Improving Environmental Performance by Implementing the Activities of Supply Chain

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Abstract- The objective of the ongoing study is to analyze the influence of cooperation with the customer, green purchasing and investment recovery on the environmental performance of the manufacturing companies of Bandung city Indonesia. The secondary aim of the current article is to examine the mediating role of supply chain management among the links of cooperation with the customer, green purchasing, investment recovery and environmental performance of the manufacturing companies of Bandung city Indonesia. The data has been obtained from the employees of manufacturing companies by using questionnaires while this data has been analyzed by using smart-PLS. The results indicated that green purchasing and investment recovery have a positive impact on the environmental performance of the manufacturing companies of Bandung city Indonesia. The results also exposed that supply chain management positively mediated among the links of cooperation with the customer, green purchasing, investment recovery and environmental performance. These findings are suitable for upcoming studies along with regulators in term of further study and develop the policies related to the supply chain and environmental performance.

Keywords; Cooperation with the customer, Supply chain management, Green purchasing, Environmental performance

1. Background

For the improvement of the firm's performance and sustainable development, the implementation of various elements could enhance the levels of significance. Supply chain activities have inserted eminence toward the significant implications of improvement measures for performance and development. The green supply chain management has become a rising topic in the past few decades where the numerous endeavors are used for the management of logistics and administrations [13]. The global economy has expanded with eminent elements where the focus on revenue and yield has certainly growth rather than the element of services and products. Usually, every company is striving for the rise of profits and significant yield values for its sustainable performance [30]. Generally, the statement about sun and earth is depicted where the significance of ozone layer has some

eminence which is protecting the earth from various scenarios; therefore, the implementation of green supply chain management has been countered as protecting measure [8]. The numerous consequences occurred with the development of environmental behaviors in the business where the behaviors are the most significant element for a sustainable environment. The elements of social sustainability and eco-friendly has caught much importance in the management of companies whereas systems of the supply chain also insert some dominant measure along with the efficacy of long term benefits [2]. The dominant integration of supply chain has attained much attention by the global world which is consistently elaborated as the mean of establishing sustainable environment among the networks of organizations [32]. With the emergence of market-based economies, some mechanisms proficiently enacted for the allocation of various resources into the businesses not only for the enhancement of performance but also for the sustainable environments.

The pressures of environments are highlighted by the variant mechanisms where the sustainable advantages are inserted with eminent means of covering the variant scenarios [29]. The depiction of various strategies that are inserted in economies has lasted the effects from which many companies have attained the gains [9]. Therefore, the monetary edge for the firms are dominant which usually influence the performance of firms; therefore, where the existence of monetary edge prevails, the edge of competitiveness also prevails. It is dominant to have a link of companies with their customers not only for the profits but also for the sustainability advantage in competitive markets [14]. Cooperation with customers helps various companies to take advantage of minor variation in products which could help companies to retain their competitive advantage. The role of positive purchasing has enabled the doors for companies to enhance their profits while many disasters prevail in the natural environment [17]. The recovery procedures of companies are dependent on the ways where companies have made investments and their ultimate means prevail on the products rendering profits [11]. Companies usually enjoy

all the benefits that are to be obtained through the means of employing various strategies into markets; therefore, the significance of aim induces major reasons on which companies usually attain sustainability [31]. Management that prevails in the companies denoting the friendly environment of the practices of the supply chain usually provides various measures of business to improve the sustainable environments of business [4]. The elements of sustainability and firm performance involve various measures where the dominance of cost-effectiveness and efficiency of operations are countered as eminent one which influences the overall benefits of firms.

Some influences render positive impacts which denote the factor as improvement tools while some are depicted as the negative elements which do influences the sustainable efforts with the firm performance [3]. The progressiveness of green supply chain practices endorses various measures toward the improvement of sustainable efforts with the eminent performance of firms [19]. Although, many factors also influence the measurement tools which prevail in the sustainability of firms and firm performance the effective strategies put enormous measures upon them and pressure them to uphold the influences [1]. Some friendly environment strategies that are adopted by the academia involve the systems of information, management of logistics and purchasing where the environments are well integrated with the company's structure. Cooperation with the customer usually influences the environmental performance whereas the dominance of green purchasing is also dominant for the performance measures [26]. The implications of investment recovery help firms to enable sustainable advantages and also strives variant to enhance environmental performance. The significance of all factors have eminent contribution toward the environmental performance but the significance of the supply chain also helps to insert role among the relationship between them which strive for the performance of the environment. Some generic dimensions of social sustainability for the companies involve various measures through which the performance of companies are measured; therefore, the significance of various supply chain practices enables the achievement of advantages [33]. Green supply chain management usually enables the era to firms in various ways to achieve the objectives with a vast variety of elements. Therefore, the eminence of sustainability and firm performance are interlinked with each other and could be performed effectively through the implication of the green supply chain.

