

Green Supply Chain Management, Investment Recovery, Competitiveness, and Organizational Performance.: A Case of Manufacturing Firms in Indonesia

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Abstract- The main purpose of the current study is to examine the impact of the green supply chain management, investment recovery, competitiveness, on organizational Performance. This research work is based on the acknowledgment of findings of GrSCM activities by examining the three various kinds of outcomes regarding performance. The present study has adopted the survey based methodology and data is collected with the aid of an adapted questionnaire. A total of 420 questionnaire were distributed among the manufacturing firms in Indonesia. Out of these the 307 questionnaire were usable for analysis. The research conducted that included survey of medium-scale textile and large-scale textile companies both are included, so according to this survey it was estimated that in the textile industry of Indonesia the Indonesian manufacturers are reactive to the buyer's requirement towards the environmental issues and hence, it became more of market concern. The stress from the small foreign companies and buyers is particularly very less: it forces the Indonesian textile industry to adjust themselves on a further urgent basis. the research work assumed a more general approach to its theoretical development of a model with a perception that participants of the supply chain collaborated and would depend on one another. These activities encourage the organizations to find advantages of high-level performance in the long-term as compared to the short run.

Keywords; *Green supply chain management, Investment recovery, Competitiveness, and Organizational Performance*

1. Background

Green supply chain management (GrSCM) is one of the emerging phenomena for numerous companies in the 21st century which is a challenging attempt for their logistics and administrative management. Green supply chain management (GrSCM) has been an essential topic in numerous research works, it is considered as a strategy which targets objectives related to environmental factors [1]. The emerging international economy has the growth of success in the form of revenues and higher yields. Therefore, along with the emerging economy, the globe

faces one of the environmental risk factors that is resulted from the depletion of the ozone layer. As a result, environmental growth has attained much more significance in developing eco-friendly and socially workable processes management and supply chain systems. The supply chain systems that are well-integrated are considered as a key success factor in the current situation for attaining environmental sustainability in the business system [2].

[3] claimed that the market-based economy has a skilled tool for the distribution of rare economic assets and pointed out the pressure which is developed at the environmental level that is required to acknowledge the firm's sustainability concerning legislation. The perception of GrSCM to approach strategies are identifiable during the usage of indigenous elements but also in competitive and monetary benefits achieved by the businesses. [4] claimed that the execution of GrSCM is considered as authoritative in many sectors for attaining the competitive advantages in the market. GrSCM could only be executed pertinently when the management and workers of the company do their jobs synergistically as in the chain relation. Generally, GrSCM activities have a successful association with performance and a firm's perception of both [1].

Hence, this research work is based on the acknowledgment of findings of GrSCM activities by examining the three various kinds of outcomes regarding performance. The activities of eco-friendly management of the supply chain presented the initial step to support businesses for enhancement of sustainability, cost-effectiveness, and operational efficiency [5].

Advancement in green activities practice plays a vital role in academicians and practitioners both to acknowledge the association among smaller carbon footprint and higher performances. These practices demanded from the businesses to select the option which are well-integrated environment-friendly activities such as

logistic management, purchasing, and information systems [6].

The addition of perception regarding “green” to the generation of the supply chain which consists of adopting various views globally where supply chain and environmental activities are supervised at a similar time for the development of a greener globe. In Asian developing economics where numerous businesses are required to develop Gr SCM, vigorous and hard work is needed in terms of the development of their regulations which would support the attainment of perception of developing an eco-friendly economy.

[7] claimed that a company that has a sustainability viewpoint will gain fruitful results in the upcoming period through chasing the targets of sustainable growth, hence, it enhances the association with investors because of higher employee productivity and lesser cost of conflicts. However, managers would refer the sustainable practices as a business strength of competitive edge for future rewards since long-term sustainable revenues are based on well-governed economic, environmental, and social systems [3].

Furthermore, [8] researched that is based on meta-analysis to find the relationship of these factors, and according to their research findings the practice of green activities showed better performances in the form of four dimensions that are the economic, environmental, operational, and social performance. The perception regarding resource dependence stated that effectiveness can only be achieved through the connection of interfirm activities. To recognize internationally, dependency on internal assets is not sufficient to confront the challenges of the organization [9]. The collective support by all factors and parameters associated with the supply chain is required in the current situation for the growth of services, products, and methods which encourage the eco-friendly environment [10]. There are certain limitations of this research therefore it has been suggested that more research work is required to analyze the effect of GrSCM on organizational performance.

