The Role of Institutional Pressure, Green Procurement and Reverse Logistics Practices on Environmental Performances: Evidence from Ethiopia Industrial Parks

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ABSTRACT
Environmental sustainability is a growing concern for businesses and organizations due to climate change trends. This study aims to examine the direct impact of institutional pressures, green procurement (GP), and reverse logistics (RL) on environmental performance (EVP). The mediating influences of RL and GP on institutional pressure and EVP are also examined. The study uses a quantitative method where data is gathered from the CEO, operations, human resources, logistics, and procurement managers of 165 industrial park firms using customized questionnaires. The data is analyzed using the PLS-SEM software (SmartPLS 4). The results suggest that the adoption of institutional pressures has a significant effect on GP and RL, and the findings show that GP does not improve EVP. However, the implementation of RL mediates the relationship between institutional pressure and EVP. The study develops a comprehensive empirical model that tests the joint influence of institutional pressure- GP-RL-EVP model was developed and validated. The findings indicate that institutional pressure and RL help firms advance EVP.

1. Introduction

Environmental sustainability challenges are becoming a concern for businesses and organizations in many countries, including Ethiopia. The Ethiopian government devised a climate-resilient green economy (CRGE) strategy in 2011 to achieve middle-income status [1]. The Ministry of Trade and Industry (MoTI), the Industrial Park Development Corporation (IPDC), local governments, and private industrial park developers are involved in the country's economic development. As a result, the Ethiopian government established the IPDC in 2014 to creation, and manage industrialization. IPDC aims to create a diversified, internationally competitive, and environmentally accountable industrial sector [2]. So, Ethiopia's industrial park (IP) expansion aims to increase the new economy, productivity, and competitiveness of manufacturing firms, link the high-tech and light manufacturing industries, expand the metal and engineering sectors, and swap imported goods for those made domestically [3].

Consequently, Ethiopia's manufacturing sector has grown significantly over the past 20 years[2]. The practices of fertilizers, insecticides, herbicides, and gas emissions from industrial activities all contribute to environmental pollution [4].According to [5]and [6], environmental factors can significantly harm circular environment (CE) performance. Ethiopian governments, corporate communities, and individuals constantly monitor ecological issues [7] and [8]. Ethiopia IP are under different pressure to safeguard the environment due to increasing demand from the government and environmental regulatory institutions [9]. Customers, media, governments, employees, society, and investors are just a few of the

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stakeholders under pressure to adopt environmentally friendly practices [10],[11],and [12]. Because of the stakeholeders encourage the company to initiate using GP and reverse logistics (RL), regulatory and customers pressures develop an EVP. Manufacturers under intense regulatory pressure employ GP strategies [13]. GP is the activity of procuring goods and services that have little or no negative environmental impact. When seeking high-quality products and services at reasonable prices, consider the effects on human health and the environment [14]. Recycling products in the supply chain and reducing waste sources are two aspects of GP [15]. The results show [15] that adopting GP practices reduces the cost of pollution management, improves organizational market share, and improves circular EVP. Also, GP protects the environment from harmful and poisonous materials [16]. Then, GP is a reliable tool for reducing pollution, and as a result, it is essential to the EVP of firms [17] . Furthermore, it builds a company's favorable reputation and image in the marketplace [15].

Mimetic drivers are one of the drivers of environmental management practices, as they occur when organizations mimic their competitors when responding to environmental issues. Chinese companies have gained benefits by learning from clients and competitors, such as in the [18] study, which found that Chinese firms learned good environmental practices from leading competitors in developed countries and implemented them proactively in China. Competitive factors such as green image, policies and missions, and liability for disposal of hazardous materials also play a significant role in driving organizational environmental practices [19].

RL refers to material recycling, reuse, and reduction during production [20] and [21]. Industrial firms in developing countries employ RL and green buying less frequently to handle their long-term environmental responsibilities [22]. Environmentally friendly RL is crucial for businesses to reduce environmental impacts and boost productivity [23]. EVP is the effect that firms practice on the natural milieu [24]. It can lead to increased market share, improved revenue, reduced operating costs, higher productivity, and efficiency [25].

The Industrial Parks Proclamation 886/2015 requires IP developers, operators, and businesses to adhere to environmental and social norms, standards, safeguards, management practices, and mitigation strategies [26]. The main challenges of environmentally friendly practices IPs in Ethiopia include lack of appropriate policies and implementation strategies, inadequate knowledge, poor coordination and insufficient capability of stakeholders, challenges with political instability and security, and poor information and technology management [27]. The Ethiopian IP firms faced a lack of technology, and sustainability systems, resulting from high solid waste, air pollution, and GHG emissions, a decline in productivity and profitability due to resource waste, and a lack of EMS [28], and[29].