2. Hypotheses development

Literature reported the studies about green practices that are better for the improvement of performance in various dimensions. Socially, green practices help companies to build various links with the customers as well as companies of various objectives and levels. It is consistent to analyze the performance through the channel of operational activities that are performed internally and externally about the level of objected aims [16]. Using the measure of environmental strategies, the development is sustained with the implication of significant green practising measures. Although factors of green practices are eminent in describing the influence toward the global challenges as well as internal challenges that companies usually face [22]. Therefore, it is dominant for the companies to analyze the performance of the economy because of its impact on the overall sustainable development and performance of firms [23]. Some studies established the links of collaboration with other companies for the enhancement of various objectives where the internal reliance is not sufficing as the levels of risk increases due to variation of external and internal elements. Literature positively enumerated the aspects of green purchasing and cooperation with customers, while some studies have interlinked the relation among them which are dominant in influencing the environmental performance. Investments are recovered through the variety of businesses launched by companies where the effectiveness of strategies could help companies to attain the recovery element [24]. Various role of factors elected in this study is denoted by studies, while the eminence of supply chain management positively contributed role among them.

The working of joint people helps to achieve various objectives wherein the terms of business the role of cooperation with customers induces eminent impact on the performance of the environment [23, 34]. It is prevalent on the companies to maintain environments on various objectives; therefore, companies usually establish cooperation with customers to retain various margins in markets. The cooperation is established by providing hands to other people generally, while businesses establish certain cooperation for the stability of their product which could create the ideas of increasing performance [13]. Company objectives are obtained when the problem cause of cooperation between customers and companies are established. It is not only beneficial for the companies but also helps various sectors to maintain the performance of environments by inserting positive measures. Cooperation usually establishes by the ways of resolving issues that prevail between the companies and customers which could influence the environmental performances [18]. The significant praises between both customers and companies are also mean of cooperation.

H1: Cooperation with customer significantly influences the environmental performance.

Some purchasing are referred by digital marketing which could have benefits and disadvantages both, while the element of environment saving dominates in some products. Green purchasing is based on the intentions of

consumers who are ready to buy the product with intentions of notifying about the benefits of the product [34]. Green purchasing usually help customers to get acknowledge about the safety of a product which elaborates the overall performance with all benefiting measures [16]. Concept of green purchasing came up with the grown literature where most of the researchers have mentioned the qualities of products while some companies have hidden in the past which include just for selling. It is dominant that there is no harm to the environments from the product which is usually focused by the customer with needs [30]. There is no negative or lesser harm to the environment as well as on human; therefore, the concept of green purchasing has risen.

H2: Green purchasing significantly influences the environmental performance.

The dominating factor of this study is named as investment recovery which usually endorses some effects on environmental performance. It is dependent on the variety of investments made in commercial markets by companies where the values of companies are also dominant [28]. The value of the company is dominant under the adaptation of various measures for the recovery of investments; therefore study mentioned a variety of tools that enable for investment recovery programs [5]. It is dependent upon the level of investments which are put forward by companies which may contain capital investment or working investment; therefore, the ultimate mean of recovery could insert some dominant impact on the performance of environments [6]. Some studies mentioned the interlinked relationship among investment recovery as well as environmental performance.

H3: Investment recovery significantly impacts environmental performance.

The difference among needs of customers and the needs of companies are not justified while the significance of supply chain positively helped to enumerate the differences that prevail among them [34]. Studies mentioned supply chain management a significant element which retains fit among various elements of the business but the significance of cooperation with customers is measured through various aspects. The relation between customers and companies are strengthened through the use of the product which is an important mean for the customer and companies though [30]. Integration of supply chain for the development of the link between customer and companies are elaborated through means of production. Usually, products help in the enhancement of profits to the companies but the sustainable environment is also dependent on the needs and demands of customers [21]. Supply chain management effectively inserts role among cooperation element and environmental performance, while the study depicted the mediating role of supply chain management among the relationship

between cooperation with customers and environmental performance.

H4: Supply chain management significantly and positively mediates among cooperation with customers and environmental performance.

Usually, customer intends to purchase the product with a variety of benefits whereas the environmental performance is also based on the green purchasing [28]. Link of the product successfully establishes the dominance of green purchasing where supply chain management inserts the role of distribution toward the markets. Supply chain management insert role of distributor among the companies and customers while product development from the initial stage to the end stage is pertinent by the ways of supply chain management [1]. Role of green purchasing discusses the mind of the customer where the involvement of customer defines the intentions of buying in local markets as well as international markets. Environmental performance is based on the levels of green purchasing because the ultimate green purchasing prevail on the effectiveness of the product; therefore, supply chain management countered as an effective mean of retaining the role among performance and green purchasing [15]. The mediating role of supply chain management between green purchasing and environmental performance is depicted in this study with various effective measures.