2. Hypothesis Development

Eco-design is defined as the growth of a product so that the design performance is related to environmental health and safety targets [11]. The major focus on sustainable design is to develop a product that is environmentally friendly or it would be lesser harmful in terms of environmental influence and similarly, manages the design conditions namely low cost and better functionality [12]. [13] highlighted that the alliance between units within the businesses as well as with the external partners during the network of supply chain these alliances are both significant and are needed for well-developed eco-design. Technological possibilities, customer demand, and economies of scale are all significant features for product

development and are kept at the top of mind during the development of a product that is ecological friendly [14].

Accordingly, eco-design is associated with the ecological perception of the overall supply chain network. [15] claimed that a firm’s environmental performance was positively affected by eco-design and investment recovery, on the other hand, a firm’s economic performance is negatively affected by the eco-design because of high costs that are associated with processes and materials used. [13] and [16] also claimed about same results that developing an eco-friendly design is way too expensive than the execution of other activities in a firm such as green distribution, it is very reasonable for implementation in a company. According to the research work that was conducted previously it was reported by the scholars and the significant role of eco-design with its estimated impact on a firm’s performance, in this research work, the association among eco-design and organizational performance.

Hypothesis 1: Eco-design has significant impact on the organizational performance .

Internal environmental management (IEM) systems are considered as a workforce that performs as a powerful strength and encouragement in efficient improvements such as implementing the latest technologies, activities, and programs [17]. The attainment of Environmental excellence can only be possible if high authorities are completely devoted and loyal towards regulations and guarantee environmental challenges. Furthermore, [18] claimed that the implementation of GrSCM practices is positively influenced by observant management and organizational support.

Various research work by [19] and [18] claimed that the origin of environmental excellence starts in the early stage of process design and product, on the other hand, the high authorities commit to executing strategy related to the environmental sustainability which plays an important role to guarantee the implementation of overall green lifecycle approach. [8] investigated the association between corporate performance and environmental management system along with its facilitating role of investment recovery, these scholars also reported the significant association among all three theories. The researchers claimed according to the findings that the exact positioning of internal environmental systems (IES) consequently due to economy and competitive influence is directly proportional to the economic performance of companies and the environmental performance of companies.

The researchers claimed that regulatory pressure and IES has a negative influence on parameters of performance together [13, 15, 18]. [1] reported that the establishment of IES was associated with low level and high-level management involvement at a high rate. However, the execution of regulations such as ISO 14001

acknowledges the significance of environmental challenges among the internal workforce of the company, and the execution of appropriate regulations for social responsibility is one of the significant accountability for which the high authority of the companies should watch out by themselves. Reward systems are one of the important ways which motivate the execution of sustainable standards [20]. Hence, according to the research study reported by the earlier scholars, these hypothesis are presented to analyses as follow:

H2: Internal environmental systems have significant impact on the organisational performance.

Green distribution is considered as one of the actions that have a target to transport products or services, the purpose is to have a minimum amount of carbon impressions either from manufacturers to customers or from suppliers to manufacturers [15, 18]. Green distribution deals with the activations associated with the reshuffled loading patterns, warehousing, green packaging, reshuffled loading patterns, carriage, and inventory control [21]. The logistics designs are one of the significant challenges related to the environment, for example, intermodal, air travel or direct shipping, distributed network or central warehouse, intermodal or single-mode, and organization-owned vehicles or services by the third party company [22]. To reduce the negative influence of the environment, usually, the companies hire third-party outsource for logistic services [21]. Sustainable distribution requires a decline in production and less depletion occurs in business across the supply chain system for transferring products and services. The above mention concern encourages to examine the hypothesis as follow:

H 3: Green distribution has significant impact on the organisational performance.

There are three measures of performance such as operational, environmental, and economic performance. In this research work, dependents factors are of three kinds of firm's performances such as operational performance, economic performance, environmental performance. In this research work, the positive association claimed among performance and green practices [13, 18]. the execution of GrSCM activities influences inappropriate environmental performance beyond keep in mind about their customers or suppliers [13]. Environmental performance associates with the activities of the manufacturers to minimize the air emission, consumption of hazardous materials, solid wastes, and effluent waste [18].