Therefore, studies of the relationships between institutional pressures, GP, and RL on EVP in developing countries have not been extensive. According to [30]'s outcomes, there is little research on institutional pressure, GP, and RL on environmental performance in Africa. The researchers have investigated the use of institutional drivers, GP, and RL to determine how effective they are at enhancing firms' EVP, and the results have varied [31]. A substantial body of research has shown an association between institutional pressure, GP, and RL and a firm's EVP [13]. However, the institutional drivers, RL, and GP on EVP couldn't be studied or investigated in Ethiopia's industrial parks, and there were many research gaps and a lack of clarity regarding the relationship between variables in Ethiopia's IPs. According to [32] , the relationship between institutional pressure and EVP was investigated but mediating by GP and RL was not evaluated. This study contributed to the body of knowledge by carefully analyzing recently initiated discussions on the environmental benefits attained by GP, RL, and institutional pressure for IP firms in Ethiopia [33] and [34]. By bridging disparate points of view within the body of knowledge, the study is better able to produce trustworthy outcomes and present conclusive findings in developing nations with this broadly integrated perspective. The study surveyed information acquired from IP firms in Ethiopia. The contribution is to further the research by examining how institutional pressure, GP, and RL practices are intertwined. The theory's relevance is supported when institutional theory is employed as a theoretical framework because no study has used it to assess the impact of stakeholder pressures on EVP . Generally , the environmental effect in Ethiopia's industrial park needs to be studied and the gaps investigated enhance firms' EVP. Additionally,the study gives managers of firms in Ethiopia's industrial parks directions on specific elements and methods for improved EVP. There are four research questions:

- Do the institutional pressures encourage GP, RL, and EVP?

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- To what extent can GP practices have a direct effect on EVP?
- To what extent can the RL affect the EVP?
- To what extent do GP and RL have a mediating role between institutional pressures and a firm's EVP?

2. Literature Review

2.1. Institutional theory

The institutional theory explains how an organization behaves and acts [35]. The main application of institutional theory is to provide proper and improved knowledge of organizational and supply chain sustainability strategies [36]. According to institutional theory, decisions and actions, including rules and regulations, standards of conduct, cultural norms, and expectations, have businesses operate [37]. According to related studies, there is a lot of pressure on manufacturers to undertake environmental management [38] [39]. This theory, as well as regulatory (coercive), customer (normative), and competitor (mimetic) considerations, have all examined and explained the reason for and extent of implementing the firm's sustainable practices [40] [41].

2.2. Institutional pressure on GP, RL, and EVP

Globalization not only puts pressure on companies but also gives them the impetus to improve their EVP [42]. The supply chain networks of businesses play a large part in environmental deterioration [30]. The institutional theory and circular environment issues are incorporated into supply chain operations [43] [44] and help to implement green practices in endwise supply chain operations to achieve EVP [45]. Organizations profit from regulatory, competitive, and market pressures resulting in green procurement,and reverse logistics enhanced EVP [32] [46]. Environmental rules have compelled companies to generate green products proactively, minimizing environmental impact and improving EVP [47], [48]. Institutional pressures, such as domestic regulatory agencies, government rules, stakeholders, clients, rival businesses, non-governmental groups, and staff, can have an impact on EVP [49]. Also, pressure from rival companies motivates organizations to embrace GP and RL [50]and [51]. Evidence suggests that government oversight, legislation, and RL are crucial elements in creating cooperation between product designers and suppliers to lessen and eliminate the environmental impact of products [52]. According to [53], improving EVP results in

pressure applied to pesticide chemical companies and other businesses to embrace green practices by the government, consumers, media, and other institutions, and similarly, the government focuses on facilitating and giving subsidies. According to a survey of 196 manufacturing managers, institutional pressure significantly affected EVPs [47]. [35] discovered a link between institutional pressure and environmental issues in "the internal activities created by the company towards pollution control and environmental restoration" [54]. Additionally, industrial businesses are under pressure to implement RL into their supply chain procedures due to government regulations, the competitive benefit of product recalls, and customer demand for better environmental policies [50]. RL stands for the collection and processing of waste goods and resources [21].

The findings of [27] revealed the most details in this text: the challenges obstructing the sustainability of sustainable industrial parks in Ethiopia. The results include political instability and security problems, a lack of suitable policies and implementation strategies, inadequate knowledge, weak coordination and limited capacity of stakeholders, weak management of industrial parks, and poor information and technology management. Also, the effectiveness of governance practices for sustainable industrial park development and operation in Ethiopia has less attention. [55] found that barriers to green manufacturing in Ethiopia included a lack of environmental knowledge, societal influence, and technological, financial, organizational, and regulatory or government barriers to environmental performance. [56] found that institutional pressures played a role in enhancing environmental performance. The study by [57], Ethiopian manufacturing firms are not adopting green purchasing, suppliers' ecological management audits, designing products for reduced material consumption, product life cycle assessment, or reverse logistics practices. [58] The main obstacles to GMP in Ethiopia include a lack of awareness and information, inadequate legislation, law enforcement, low top management commitment, and low public pressure. This study integrates competitive, customer, and regulatory aspects with GP and RL to improve EVP. Thus, we hypothesize that:

H1. Institutional pressure has a direct significant positive effect on EVP

H2. Institutional pressure has a positive effect on GP.

H3. Institutional pressure has a positive effect on RL.

2.3. GP on EVP

GP is a different strategy that can improve EVP. Green purchasing (GP) is an effective way to develop the performance of companies by minimizing wastage and encouraging recycling. It is also known as an environmentally preferred purchase (EPP), which means products that satisfy customers without affecting the environment [59]. GP reduces transaction costs and increases access to innovative environmental solutions [60], [61] , and [62]. Due to the concentration of businesses that use waste as a resource in production, industrial symbiosis offers a competitive advantage to firms in industrial parks. The environment and society benefit from green products, commonly called sustainable products. Eco-friendly items, recycled papers, energy-efficient lighting, and eco-friendly bags are a few examples. Additionally, these devices often cause little trash and can be recycled [63], [64], [65], and [66]. [67] Green procurement in Ethiopia faced difficulties due to a lack of qualified employees with experience in GP and sustainability. Thus, we hypothesize that:

