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Investigating the Drivers of the Reverse Logistics Implementation in Reducing Waste in Vietnam

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ABSTRACT: Reverse logistics systems are now acknowledged as being crucial for enterprises to enhance their overall financial and environmental performance, particularly in developing nations where they face more challenges on both fronts. The majority of researchers examined drivers and barriers to implementation in developed nations. This study aims to investigate the main factors that positively influence the practice of reverse logistics in a developing country such as Vietnam. The study employed a sample of 287 managers within 5 industries. According to the findings, 4 key factors influenced the reverse logistics implementation in developing countries: economic drivers, competitive drivers, outsourcing drivers, and environmental drivers. Regulation drivers and reputation drivers have little influence on reverse logistics performance, contrary to predictions. The findings help scholars in understanding the factors influencing reverse logistics operations in emerging nations. Furthermore, the findings demonstrate differences in the drivers of reverse logistics execution in developing and developed countries.

KEYWORDS: Reverse logistics, performances, economic drivers, environmental drivers, sustainability, corporate social responsibility

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Introduction

The world's population is now more than three times higher than it was in the mid-twentieth century. "The global human population will exceed 8.0 billion in mid-November 2022, up from an estimated 2.5 billion in 1950, with 1 billion added since 2010 and 2 billion added since 1998″."[1] Furthermore, recent economic expansion, along with a growing middle class, has resulted in a consistent rise in global spending patterns.[2] The above factors, combined with the present tendency of planned obsolescence that has permeated production, have caused customers to prematurely abandon things, resulting in a loss of utility and value.[3] As a result, there is an increase in the use of natural resources, waste creation, and carbon dioxide emissions,[4] all of which contribute to climate change.

It is expected that the increased accumulation of carbon dioxide and other greenhouse gases will only exacerbate this worldwide concern beyond the next century. The global mean surface temperature has increased by 0.4°C to 0.8°C during the previous 100 years, and it anticipates increasing by 1.4°C to 5.8°C over the next 100 years.[5] Climate change, according to the Intergovernmental Panel on Climate Change (IPCC), will have several serious consequences, including rising temperatures, changing rainfall patterns, rising sea levels, saltwater intrusion, and an increased likelihood of extreme weather events like flooding and droughts.

Reverse logistics (RL) is viewed as a viable solution to the rising waste problem. RL is the process of successfully recovering value from end-of-life goods through actions like reuse, recycling, refurbishment, repair, and remanufacturing.[4] Reverse logistics plays an important role in recycling operations and positively provides economic, environmental, and social responsibilities.[6] Direct reuse, product recovery, and trash management will help the organization to recuperate the value of the goods and achieve long-term resource and financial sustainability.[7] From a sustainability perspective, firms must invest in green solutions that will allow industrial enterprises to decrease excessive emissions via RL operations, transportation, and waste management procedures.[4] An eco-friendly RL network assists businesses in reducing emissions through its multiple processing facilities and transportation. Furthermore, it contributes to attaining net-zero emissions objectives in the long run.[8] Significant progress has been made in wealthy countries, and RL is being promoted. However, in developing countries like India and South Africa, there is a significant shortage of RL practices.[2,7]

Despite the benefits of implementing RL procedures, businesses sometimes miss the reverse flow of goods, particularly under the status quo. They do not optimize reverse flow, instead focusing on forward flow.[2] Previous research has found challenges to RL adoption in underdeveloped nations, where resources tend to be scarcer than in rich countries. The studies sought to better understand the difficulties that emerging countries confront in terms of both economic growth and environmental conservation. A number of barriers could hinder the attainment of these benefits, making RL adoption challenging for many. The literature, for example, "extensively addresses the uncertainties regarding quality, quantity, and product return time that exist in closed-loop supply chains, which translates into ambiguities in activities such as capacity planning for revamping events such as remanufacturing."[2]

The difficulty in applying RL to developing nations, however, there are still beneficial characteristics that push firms here to investigate RL operations in order to gain a competitive advantage and protect the environment, as every corporation should do. A lack of awareness of the determinants of RL adoption will further exacerbate challenges for developing-country enterprises. However, little study has been conducted on the drivers of RL adoption in underdeveloped nations.