The vital sustainable advantages included sustainable distribution which significantly enhances the environmental performance among manufacturing companies [15]. Green buying activities guarantee that from suppliers buying of raw material related to the needed green features for example recyclability and

reusability. Particularly in the manufacturing sector, the powerful link and connection with the suppliers facilitate the adoption of progressive environmental technologies and growth [2]. Hence, for enhancement of the environmental health of a firm the suppliers play a significant role. Economic performance regarding the ability of manufacturing firms to lessen the budget associated with purchased materials, waste discharge, fines/penalties for environmental accidents, purchased materials, and energy consumption [18].

Furthermore, the researchers [23] examined the association between performance and green practice and determined that these activities not only support effective economic performance but also generate more competitive benefits. [15] claimed that the practices inside the company such as green logistics, green designing as well as green packaging may be fruitful for a long-period as compare to the short-period because it is expensive to execute for short-term. Hence, the vague association exists among enhancement in economic performance and GrSCM activities [24]. Operational performance is the skill of any, manufacturing plant to generate and deliver products to the buyers in a more effective way [18].

It reflects the costs, flexibility, delivery, and quality which are significant and often debated as competitive zones that if attained by the organization then it tends to move towards an innovative level of performance [25]. Furthermore, a company's operational effectiveness reflects a target on emerging competitive benefits by changing competitive perceptions into strategic proficiencies. [1] claimed about two significant operations management perceptions just-in-time manufacturing principles and total quality management that influence the association among performance and GrSCM activities which in result showed the positive and significant outcomes. With few amounts of effort made on GrSCM's effect on operational performance. Hence, it is stated to theorize the impact on operational performance by internal and external green activities.

Investment recovery is considered as a facilitating factor in a process of the closing loop of the supply chain system and is hypothesized as the capability of manufacturing plants to used and scrap materials, to sell the surplus inventories and old-fashioned machinery [18]. It is a construct in which the firms who execute the measures resulted in more eco-friendly capabilities by reducing the number of materials utilized, recycling, and reusing [18].

On contrary to logistics deals to managing the returned materials, defective production, production scraps, and out-of-date supplies. These practices associated with investment recovery are expected to enhance the profit benefits of manufacturers [18]. [15] stated a positive relation of investment recovery with the ecodesign, green information system, and green environmental

management. Waste reduction and resource usage are significantly influenced by the positive significant role of collaboration among all investors [26].

[18] claimed that investment recovery which is a mediating factor does not only restrict the reprocess and reuse but also producing more revenue by the sale of surplus resources and products which have no efficacy left. [15] also claimed investment recovery that this factor had a positive relation with economic performance, although, the researcher claimed that this factor investment recovery does not influence environmental performance. The definition of competitiveness is “ a condition in which high competition because of the existence of different competitors, and the absence of further chances for more development [27].

In competitive condition, the firms functioning have a chance to avail advantages from whole supply chain environmental innovations for example high level of competitiveness and economic performance [28]. In this research, the derivative stress, faced by the organization when it copies the activity done by the prosperous rivals in the industry, [13] examined the impact of investment recovery after it collaborated with competitive pressure on economic and environmental performance. Competitiveness is significantly reliant on the market environment.

It is considered that competition does not impact the improvement or deterioration of the company, but in the existing condition the buyers should make a choice to switch the suppliers because of a vigorously competitive environment [29, 30]. This approach of competitiveness recommends that deals with buyers' needs and react towards the market condition is the single method to sustain success in the competitive market condition [31]. Further studies have analyzed the association between competitiveness, green purchasing, and environmental performance. [32] reduced the gap which was claimed that practices and green innovation tend to increase the competitiveness and efficient environmental performance, therefore the research by [32] based on the earlier study done according to the Indonesian perception and gathered further empirical proves to acknowledge the association among internal green practices of an organization, along with the mediating role of competitiveness the performance outcomes and investment recovery. However, this research targets to examine the hypothesis as follow:

H4: Eco-design has significant impact on the Investment recovery.

H5: Internal environmental systems have significant impact on the investment recovery.

H6: Green distribution has significant impact on the investment recovery.

H7: Investment recovery has significant impact on the organizational performance.

H8: Investment recovery has significant impact on the competitiveness.

H9 : Competitiveness has significant impact on the organizational performance .