H4. GP has a positive effect on EVP

2.4. RL, and EVP

When it is impossible to reduce environmental harm or improve the overall quality of each environmental category without raising prices, a collection of remedies is said to be RL. Rising ecological concerns make RL crucial to the modern supply chain [21]. Firms should differentiate between value-adding and non-value-adding RL activities and set their targets to minimize planned RL activities efficiently and

effectively to reduce environmental impacts [68]. EVP implies using waste minimization, pollution avoidance, reuse, and recycling as environmental performance metrics [69] and [70]. Solid waste management in developing countries is a constraint but integrated solid waste management is becoming a paradigm. Waste management focuses on physical and governance elements, achieving financial sustainability, and strengthening institutions to perform their enviromental tasks [71]. Firms employ reverse logistics to cut costs and improve environmental performance [72] and [73]. Thus, we propose that:

H5. RL has a positive effect on EVP.

2.5. The mediating effect of GP and RL

Institutional pressure is essential for using green techniques to improve EVP [22], [37], [59],and [60]. For instance, [74], the research shows that RL and GP devices are more effective when institutional pressure is present. Through pressure and environmental regulation, executives are encouraged to use RL and GP to improve EVP [40], and[33].These actions can result in environmentally friendly waste disposal and reduce the impact of environmental pollution [77], [40],and [78]. Environmental performance is a consequence of the integration of GP and RL [79]. Through reverse logistics and green procurement, the study illustrates the direct and indirect effects of institutional pressure on environmental performance [41]. Thus, we hypothesize that:

H1a: GP positively mediates institutional pressure and EVP

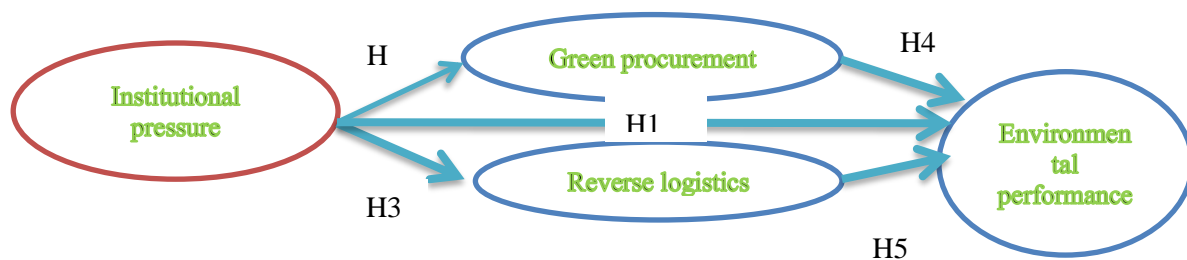H1b: RL positively mediates institutional pressure, and EVP

Fig. 1. Research model.

3. Material and Methods

Data were collected using cross-sectional, quantitative, and survey questionnaire methods. Industrial park firms served as the study's unit of analysis. The Ethiopian Industrial Parks Development Corporation has built 13 industrial parks. Bole Lemi IP, Kilinto IP, and Information and Communication Technology Park in Addis

Abeba; Hawassa IP in Sidama; Debre Birhan IP, Kombolcha IP, Bahir Dar IP, and Arerti IP in Amhara; Mekelle IP in Tigray; Adama IP, Jimma IP, and Eastern Industrial IP in Oromia; Dire Dawa IP in Dire Dawa; and Semera IP in Afar.There are currently eight Operational industrial parks, Bole Lemi IP, Hawassa IP, Eastern Industrial Zone IP, Adama IP, Dire Dawa

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IP, Debre Birhan IP, Bahir Dar IP which consist of 270 registered companies in the Industrial Park Corporation (IPDC). Political instability and uncertainties associated with security problems are the key challenges currently obstructing the effort to promote sustainable Industrial Parks in Ethiopia. Investigation of the current status has identified pertinent issues triggered by the prevailing political instability and security problems [27]. Since manufacturing companies contribute to economic value and environmental degradation, Eastern, Hawasa, Adama, and Bole Lemi industrial parks are conveniently included in this study because of political instability in Amhara and Tigray, time, costs, and large numbers of firms in the parks. Once ethics clearances were granted by both Bule Hora University and the IPDC directors' office, we tested participant knowledge and comprehension of the various study scales. To collect the data, direct survey methods were employed. The top and middle managers of firms located in industrial parks were the intended responders for this study's questions regarding operations, logistics and purchasing, human resources, and other managers. The researchers sent questionnaires to 176 firms in industrial parks. Out of these, 169 questionnaires were completed (or 96%), while seven respondents (or 5%) declined (five from Eastern IP and two from Hawassa IP). The response resulted from Hawassa IP (36), Adama IP (8), Bole Lemi IP (14), and Eastern IP (107). 165 of the 169 results were genuine, while 4 (3%) were discarded due to incomplete information. A total of 93.75 percent of the study's participants replied. Production managers (32%), human resources managers (27%), and logistics and procurement managers (19%) all provided the same number of responses, while other managers provided fewer responses.

3.1. Sampling techniques
Sampling allows for generalizations about a population or a theory [80]. There are two methods of sampling: non-probability sampling and probability sampling. Since including Ethiopia's northern industrial parks would be impractical because of political instability, probability sampling is inappropriate for the current study.

Non-probability sampling could be helpful when randomization is challenging, such as when the population is large. In this study, industrial parks were chosen using the convenience sampling method. Nonrandom sampling is preferred due to limited resources and time, with target respondents chosen based on criteria such as ease of access, proximity, availability, and willingness to participate [81]. Due to the high concentration of firms and good standing in the industry, a census survey was used to collect data from selected industrial park firms [82].