H5: Supply chain management significantly and positively mediates among green purchasing and environmental performance.

Companies usually make investments in products with a variety of intentions; therefore, the recovery element is also dominant which is sometimes not achieved [25]. Some time frames exist the companies and customers with the relation of product which endorse the effectiveness of supply chain. Usually, companies supply product on demands whereas the products varied with the level of availability; therefore, demands and orders are met in the relativeness of supply chain management [10]. Investment recoveries are easily achieved if there is the consistency of supply chain management between the dominance of environmental performance. Link of both variables differentiates with the dominance of strategic measures which include supply chain management, while eminent use of supply chain management between environmental performance and investment recovery could establish strong relationships [20]. There is a significant mediating role of supply chain management among the relationship between investment recovery and environmental performance, while some studies mentioned the individual role of supply chain management with effective strategic positions.

H6: Supply chain management significantly and positively mediates among investment recovery and environmental performance.

3. Methodology

The objective of the ongoing study is to analyze the influence of cooperation with the customer, green purchasing and investment recovery environmental performance of the manufacturing companies of Bandung city Indonesia. The secondary aim of the current article is to examine the mediating role of supply chain management among the links of cooperation with the customer, green purchasing, investment recovery and environmental performance of the manufacturing companies of Bandung city Indonesia. The data has been obtained from the employees of manufacturing companies by using questionnaires. These questionnaires have been sent to them by personal visit while these respondents were selected by using simple random sampling. Around 540 questionnaires have been sent to them but only 380 were returned that has around 70.37 percent response rate. In addition, this data has been analyzed by using smart-PLS due to very complex model has been adopted by the study and PLS-SEM provided the best results in this case. Moreover, the variables such as cooperation with the customer (CC) has ten items, green purchasing (GP) also has ten items and investment recovery (IR) has five items. In addition, the dependent variable such as environmental performance (EP) has six items while the mediator variable named as supply chain management (SCM) has four items [27]. These variables along with relationships are mentioned in Figure 1.

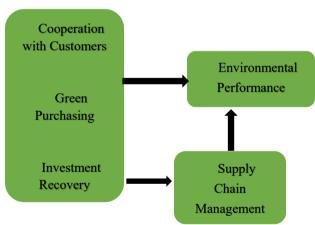


Figure 1. Theoretical model

4. Results

The findings indicated the valid convergent validity and high linkage among the items because the Alpha and CR are more than the standard value such as 0.70 while loading and AVE values are more than the standard value such as 0.50. These values are mentioned in Table 1.

Table 1. Convergent validity

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Items	Loadings	Alpha	CR	AVE		
CC1	0.762	0.938	0.948	0.668		
CC10	0.844					
CC2	0.839					
CC3	0.788					
CC4	0.796					
CC5	0.823					
CC6	0.832					
CC7	0.840					
CC9	0.829					
EP1	0.774	0.879	0.912	0.675		
EP2	0.861					
EP4	0.838					
EP5	0.806					
EP6	0.827					
GP1	0.704	0.944	0.945	0.632		
GP10	0.786					
GP2	0.619					
GP3	0.826					
GP4	0.830					
GP5	0.863					
GP6	0.763					
GP7	0.868					
GP8	0.782					
GP9	0.874					
IR1	0.860	0.918	0.939	0.754		
IR2	0.870					
IR3	0.870					
IR4	0.887					
IR5	0.854					
SCM1	0.892	0.923	0.946	0.813		
SCM2	0.909					
SCM3	0.897					
SCM4	0.909					

The findings indicated the valid discriminant validity and no high linkage among the variables according to the Fornell Larcker and cross-loadings methods because the values that highlighted the links with variable itself are larger than the values that highlighted the link with other variables. These values are mentioned in Table 2 and Table 3.

Table 2. Fornell Larcker

	CC	EP	GP	IR	SCM
CC	0.818				
EP	0.510	0.822			
GP	0.288	0.280	0.795		
IR	0.432	0.410	0.280	0.868	
SCM	0.497	0.506	0.296	0.398	0.902