3. Methodology

The present study has adopted the survey-based methodology and data is collected with the aid of an adapted questionnaire. A total of 420 questionnaire were distributed among the manufacturing firms in Indonesia. Out of these the 307 questionnaire were usable for analysis (Hair, Hult, & Ringle, 2016; Henseler, Hubona, & Ray, 2016; Hafeez, Basheer, & Rafique, 2018). Thus the total response rate is 73.05 percent (Ramayah, Cheah, & Memon, 2018; Singh & Prasad, 2018). Based on the research objectives, the study has used the SE-PLS for data analysis.

4. Analysis

The SEM-PLS is consists of two steps: namely the measurement model and structural model. In the measurement model we estimates the cross loadings, reliability, validity and coefficient of determination [12,13]. The measurement model of the current study is shown in the figure 1 below.

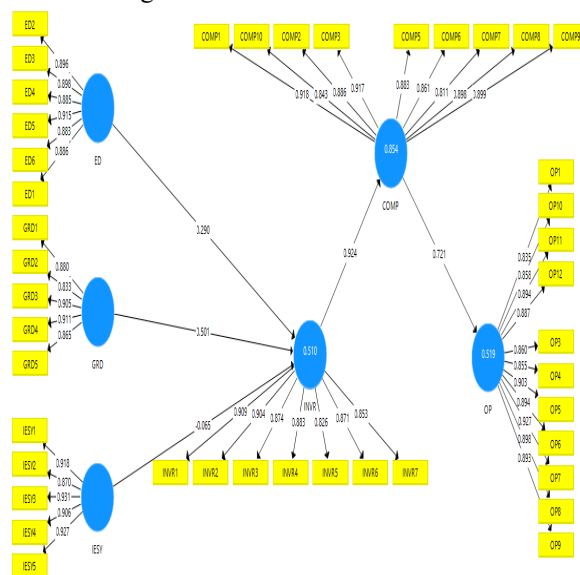


Figure 1. Measurement Model

The cross loadings value of the current study is shown in the table 1 below [33, 34]. The cross values shows that the item loadings are higher than 0.70.

Table 1. Cross Loadins

	COM P	ED	GR D	IES Y	INV R	OP
COMP1	0.918	0.66	0.68	0.66	0.854	0.66
COMP0	0.843	0.58	0.65	0.57	0.784	0.63

COMP2	0.886	0.62 3	0.70 4	0.63 7	0.866	0.65 0
COMP3	0.917	0.65 4	0.69 8	0.66 8	0.868	0.68 1
COMP5	0.883	0.58 7	0.63 6	0.61 1	0.792	0.59 6
COMP6	0.861	0.59 1	0.61 7	0.65 1	0.760	0.61 8
COMP7	0.811	0.55 3	0.57 8	0.53 3	0.738	0.54 9
COMP8	0.898	0.61 1	0.64 9	0.58 6	0.836	0.64 5
COMP9	0.899	0.63 8	0.67 5	0.62 8	0.810	0.66 0
ED1	0.618	0.88 6	0.81 2	0.82 4	0.593	0.60 1
ED2	0.600	0.89 6	0.79 4	0.76 4	0.633	0.56 7
ED3	0.599	0.89 8	0.81 6	0.79 8	0.587	0.58 3
ED4	0.602	0.88 5	0.79 9	0.75 1	0.603	0.59 5
ED5	0.693	0.91 5	0.85 7	0.83 4	0.668	0.61 2
ED6	0.613	0.88 3	0.79 9	0.80 9	0.597	0.62 1
GRD1	0.644	0.77 7	0.88 0	0.79 6	0.618	0.58 6
GRD2	0.637	0.78 5	0.83 3	0.76 6	0.560	0.60 1
GRD3	0.673	0.80 8	0.90 5	0.79 7	0.650	0.64 0
GRD4	0.694	0.83 1	0.91 1	0.81 5	0.672	0.64 7
GRD5	0.627	0.79 9	0.86 5	0.85 2	0.591	0.60 5
IESY1	0.647	0.83 1	0.86 0	0.91 8	0.614	0.65 7
IESY2	0.570	0.78 0	0.77 6	0.87 0	0.527	0.56 7
IESY3	0.660	0.82 1	0.83 6	0.93 1	0.623	0.62 8
IESY4	0.642	0.81 5	0.83 7	0.90 6	0.576	0.58 1
IESY5	0.674	0.81 2	0.85 3	0.92 7	0.618	0.62 8
INVR1	0.832	0.63 6	0.61 7	0.57 1	0.909	0.62 8
INVR2	0.819	0.62 4	0.62 2	0.59 9	0.904	0.65 4
INVR3	0.820	0.59 9	0.62 6	0.58 2	0.874	0.58 0
INVR4	0.814	0.63 4	0.64 7	0.60 0	0.883	0.59 2