3.2. Measure of constructs
To test our assumptions, we created a survey instrument with 47 items: 20 items on institutional pressure, 9 items on GP, 11 items on RL, and 7 items on EVP. The questions are based on feedback from industry professionals and literature used in previous empirical research investigations by [32] [83] [40] and [84]. With the assistance of the practitioners' and academics' viewpoints, we were able to remove any ambiguous and useless scales and elements. The questionnaire of this study employed a five-point Likert scale to evaluate the extent to which the respondents agreed or disagreed with items of institutional pressure, GP, RL, and EVP, with (1 = strongly disagree to 5 = strongly agree) being used to assess institutional pressures, (1 = not implemented yet to 5 = fully implemented), to assess GP and RL, and (1= being barely significant and 5= being highly significant) to assess EVP components. Following that, effective communication with practitioners and academics has conducted to validate and improve these assessment tools [85]. Second, a pilot test was carried out with the cooperation of the fifteen most senior managers employed by industrial park companies to evaluate the validity of the primary questionnaire. The internal consistency of each construct was assessed through the distribution of questionnaires and analysis of the responses [86] [87]. Researchers consider the Cronbach's coefficient alpha test reliable when 0.70 or above, with 0.60 being considered average [88]. High reliability coefficients for the results, which ranged from 0.770 to 0.922, were observed (see Table 1).

Tab. 1 Reliability tests for pre-testing

Construct	N of Items	Mean	Std. Deviation	Cronbach's Alpha
Regulatory pressures/drivers	6	3.1667	.78427	.770
Customer pressures	7	3.7429	.65953	.807
competitor pressure	6	3.8444	.82247	.922

Green Procurement Practices	7	3.8952	.74126	.898
Reverse Logistics Practices	11	3.7818	.63059	.889
Environmental performance	7	4.2381	.82361	.920

Sources: Survey data

3.3. Non-Response and common method Bias

Because nonresponse bias influenced the study's findings, a t-test was used to determine whether there was a statistically significant difference between early and late responses [89]. There was no statistically significant difference ($p < 0.05$) in the results [90]. A t-test was also used to examine the perceived differences between operation managers, logistics and procurement managers, and HR managers. The findings revealed that there was no statistically significant difference between managers at ($p < 0.05$). Furthermore, we used the variance inflated factor (VIF) of each construct to detect whether common method bias occurs. Because all of the constructs had VIF values, the results indicated that common method bias should not be a concern in this study because all the constructs had VIF values VIF< 3.3 suggested by [91],as shown in Table 2

Tab. 2. VIFs

	VIF				
CP1	1.724	MP3	2.520	RL11	1.780
CP3	1.818	MP4	2.338	RL2	1.805
CP4	1.609	MP5	1.701	RL4	1.594
CP5	1.253	MP6	2.272	RL7	1.750
NP1	1.590	GP1	2.783	EVP1	2.387
NP2	1.814	GP2	2.579	EVP2	2.046
NP6	1.911	GP3	1.471	EVP4	2.853
NP7	1.542	GP5	1.656	EVP5	2.705
MP1	1.999	GP7	1.476	EVP6	2.777
MP2	3.203	RL10	1.817	EVP7	2.264

Note: CP=Coercive/regulatorypressure;NP=normative/customer pressure; MP= mimetic/competitive pressure GP= Green procurement; RL= Reverse Logistics EVP= Environmental Performance

4. Results and Discussion
4.1. Sample profile of respondents

A total of 176 managers from four industrial park firms participate in the study. The CEO, Logistics/Purchasing, Human Resources, Production/Operations, and Plant Managers are frequently the responders. The sample group was well-represented, with 74% of respondents between the ages of 20 and 30 years old, compared to 6.1% who were above 60;(63.5%) who were found to be male, and the majority were production, human resources, and logistics managers. The results suggest the respondent's age can forecast their ability to implement environmentally friendly practices. The study results in responses from ISO 9001 and 14001-certified respondents' firms, indicated that 40% of them were certified and aware of green practices. Also, more than 86% of the respondents had a bachelor's degree or higher, ranging from a bachelor's degree to a master's degree. As a result, it was likely that people with this level of education were aware of and using sustainable practices.

PLS-SEM is employed in this study to proceed with the data using Smart PLS software version 4. For several reasons, the authors used this strategy in their investigation. To begin, recent suggestions for employing PLS-SEM have demonstrated its utility in measuring mediation. This study model necessitated a mediation analysis [92] ,and [93]. Second, because the research model employed in this study is complicated with first- and second-order variables as well as over 47 items, the PLS-SEM is the appropriate and best choice for analysis [94]. Third, PLS-SEM has more statistical power than CB-SEM. As a result, PLS-SEM is the most powerful and practical tool for analyzing correlations. Finally, PLS-SEM can perform several measurement scales with a small sample size. The descriptive statistics shown in Table 3 were computed using the same program. Even though PLS-SEM can accept non-normal data, we validated the data's normality to support the findings and make them repeatable. Skewness and kurtosis values fell within the advised range of -2 to 2 (see Table 3) [95]. Since the data in this investigation were sufficiently normal, SEM could be performed on them.

Tab. 3. Reliability, validity, and descriptive statistics of first-order constructs.