Table 3. Cross-loadings

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	CC	EP	GP	IR	SCM		
CC1	0.762	0.423	0.282	0.330	0.656		
CC10	0.844	0.463	0.228	0.364	0.748		
CC2	0.839	0.468	0.318	0.342	0.806		
CC3	0.788	0.442	0.257	0.365	0.725		
CC4	0.796	0.401	0.238	0.339	0.686		
CC5	0.823	0.400	0.197	0.374	0.690		
CC6	0.832	0.319	0.161	0.345	0.665		
CC7	0.840	0.474	0.253	0.367	0.896		
CC9	0.829	0.314	0.157	0.353	0.663		
EP1	0.453	0.774	0.224	0.362	0.447		
EP2	0.416	0.861	0.245	0.344	0.415		
EP4	0.422	0.838	0.255	0.330	0.396		
EP5	0.384	0.806	0.203	0.304	0.407		
EP6	0.410	0.827	0.219	0.336	0.408		
GP1	0.138	0.107	0.704	0.113	0.112		
GP10	0.105	0.084	0.786	0.108	0.094		
GP2	0.449	0.416	0.619	0.411	0.462		
GP3	0.132	0.188	0.826	0.163	0.144		
GP4	0.172	0.206	0.830	0.158	0.170		
GP5	0.137	0.118	0.863	0.138	0.139		
GP6	0.061	0.091	0.763	0.123	0.103		
GP7	0.143	0.123	0.868	0.149	0.150		
GP8	0.117	0.103	0.782	0.111	0.103		
GP9	0.145	0.125	0.874	0.151	0.156		
IR1	0.326	0.346	0.217	0.860	0.307		
IR2	0.391	0.345	0.235	0.870	0.355		
IR3	0.361	0.326	0.248	0.870	0.320		
IR4	0.385	0.323	0.283	0.887	0.347		
IR5	0.403	0.422	0.235	0.854	0.385		
SCM1	0.774	0.446	0.287	0.334	0.892		
SCM2	0.839	0.471	0.249	0.380	0.909		
SCM3	0.782	0.438	0.289	0.337	0.897		
SCM4	0.837	0.467	0.244	0.380	0.909		

The findings indicated the valid discriminant validity and no high linkage among the variables according to the Heterotrait Monotrait ratio because the values are lower than 0.90. These values are mentioned in Table 4.

Table 4. Heterotrait Monotrait ratio

- ****					
	CC	EP	GP	IR	SCM
CC					
EP	0.553				
GP	0.207	0.210			
IR	0.463	0.450	0.214		
SCM	0.453	0.560	0.215	0.428	

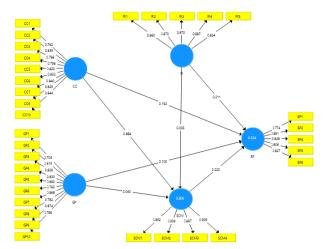


Figure 2. Measurement model assessment

The findings indicated that green purchasing and investment recovery have a positive impact on environmental performance and accept H2 and H3. However, cooperation with customer insignificantly impacted environmental performance and reject H1. In addition supply chain management positive mediating among the links of cooperation with the customer, green purchasing, investment recovery and environmental performance and accept H4, H5 and H6. These links are mentioned in Table 5.

Table 5. Path analysis

	3				
Relationships	Beta	S.D.	t- statistics	p-values	
CC -> EP	0.192	0.123	1.557	0.061	
GP -> EP	0.100	0.053	1.888	0.031	
IR -> EP	0.211	0.068	3.105	0.001	
SCM -> EP	0.220	0.121	1.815	0.036	
CC -> SCM ->	0.104	0.100	1.001	0.025	
EP GP -> SCM ->	0.194	0.108	1.801	0.037	
EP	0.109	0.024	4.542	0.035	
IR -> SCM -> EP	0.101	0.034	2.971	0.041	

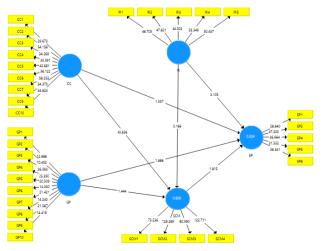


Figure 3. Structural model assessment

This article analyzes the environmental, performance, and supply chain management. This article is in line with previous articles including: Environmental [36], [37]. Performance [38], [39], [40], [41], and [42]. Supply Chain Management [43], [44], [45], [46].

5. Discussion and conclusion

The results indicated that green purchasing and investment recovery have a positive impact on the environmental performance of the manufacturing companies of Bandung city Indonesia. These results are matched with the outcomes of Zhu, Feng [35] who examined that green purchasing has a positive association with the environmental performance of the organization. A study by Inman and Green [12] investigated that environmental performance has depended on the strong investment recovery strategy of the organization and this finding same as the findings of the ongoing study. The results also exposed that supply chain management positively mediated among the links of cooperation with the customer, green purchasing, investment recovery and environmental performance. These findings are also similar to the outcomes of Feng, Yu [7] who also exposed that effective supply chain practices are necessary for the high environmental performance in the organization. These findings are suitable for upcoming studies along with regulators in term of further study and develop the policies related to the supply chain and environmental performance. Thus, it is concluded that the manufacturing companies of Indonesia has managed high cooperation with the customer along with high green purchasing, and effective supply chain practices that enhance the environmental performance of the organization. This study has recommended that the upcoming literature should expand the study scope by expanding the target population of the study. In addition, it also included in the suggestion that future studies should add any moderating impact in the framework that is ignored by the ongoing study.

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