INVR5	0.760	0.57 2	0.57 7	0.53 0	0.826	0.55 8
INVR6	0.814	0.58 7	0.62 2	0.57 3	0.871	0.58 5
INVR7	0.797	0.55 3	0.60 2	0.53 2	0.853	0.64 8
OP1	0.562	0.50 3	0.50 8	0.47 0	0.554	0.83 5
OP10	0.631	0.61 5	0.63 1	0.64 3	0.621	0.85 8
OP11	0.654	0.59 7	0.62 6	0.58 8	0.613	0.89 4
OP12	0.661	0.64 7	0.66 7	0.62 4	0.648	0.88 7
OP3	0.564	0.50 7	0.54 1	0.50 8	0.555	0.86 0
OP4	0.608	0.55 1	0.57 3	0.54 2	0.593	0.85 5
OP5	0.655	0.61 3	0.64 8	0.60 3	0.648	0.90 3
OP6	0.635	0.54 5	0.61 1	0.58 7	0.586	0.89 4
OP7	0.693	0.66 2	0.66 2	0.63 6	0.644	0.92 7
OP8	0.678	0.63 2	0.67 5	0.68 6	0.645	0.89 8
OP9	0.634	0.58 2	0.63 1	0.62 6	0.610	0.89 3

The results of the reliability analysis are shown in the table 2 below. The values of Cronbach's Alpha, composite reliability, and AVE are higher than the threshold values; indicating the model reliable [35, 36].

Tale 2. Reliability

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
COMP	0.963	0.965	0.969	0.775
ED	0.950	0.951	0.960	0.799
GRD	0.926	0.930	0.944	0.773
IESY	0.948	0.951	0.960	0.829
INVR	0.949	0.949	0.958	0.765
OP	0.972	0.973	0.975	0.779

Once the reliability is established, the next step is to determine the validity. The validity of the current study is explained in the table 3. The diagonal values shown in the matrix are higher than the lower diagonal values, which indicate that our proposed framework is valid.

Table 3. Validity

	COM P	ED	GR D	IESY	INV R	OP
COM P	0.880					
ED	0.696	0.894				
GRD	0.745	0.810	0.879			
IESY	0.703	0.891	0.715	0.811		
INVR	0.724	0.688	0.705	0.651	0.875	
OP	0.721	0.667	0.701	0.674	0.693	0.883

The coefficient of determination must be greater than 0.15 (Hassan et al., 2019; Basheer et al., 2019b). The values shown in the table are greater than 0.15.

Table 4. R-Square

	R Square
COM P	0.854
INV R	0.510
OP	0.519

Once the measurement model is determined, the next step is to determine the structural model. The structural model of the current study is shown in the figure 2 below

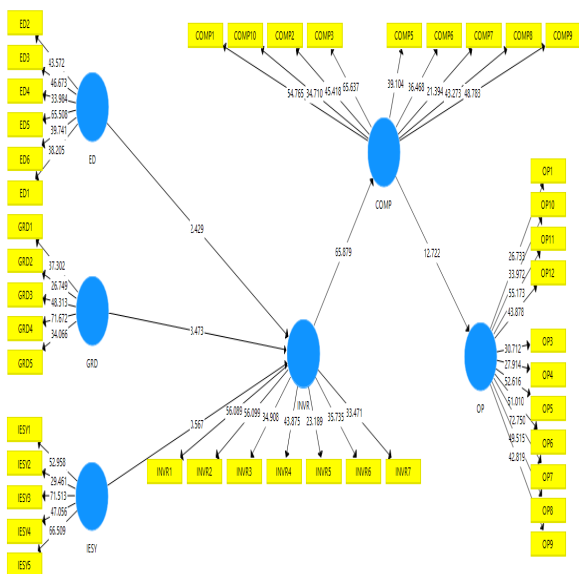


Figure 2. Strutral Model

The bootstrapping procedure is employed for the determination of direct relationships between and among the variables. The results indicate that all the paths except

IESY -> COMP, IESY -> INVR, and IESY -> OP are significant at p-value less than 0.05.