Constructs	Items	Loading	Skew-ness	Kurtosis	T Value	Alpha	CR	AVE
Regulatory pressures(CP)	CP1	0.825	-0.434	-0.562	23.714	0.766	0.852	0.592
	CP3	0.821	-0.472	-0.570	22.908			
	CP4	0.790	-0.350	-0.821	13.432			
	CP5	0.626	-0.300	-0.955	10.212			
Customers pressure(NP)	NP1	0.716	-0.423	-0.580	11.584	0.758	0.847	0.582
	NP2	0.827	-0.324	-0.584	25.727			
	NP6	0.821	-0.432	-0.458	20.525			
	NP7	0.677	-0.289	-0.885	10.986			
Competitor pressure(MP)	MP1	0.765	-0.171	-0.715	21.131	0.890	0.916	0.647
	MP2	0.863	-0.312	-0.763	36.083			
	MP3	0.831	-0.529	-0.459	27.902			
	MP4	0.808	-0.388	-0.702	25.014			
	MP5	0.729	-0.462	-0.585	14.683			
	MP6	0.822	-0.418	-0.850	31.796			
Green procurement (GP)	GP1	0.862	-0.623	-0.270	34.072	0.843	0.889	0.618
	GP2	0.854	-0.938	0.430	34.967			
	GP3	0.712	-0.805	0.310	12.242			
	GP5	0.752	-0.627	-0.301	16.789			
	GP7	0.737	-1.016	0.696	14.857			
Reverse logistics(RL)	RL10	0.799	-0.605	-0.374	24.993	0.838	0.885	0.607
	RL11	0.795	-0.884	0.471	23.016			
	RL2	0.789	-0.816	0.067	20.508			
	RL4	0.735	-0.91	0.066	16.437			
	RL7	0.778	-0.696	-0.306	19.441			
Environmental performance(EVP)	EVP1	0.731	-0.770	-0.152	13.869	0.896	0.920	0.658
	EVP2	0.782	-1.096	0.778	18.142			
	EVP4	0.869	-1.032	0.649	36.871			
	EVP5	0.850	-0.934	0.414	30.991			
	EVP6	0.841	-1.114	0.779	25.267			
	EVP7	0.786	-1.085	0.730	21.424			

Source: Survey data result, 2023

4.2. Measurement model assessment

The Cronbach alpha, composite reliability (CR), and average variance extracted (AVE) were used to evaluate the constructs' reliability and validity [92] [95] [96],and[97]. The dependability of the measurement model was validated by examining the indicator and construct reliability. All indicators exceeding the 0.6 minimum threshold were retained, whereas ones with lower loadings were eliminated. Table 2 confirms the internal consistency and reliability of the measurement model based on the six reflecting constructs, all of which have alpha values > 0.6 and CR > 0.7 [98]. Construct validity was shown by proving the convergent and discriminant validity of all first-order reflective constructs. As can be seen in Table 3, all constructions had AVE values greater than the 0.5 threshold for being considered complete. It followed that convergent validity was established. The discriminant validity determines how much a

concept differs from other components in the model [99]. If the square root of AVE for each construct is greater than its correlation coefficient with other constructs, then the Fornell and Larcker technique, as it is commonly known, accepts the existence of discriminant validity [100].The heterotrait-monotrait (HTMT) ratio of correlations, a more modern technique, is also utilized to verify discriminant validity in PLS analysis. To demonstrate the discriminant validity of conceptually extremely comparable ideas, an HTMT value of less than 0.90 is advised [101]. Table 4(A) shows the square root of the AVE values for each construct as bold values in the diagonal. These values are larger than all other values below them as a correlation, and the values in Table 4(B) are HTMT values. By meeting the HTMT0.90 threshold value, all HTMT values were less than 0.90, which strengthened the discriminant validity of all first-order reflective constructs.

Tab. 4(A). Discriminant validity of first order constructs.

	CP	EVP	GP	MP	NP	RL
CP	0.770					
EVP	0.377	0.811				
GP	0.501	0.588	0.786			
MP	0.401	0.517	0.565	0.804		
NP	0.443	0.556	0.603	0.619	0.763	
RL	0.506	0.676	0.711	0.535	0.639	0.779

Note: Values on the diagonal are the square root of AVEs.

Tab. 4(B). Discriminant validity of first order constructs.

	CP	EVP	GP	MP	NP
CP					
EVP	0.440				
GP	0.632	0.662			
MP	0.493	0.570	0.644		
NP	0.575	0.659	0.741	0.752	
RL	0.616	0.768	0.842	0.609	0.800

