Feng, and Y. Duan, “Innovative search, capability reconfiguration and firm innovation performance in the process of technological leapfrogging,” Chinese Manag. Stud., vol. 15, no. 5, pp. 961–984, 2021, doi: 10.1108/CMS-02-2020-0051.
S. Singh, “How market orientation and outsourcing create capability and impact business performance,” Thunderbird Int. Bus. Rev., vol. 51, no. 5, pp. 457–471, 2009, doi: 10.1002/tie.20283.
K. H. Heimeriks and G. Duysters, “Alliance capability as a mediator between experience and alliance performance: An empirical investigation into the alliance capability development process,” J. Manag. Stud., vol. 44, no. 1, pp. 25–49, 2007, doi: 10.1111/j.1467-6486.2006.00639.x.
G. L. Tortorella, A. Mac, C. Vergara, J. A. Garza-reyes, and R. Sawhney, “Organizational learning paths based upon Industry 4.0 adoption: an empirical study with Brazilian manufacturers,” Int. J. Prod. Econ., 2019, doi: 10.1016/j.ijpe.2019.06.023.
U. Sekaran and R. Bougie, Research Methods for Business, Seventh. United Kingdom: John Wiley & Sons Ltd, 2016. doi: 10.1017/CBO9781107415324.004.
D. R. Cooper and P. S. Schindler, Business Research Methods. 2017.
J. F. Hair, J. J. Risher, M. Sarstedt, and C. M. Ringle, “When to use and how to report the results of PLS-SEM,” Eur. Bus. Rev., vol. 31, no. 1, pp. 2–24, Jan. 2019, doi: 10.1108/EBR-11-2018-0203.
D. R. Cooper and P. S. Schindler, Business research methods, 12th ed. Newyork: McGraw-Hill Irwin, 2014.
J. F. et. a. Hair, A Primer on Partial Least Squares Structural Equation Modeling, 2nd Editio. Los Angeles: SAGE Publications, Inc., 2017. doi: 10.1016/j.lrp.2013.01.002.
J. . G. T. M. H. C. M. R. M. S. Joseph F. Hair, A primer on partial least squares structural equation modeling (PLS-SEM)-Third Edition. 2021.
G. Shmueli et al., “Predictive model assessment in PLS-SEM: guidelines for using PLSpredict,” Eur. J. Mark., vol. 53, no. 11, pp. 2322–2347, 2019, doi: 10.1108/EJM-02-2019-0189.
C. R. Carter and D. S. Rogers, “A framework of sustainable supply chain management: Moving toward new theory,” Int. J. Phys. Distrib. Logist. Manag., vol. 38, no. 5, pp. 360–387, 2008, doi: 10.1108/09600030810882816.
S. Bag, G. Yadav, P. Dhamija, and K. K. Kataria, “Key resources for industry 4.0 adoption and its effect on sustainable production and circular economy: An empirical study,” J. Clean. Prod., vol. 281, p. 125233, 2021, doi: 10.1016/j.jclepro.2020.125233.
L. Ambarwati and E. Rusmiati, “Pertimbangan variabel kesadaran stakeholder pada tingkat pengembalian produk dalam kerangka kerja sistem dinamik untuk rantai pasok terbalik terintegrasi,” J. Teknol. dan Manaj., vol. 20, no. 1, pp. 1–8, 2022, doi: 10.52330/jtm.v20i1.36.