Table 5. Regression Results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
COMP -> OP	0.721	0.724	0.057	12.722	0.000
ED -> COMP	0.268	0.262	0.109	2.453	0.014
ED -> INVR	0.290	0.284	0.120	2.429	0.016
ED -> OP	0.193	0.191	0.083	2.327	0.020
GRD -> COMP	0.462	0.456	0.136	3.412	0.001
GRD -> INVR	0.501	0.493	0.144	3.473	0.001
GRD -> OP	0.333	0.331	0.102	3.253	0.001
IESY -> COMP	-0.060	-0.044	0.107	0.567	0.571
IESY -> INVR	-0.065	-0.047	0.115	0.567	0.571
IESY -> OP	-0.044	-0.031	0.078	0.561	0.575
INVR -> COMP	0.924	0.924	0.014	65.879	0.000
INVR -> OP	0.666	0.669	0.054	12.394	0.000

The last step is to determine the predictive relvance of proposed framework. The blindfolding procedure is used to determine the predictive relvance , which is shown in the figure 3.

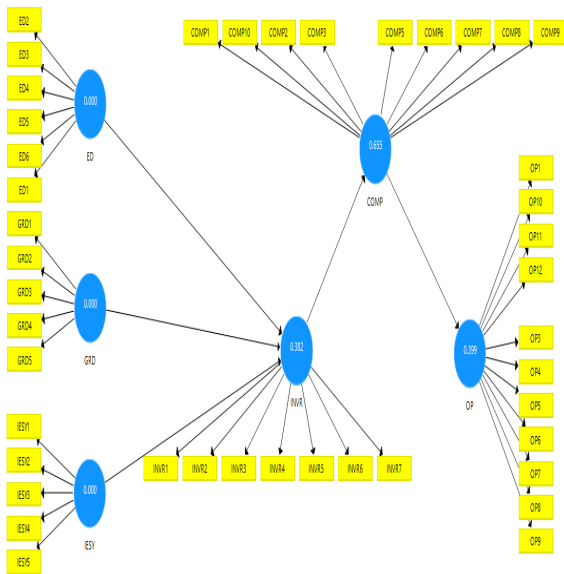


Figure 3. Blindfolding's

Table 6. Q-square

	SSO	SSE	Q ² (=1-SSE/SSO)
COMP	1953.000	674.588	0.655
ED	1302.000	1302.000	0.000
GRD	1085.000	1085.000	0.000
IESY	1085.000	1085.000	0.000
INVR	1519.000	939.155	0.382
OP	2387.000	1434.156	0.399

5. Conclusion

Environmental issues exist in the developing economies and tend towards the responsiveness between the buyers during the generation of purchasing decisions. However, buyers like those companies which are recognized for environmentally friendly practices in the organization. Consequently, the research showed that collaboration with the buyers has a significant positive influence on the environmental and economic advantages of the operating company but it has no operational performance influence related to the results Khan and Qianli [15]. The researchers Pekkanen, et al. [37] claimed that because of the increasing demand of buyers, the existing companies lessen their assurance towards environmental challenges, ecological concerns for more sustainable products and pro-sustainability. However, these forms of consumer demand and behavior motivate a change in sustainability in firms [37].

This research indicates a flaw in the area of green development by selecting a unique and general approach first time on various levels. The significant participation of this research work is discussed below: Firstly, in Indonesia's economy this research study act as an originator that formally investigated the influence of GrSCM activities on the company's performance. [8] reported through an investigation based on 50 research

reported earlier regarding this subject in the last two decades and claimed that no research work was done in these years in Indonesia. Secondly, this research appears as one of the prior research work for analyzing the influence of GrSCM activities with competitiveness and investment recovery as a mediator on the firm's performance.

Thirdly, it was stated that mostly the research work did not investigate the direct influence on operational performance by the green activities. This research work only took the dependence theory as a base, resource, and highlighted theory. However, the research work assumed a more general approach to its theoretical development of a model with a perception that participants of the supply chain collaborated and would depend on one another. These activities encourage the organizations to find advantages of high-level performance in the long-term as compared to the short run. [9].

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