Note:. HTMT values are less than 0.90
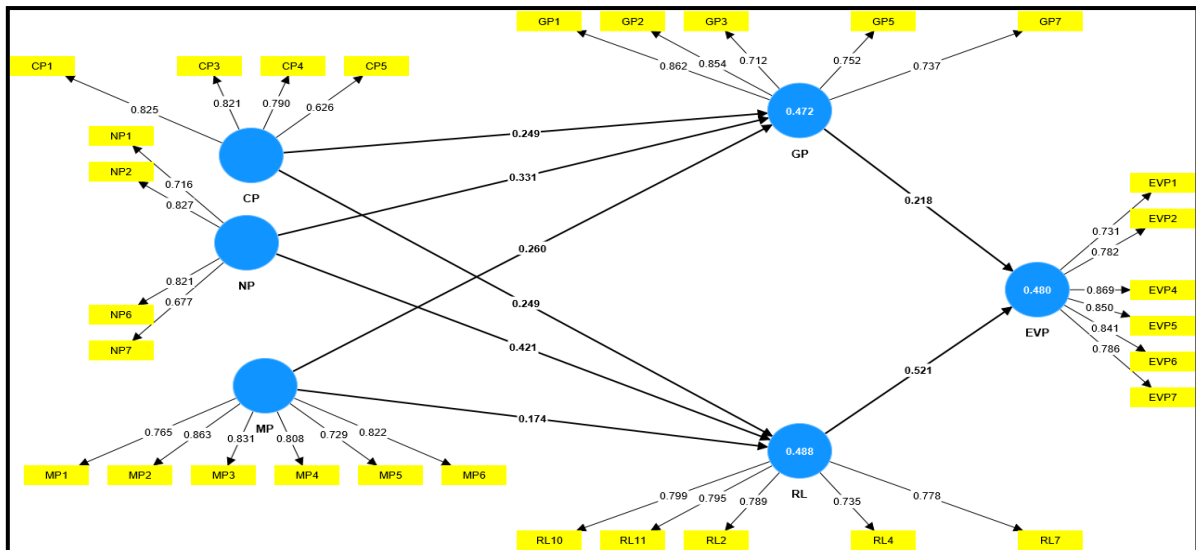Source: Survey data result, 2023

Fig. 3. PLS-SEM result.

Second-order constructs, such as institutional pressure, are created using a two-stage approach [102]. Three constructs were measured as first-order constructs (GP, LR, and EVP), with each set of indicators used to determine the outcomes. The three dimensions of institutional pressure are regulatory, customer, and competitive pressure, and the latent variable scores of these constructs' dimensions were utilized as indicators for estimating the model. According to [103], the proposed second-order constructions must be distinct from one another and must be able to explain the first-order structures. It is crucial to demonstrate that the second-order constructs may conceptually characterize the first-

order constructs to increase knowledge of the theoretical framework in use. In the current study, institutional pressure is indicated in Table 5 as a second-order construct. This was done using SmartPLS 4 to create a unique model that included institutional pressure as a second-order reflective construct [104]. Regulatory pressures (CP), consumer pressures (NP), and competitor pressures (MP) were the indicators of the institutional pressure second-order construct. We had to reevaluate the new model's first- and second-order constructs at this step, similar to how we did with the first-order constructs [102]. Table 5 includes the findings of the institutional pressure evaluation together with the first-order reflective

constructs GP, RL, and EVP.

Tab. 5. Validity and reliability after generating second-order constructs.

	Alpha	CR	AVE
EVP	0.898	0.92	0.622
GP	0.844	0.883	0.523
Institutional pressure	0.876	0.898	0.410
RL	0.838	0.885	0.608

Note: EVP: Environmental Performance; GP: Green procurement; RL: Reverse Logistics

Source: Survey data result, 2023

Cronbach alpha, CR, and AVE values of the first and second-order constructs were above 0.6, 0.7, and 0.5, respectively, except institutional pressure AVE, and fulfilled the requirements of minimum threshold values [105]. Item loadings for the second-order institutional pressure constructs were also good. Table 6 shows the discriminant validity test results for the second order after the generation of second-order constructs. HTMT0.90 methods showed evidence for the discriminant validity of the constructs in the new measurement model. Hence, the measurement model was acceptable for second-order structural model assessment.

Tab. 6. HTMT ratio after generating second-order constructs.

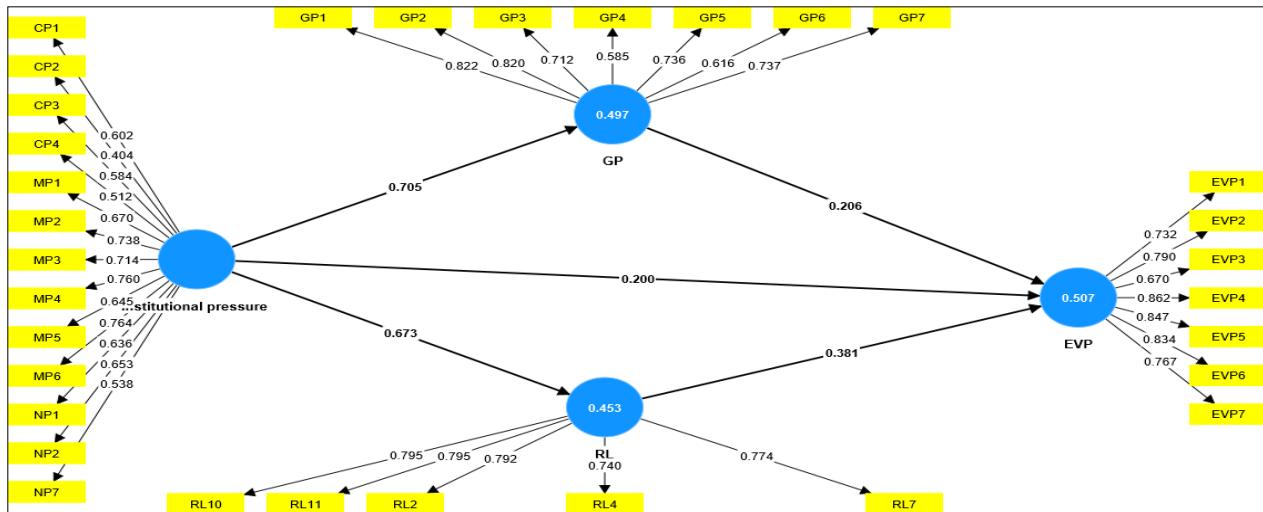|	EVP	GP	Institutional pressure
EVP			
GP	0.712		
Institutional pressure	0.659	0.809	
RL	0.756	0.889	0.775