To fill a research gap, investigate the factors that positively influence the use of RL in developing nations, particularly Vietnam. Unlike prior studies that employed qualitative approaches to explore the factors influencing RL adoption, this study used a survey, Likert scales to measure variables, and SPSS and AMOS statistical software to examine test results for research hypotheses. There are differences in research techniques and research subjects in this study, which are the drivers of RL implementation in developing countries. The research findings will add to the literature on the factors influencing RL implementation, assisting researchers and policymakers in developing RL activities.

Literature Review

Reverse logistics

Reverse logistics (RL) has been defined as: "the process of planning, implementing, and controlling the efficient, cost-effective flow of raw materials, in-process inventory, finished goods, and related information from the point of consumption to the point of origin for the purpose of recapturing or creating value or proper disposal."[9,10] RL can be defined as "the effective and efficient management of the series of activities required to retrieve a product from a customer in order to either dispose it or recover value, with activities including transferring used products from the customers' possession to the recovery site also being termed take-back."[11]

Reverse logistics and green logistics have a few similarities and distinctions. Some operations, including recycling, remanufacturing, and reusable packaging, are used in both reverse and green logistics. Green logistics' environmental challenges include reduced use of natural resources, air pollutants, congestion and road usage, noise pollution, and the disposal of both hazardous and non-hazardous waste. While reverse logistics tasks include recovering, recycling, and reusing the value of the resources and goods in order to improve economic, social, and environmental performance. Green logistics investigates the supply chain in terms of environmental and ecological activities, whereas reverse logistics focuses on the profitability of strategic recovery possibilities.

There is a distinction to be made between reverse logistics and waste management. The fundamental goal of waste management is to collect and treat waste or low-value items for recovery. In short, waste management is the efficient and effective handling of waste. Reverse logistics is primarily concerned with the returning physical flow, which contains some value from good recovery choices.

The notion of reverse logistics contrasts with the concept of sustainable development. However, reverse logistics might be considered a component of it. A European Union report defined sustainable development as "meeting the needs of the present without jeopardizing future generations' ability to meet their own needs." As a result, reverse logistics may be considered as the implementation of sustainable development at the corporate level, because proper reuse, remanufacturing, or recycling operations in reverse logistics satisfy the need for sustainable development. The relationship between reverse logistics and sustainability will be explained in the next section.

Reverse logistics and sustainability

Sustainability is viewed from a triple-bottom-line viewpoint as the integration of environmental, economic, and social goals that achieves a balance between the 3 components.[12] Firms are now recognized as having environmental and societal obligations. According to Banihashemi et al,[13] about 75% of big global corporations are under pressure to examine sustainability concerns and adopt non-financial metrics of success in addition to traditional ones. In general, sustainable development is regarded as a crucial aim for organizations because of its influence on long-term competitiveness, and sustainability has caused enterprises to reconsider their strategy and market position.

RL is an organizational approach that not only helps the company financially, and socially but also has the potential to slow down or stop environmental deterioration.[14,15] Previous research has demonstrated that reverse logistics activities have economic, environmental, and social performances (Table 1).

Reverse logistics and economic performance. An organization's economic performance is primarily concerned with profitability and growth.[13] According to Banihashemi et al,[13] the economic success of RL may be assessed using measures such as recapturing value from goods, cost containment, inventory investment reduction, and enhanced profitability and labor productivity. An increasing body of research suggests a link between RL use and economic performance.[19,20,24,28]

RL can significantly improve firm economic performance by, for example, recapturing value from goods and reducing inventory[20]; increasing revenue from sales of recovered and remanufactured products[28]; and increasing profitability through low cost and high revenue.[34] Furthermore, RL has a beneficial influence on company performance measures such as quality improvement, technological innovation capabilities, productivity development, and market share increase.[22-24]

Reverse logistics and environmental performance. According to Banihashemi et al,[13] an organization's environmental performance can be defined as "its commitment to environmental excellence in order to fulfill societal expectations about environmental issues. An organization's environmental performance is defined as its capacity to contribute to reductions in

Table 1. The performances of RL.