Source: Survey data result, 2023

Fig. 4. Higher order PLS-SEM result

4.3. Structural model evaluation

Explanatory power, predictive power, and multi-collinearity were all evaluated using VIF, R^2, and PLS prediction, respectively [105]. The findings indicated that the model had moderate explanatory power for GP, RL, and EVP (R^2, 49.7%, 45.3%, and 50.7%, respectively; see Figure 3). There is no multi-collinearity issue in this investigation (see VIF value Table 7 below). The model's ability to predict outcomes outside the sample was then evaluated using PLS prediction analysis. According to Table 6's findings, Q^2 forecasts that all of the endogenous variable's primary indicators (EVP) will be larger than zero. Additionally, all but EVP7 of the mean absolute error (MAE) of the PLS-SEM of EVP is lower than the MAE of the linear model [94]. The findings prove that the model has high predictive power [106].

Tab. 6. PLS predict environmental performance

Indicators	MAE		Q^2 predict
	PLS-SEM	LM	
EVP1	0.879	0.893	0.122
EVP2	0.732	0.781	0.242
EVP3	0.745	0.759	0.117
EVP4	0.701	0.695	0.209
EVP5	0.735	0.757	0.181
EVP6	0.711	0.715	0.262
EVP7	0.708	0.725	0.306

Source: Survey data result, 2023

4.4. Hypothesis results

The hypotheses (direct and indirect) were tested using a bias-corrected and accelerated (BCa) bootstrap, with a subsample of 10,000 and 5% significance (α= 0.05) [107]. The path coefficient is deemed significant when the t-values are greater than 1.96 and the p-values are less than 0.05. The results shown in Table 7 indicate that, apart from H4 and H1a, which are not supported, the other five hypotheses (H1, H1b, H2, H3, and H5) are supported. So, our hypothesis results except H4 and H1a all are supported with "T-statistics > 1.96 and p-value < 0.05" [108][53]. The direct effect of institutional pressure on GP, RL, and EVP shows a t-value of 2.536, 15.688, and 15.323, with β-value of 0.200, 0.705, and 0.673, respectively. The values show a significant positive impact of institutional pressure on GP, RL, and EVP. Therefore, an increase in institutional pressure will enhance GP and RL and have a greater effect on

the firm's EVP. Furthermore, while examining the effect of GP on EVP, it is found that the t-values are 1.88 with β-values of 0.206. These values show that variable GP has no significant positive or negative impact on EVP. This indicates no relationship between GP and EVP. Hence, there was a "positive and significant relationship proven between institutional pressure and EVP". Hence, "RL had a mediating role between institutional pressures and EVP". These results (institutional pressures > RL - > EVP) indicated a "relationship coefficient" (β) = 0.257, "T-statistics" = 3.324, and a "p-value" = 0.001. So, our hypothesis was accepted with "T-statistics > 1.96 and p-value < 0.05". Hence, "RL had a mediating role between institutional pressures and the firm's EVP" [96]. The size of the mediating effect is estimated using variance accounted for (VAF) (indirect effect/total effect) [109]. As shown in Table 8, the VAF confirms the mediating effects of reverse logistics, since it is more than 20%.

Tab. 7. Results of hypothesis testing

Direct path	Hypothesis	Beta (β)	STD	T Statistics	VIF	p values ≤ 0.05	Decision		
Institutional pressure -> GP	H2	0.705	0.045	15.688	1.000	0.000	Support		
Institutional pressure -> RL	H3	0.673	0.044	15.323	1.000	0.000	Support		
Institutional pressure -> EVP	H1	0.200	0.079	2.536	2.200	0.011	Support		
GP -> EVP	H4	0.206	0.110	1.880	2.729	0.060	Not supported		
RL -> EVP	H5	0.381	0.111	3.437	2.501	0.001	Support		
Mediation						LCL 2.5%	UCL 97.5%	VAF (IP/TP)	
Institutional pressure -> GP -> EVP	H1a	0.145	1.827	0.068		0.000	0.320	0.2408	Not support
Institutional pressure -> RL -> EVP	H1b	0.257	3.324	0.001		0.101	0.407	0.4269	Support

Notes: VAF = IE/TE; TE VAF < 0.20, no mediation; VAF ≤ 0.79, partial mediation; and VAF ≥ 0.80, full mediation. VAF = variance accounted for; IE = indirect effect; TE = total effect [110].

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5. Discussions

The convergent validity of this research model was evaluated, and the importance of each indication pertaining to each research variable and its components was confirmed. As they produced insignificant loading, some indications were dropped. All values were higher than or equal to 0.70. The findings thus fully supported the convergent validity of the study model, demonstrating that there is a strong correlation between all construct indicators. Most of the hypotheses were confirmed by the research's empirical findings.

In particular, the findings showed that the participants concurred that institutional pressure might favorably result in RL and that RL is a way to maintain environmental sustainability. As a result, businesses increase consumer collaboration to environmentally friendly produce and packaging by minimizing their negative environmental effect, cutting water and material waste, and reducing environmental contamination. According to some past research [111] [112] [113], and [114], institutional pressure is detrimental and has no appreciable impact on EVP. However, recent studies [115] [116] [117], and [118] have reported a strong positive association between institutional pressure, RL, and EVP which is consistent with the findings of this study. RL and institutional pressures had an effect on how well the EVP [53]. It's interesting to note that institutional pressure had a detrimental impact on Pakistani manufacturing enterprises' adoption of GP and RL practices. This study found no significant relationships between institutional pressure and GP, RL, and EVP. As a result, the current study validates previous studies that found no or little correlation between institutional pressure and GP with EVP [7]. According to [53] study recommends that implementing sustainable practices is positively related to protecting the environment.