PERFORMANCE	INDICATOR	AUTHORS
1. Economic performance	Cost saving	Hashemi[16]; Hammes et al[17]; Hazen et al[18]; Padmanabh and Jeevananda[19]; Shaik and Abdul-Kader[20]; Sharma et al[21]; Wu et al[22]; Younis et al[23]
	Profitability	Geng et al[24]; Maheswari et al[25]; Laosirihongthong et al[26];
	Delivery improvement	Eltayeb et al[27]; Geng et al[24]; Hazen et al[18]; Younis et al[23]; Wu et al[22]
	Sale growth	Geng et al[24]; Shaik and Abdul-Kader[20]; Wilson and Goffnett[28]
	Return on investment	Younis et al[23]
	Productivity improvement	Eltayeb et al[27],Eltayeb et al[29]; Govindan[30]; Hammes et al[17]
	Market share growth	Geng et al[24]; Govindan[30]; Wilson and Goffnett[28]; Younis et al[23]
	Efficiency	Azevedo et al[31]; Sarkis et al[32]
	Quality improvement	Geng et al[24]; Wu et al[22]; Younis et al[23]
	Technology innovation capability	Shaik and Abdul-Kader[20]
	Inventory reduction	Geng et al[24]
2. Environmental performance	Saving energy and resource	Geng et al[24]; Govindan[30]; Maheswari et al[25]; Shaik and Abdul-Kader[20]; Wu et al[22]; Younis et al[23]
	Reducing waste	Geng et al[24]; Maheswari et al[25]; Sharma et al[21]; Wu et al[22]; Younis et al[23]
	Reducing pollution	Eslamipoor[33]; Geng et al[24]; Govindan[30]; Hammes et al[17]; Hashemi[16]; Laosirihongthong et al[26]; Wilson and Goffnett[28]; Wu et al[22]; Younis et al[23]
	Reducing hazardous and toxic materials	Hammes et al[17]; Laosirihongthong et al[26]; Younis et al[23]
	Complying with environmental regulation	Laosirihongthong et al[26]; Shaik and Abdul-Kader[20]
	Decreasing environmental accidents	Shaik and Abdul-Kader[20]; Younis et al[23]
	Enhancing firms' environmental image	Younis et al[23]
3. Social performance	Customer satisfaction	Geng et al[24]; Maheswari et al[25]; Shaik and Abdul-Kader[20]; Wilson and Goffnett[28]; Wu et al[22]
	Firm's corporate image	Geng et al[24]; Laosirihongthong et al[26]; Shaik and Abdul-Kader[20]; Younis et al[23]
	Stakeholders' satisfaction	Maheswari et al[25]; Shaik and Abdul-Kader[20]
	Customer loyalty	Geng et al[24]; Hammes et al[17]; Wilson and Goffnett[28]
	Product image	Geng et al[24]; Laosirihongthong et al[26]
	Health and safety of the employee	Geng et al[24]; Shaik and Abdul-Kader[20]; Younis et al[23]
	Social commitment	Younis et al[23]
	Employee job satisfaction	Maheswari et al[25]; Shaik and Abdul-Kader[20]; Younis et al[23]
	Preserve environment	Maheswari et al[25]; Younis et al[23]

air and water pollution and solid waste, as well as its ability to reduce consumption of dangerous, hazardous, and toxic items and the frequency of environmental accidents."

Implementing RL has been found to have a considerable influence on the environmental performance of enterprises. Through material recycling, product reuse, and remanufacturing, RL actions assist in minimizing waste and dangerous materials in the environment, reduce pollution, and save resources, as well as its beneficial impact on climate change and global warming by returning items and lowering their carbon footprint, and contribute to improving firms' environmental protection image.[16,22-24,26,28,29,34,35]

Reverse logistics and social performance. Banihashemi et al[13] describe social performance as "a corporate organization's configuration of social responsibility principles, processes of social responsiveness, and policies, programs, and observable outcomes as they relate to the firm's societal interactions. The apparent engagement of a company with issues related to social responsibility such as management quality, health and safety issues, wages and benefits, equal opportunities policy, training/education, child labor, forced labor, freedom of association, and human rights and services is referred to as social performance."[13]