With the use of products with low energy and material requirements, cutting-edge materials, and avoiding dangerous substances, RL had a mediating effect on EVP [119] and [120]. The research found that RL is crucial for lowering water and solid waste output, which will reduce environmental effects, and EVP is improved by RL and institutional pressure. This agrees with other studies that have demonstrated the beneficial impacts of sustainable practices on environmental performance [121] [75] [122] [76] and [40].

5.1. Implications for theory and practice

Although there has not any published research on this topic. This study establishes the framework for institutional pressure through GP, RL, and EVP. According to [123], few previous studies looked at how institutional pressure affected EVP; this study demonstrates that RL plays a mediating role concerning the impact of effect institutional pressure on EVP. In this regard, [124] [125] [17] [53] [126] [127] stressed that future studies should test a more comprehensive model of the significance of institutional pressure in developing countries by containing EVP to provide validation for resource-based logic with a sustainable perspective regarding sustainable practices.Environmental alignment has been effective inside organizations' supply chain processes because of regulations imposed on businesses, customers' growing awareness, and competitors' [36] [128]. Meanwhile, by presenting empirical data on the effects of institutional pressure, GP, and RL toward achieving EVP, this work contributes to the application of institutional theory.

This study investigates how institutional pressure and RL impact industrial park companies' environmental performance. The study discovers that in emerging nations, there is less awareness of RL, such as recycling and reusing, and less pressure from the government, suppliers, and clients of the focal firm. Industrial park top management must work to integrate cutting-edge technology like big data analytics into the supply chain. Industrial park business owners can raise EVP by implementing numerous RL-friendly tactics and utilizing west management more regularly. The study's findings emphasize that RL has a more effect on EVP. Managers should ensure that RL and institutional pressure are successfully established to advance and improve EVP.

To protect natural resources and the environment for future generations, it may be possible to minimize raw material consumption and increase resource utilization as a result of this study. According to the findings, RL can be utilized in industrial parks to reduce air pollution, energy consumption, environmental hazards, and solid waste discharge/disposal, which can help reduce respiratory and airborne infections. The report can help industrial businesses make rational decisions about the strategies and tactics they will employ to address environmental and climate risks.

6. Conclusion, and Recommendation

Environmental sustainability is a growing concern for businesses and organizations due to climate change trends. This study examines the relationship between institutional pressure, GP,

and RL in Ethiopian industrial parks firms, using data from a survey of companies in the Ethiopia industrial parks. Our results show that the institutional pressure and RL effect on EVP. The findings show that GP does not improve EVP. Previous research suggests that GP practices contribute to environmental performance gains, but contradictory results have been reported [129] [40]). These findings were similar to, [94] found that GP had no positive effect on environmental performance. According to [40] and [130] GP has a positive influence on net income and the price of goods sold but has less of an impact on the environmental performance and competitiveness of China's auto industry. However, the result is consistent with the findings of [32], institutional pressure (Market or normative and regulatory or coercive pressures) exist, and these pressures encourage businesses to have enhanced environmental performance, particularly when these pressures lead to the adoption of RL practices. In order to improve EVP, institutional pressure sources are essential. Further, the study found RL plays a mediation role between institutional pressure and EVP, guiding the development of green practices like reusing, recycling, and reducing air pollution, energy consumption, and environmental hazards. These lead to green products and cleaner production, reducing waste, conserving resources, and promoting low operational costs [83], [131], [132]. These, in turn, enhance market and sales growth, improving profit margins and earnings per share. Institutional pressures, such as regulatory, market, and competitive factors, can also influence RL practices. According to this study, institutional pressure and RL project the firm's image, which pushes industrial park firms that care about the environment to prevent pollution, produce more cleanly, and put environmental management systems in place. To capitalize on the relationship's synergy and achieve market growth, a favorable reputation, and environmental performance, managers should use RL. Industrial park firms should also take the initiative to use institutional pressure and RL to help them enter the global market, especially in developed countries markets. According to the study, policymakers should give priority to institutional pressure and develop information systems to monitor, assess, and advise on environmental sustainability. Recycling waste materials reduces costs, enhances EVP, and reduces waste and energy consumption. Additionally, a climate task force should be established to provide environmental guidance to the Board of Governors, support and promote the dissemination of green best practices guidelines, and compile a database of eco-friendly corporate practices. Also, Ethiopia industrial park firms need incentives, technical training, resources, and effective monitoring and enforcement of rules and regulations to adopt green initiatives. Ethiopia banks should offer financing at lower rates and lower insurance premiums to protect against environmental risks.

6.1. Research limitation and future directions

Generalizability, endogeneity, and potential common method bias (CMB) are just a few limitations. The study was conducted in a particular national context (manufacturing firms in Ethiopian industrial parks); hence, the findings might not be generalizable to larger organizations or other cultural contexts. Future research may further test the model in other economies to see how institutional pressure, GP, and RL affect other performance metrics, including economic and social performance. Furthermore, since this study was carried out in a developing country, future studies may gather data from both developed and developing countries and compare them.Also, future research should examine other methods and theories.

7. Declaration of Conflicting Interests

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