By operating in a social and ecologically responsible manner, RL may greatly boost corporate social performance by increasing customer happiness,[20,28] boosting customer loyalty by focusing on defective items,[24,26] enhancing happiness of stakeholders by getting high income and profit, and rising health and happiness of employees via healthy working environment.[23]

Vietnamese reverse logistics context

In Southeast Asia, Vietnam is a growing nation with strong economic growth. However, there are significant environmental issues in Vietnam as well. The Mekong River Delta region of Vietnam is the most severely impacted by the effects of climate change. OXFAM (Oxford Committee for Famine Relief) organization estimates that by the year 2100, 90% of the region will be underwater, with saline-sodic soil covering around 45% of it in the year 2030.[36]

According to estimates, 25 million tons of solid trash are produced annually, with a 10% annual increase rate. While recycling and reuse rates are only approximately 10% to 12%, collection rates range from 83% to 85% in urban areas to 40% to 50% in rural regions.[37] With 10.6 million units of e-waste in Vietnam in 2020, e-waste is one of the waste streams that is rising the quickest.[36] A notable absence from Vietnam's institutional waste management and disposal systems is an efficient approach to handling trash in the direction of the circular economy. Post-consumer garbage is transferred straight to landfills or incinerators, which are the only 2 disposal options in this system, rather than being recovered from secondary materials used in the collection. Or, to put it another way, because the official treatment plan does not include a material recycling stage, the recycling goal is primarily supported by the private and gray market before being addressed by the formal program.[38] RL is not required by law for firms in Vietnam, despite the fact that solid waste is one of the major contributors to environmental deterioration.[39] Vietnam will benefit from adopting RL practices in terms of waste reduction, environmental protection, and sustainable economic growth. However, in order for reverse logistics activities to become popular in Vietnam, it is crucial to pay attention to the factors that influence reverse logistics activities.

Drivers of the implementation of RL

Economic drivers. In the past, organizations used an open-loop supply chain that was primarily concerned with the forward flow of goods and services. However, in modern organizations, integrating RL techniques into a closed-loop supply chain may bring up prospects for cost savings and revenues.[16,17,40] Using RL methods to reduce costs is an essential strategy in a highly commoditized sector where repurchase behavior is influenced by price.[41] According to Maheswari et al[25], reduced material and power costs, as well as lower expenditures for environmental issues, are all examples of cost savings that may be attained with RL practices. Furthermore, organizations have the chance to boost their revenue by recovering the value of returned goods through reuse and recycling.[34] As a result, RL's effect on cost savings and improved revenue from sales of recovered and remanufactured goods[20,28] may significantly improve the economic performance of the company.[25] Based on the economic benefits obtained through the RL implementation, we expect that businesses will be inclined to design their RL practice. Thus, we hypothesize that:

> *H1: Economic drivers have a positive impact on the implementation of reverse logistics in enterprises.*

Competitive drivers. Porter[42] described competitive advantage as "the fundamental basis for superior long-term performance"—is solely dependent on how customers perceive greater value, which may be attained through superior features at prices that are comparable to those of the rest of the market or cheaper costs with identical benefits. Sigalas and Pekka Economou[43] explained that competitive advantage occurs when the company "creates more economic value than its less efficient competitor."

RL practice is a strategic approach that may offer a company an advantage in a variety of ways. First, utilizing recycled inputs will enable businesses to reduce product costs, maintain market competitiveness, and please customers with cheaper pricing in a highly commoditized sector.[44] Customer satisfaction is essential to building client loyalty and has directly and favorably impacted the customer's intent to buy and their propensity for repeat business.[45] Second, reuse, remanufacturing, and recycling are the main activities of RL practices that help businesses project an image of environmental sustainability to their target audiences.[44,46] According to Wang et al[47], when an organization adopts environmentally friendly practices, customers may favor them over rival organizations that do not. Finally, in order to keep competitors from obtaining the company's technology or from entering the market, RL was created. RL efforts, for instance, are highly valued by IBM. They created a department named GARS (Global Asset Recovery Services) to handle the flow of returned goods and stop rivals from using their old goods.[48]

With the help of the above facts, we contend that competitiveness-related performance will positively influence the implementation of RL in the organization.

H2: Competitive drivers have a positive impact on the implementation of reverse logistics in enterprises.

Reputation drivers. Wang[49] described corporate reputation as the standing sustained through time that, based on a set of strategies and by the eminence attained by each stakeholder, ensures the sustainability of the organization. Advantages that come with reputation produce favorable outcomes in a variety of fields. These might include differentiating businesses from rivals, enhancing organizational performance, producing extra value, and seeking higher prices. Additionally, reputation is a vital intangible asset that gives it a competitive advantage and has a beneficial impact on market value, market share, and financial profits.[40,49]

By implementing RL, a significant amount of materials is recycled or recovered, enabling the business to lower its carbon footprint and save money on energy.[20,25] Additionally, this supports companies in promoting a "green" image to their target markets.[44,46] According to Akdoğan and Coşkun[50], displaying an ecologically conscious image gives the potential to establish business relationships.

Through the remanufacturing of the product and recycling of the material, the company claims that it is responsible to society and the environment. Energy usage per item, yearly fuel use, tonne km by mode, overall vehicle effectiveness, amount of payload utilized, tonne km per sale, and road vehicle km per sale are some environmental performance measures that are used in reverse logistics and are primarily focused on lowering CO2.[51] On the other hand, some businesses show social corporate responsibility by utilizing their RL practice. For instance, Hanna Andersson, a direct retailer of newborn and toddler clothing with a $50 million business, created a program called Hannadowns (www.hannaandersson.com). Customers are requested to mail back their children's used Hanna Andersson clothing at Hannadowns so that it may be donated to a charity like schools and homeless shelters. The business then offers those clients 20% off the cost of brand-new Hanna Andersson apparel.

As a consequence, the RL activities improve the company's reputation and its green image as a whole,[52] which has a positive impact on its competitive advantage and other performances. Therefore, we expect that:

H3: Reputation drivers have a positive impact on the implementation of reverse logistics in enterprises.

Outsourcing drivers. Outsourcing reverse logistics services is a kind of planned external preparation that involves hiring foreign firms to handle all or part of an organization's logistical tasks, including collection, inspection, sorting, and disposal.[53] Manufacturers can create their own RL system, or outsource to a third-party logistics company.[54,55] Tavana et al[56] explained that outsourcing decisions are dependent on a range of qualitative as well as quantitative criteria, and the organizational structure significantly affects the choice to entirely or partially outsource the RL services. Perera et al[57] make a distinction between core, core-close, core-distinct, and disposable activities. The maximum level of competitiveness contribution is made by core activities, whilst the lowest level is made by disposable activities. The level of contribution to competitiveness affects how the outsourcing plan is implemented.

Serrato et al[58] concluded that keeping a firm's own RL is no longer financially efficient in industries with substantial return variability and short product life cycles. Ko and Evans[59] highlighted that the necessity for specialized infrastructure requiring unique information systems for tracking and recording data, specialized machinery for processing returns, and well-skilled nonstandard production procedures are the main drivers of outsourcing. According to Grabara and Kot[60], the main reasons for RL outsourcing include the following: the costs associated with logistics activities are more transparent, primarily due to the ease of their recording; cost reduction is possible through the selection of the most competitive offer on the market, which enables more flexible use of the owned resources; and the elimination of internal issues that make task performance challenges.

These studies demonstrate that outsourcing operations not only assist organizations in reducing the number of complicated tasks and concentrating on core capabilities but also have a positive effect on the organization's costs and profits.[60,61] Due to this, we anticipate that the market's availability of outsourced service providers will positively impact the implementation of RL. We hypothesize that:

H4: Outsourcing drivers have a positive impact on the implementation of reverse logistics in enterprises.

Regulation drivers. Regulation refers to any jurisdiction that requires a corporation to retrieve its goods or take them back.[62] Today, companies are held accountable for the whole product life cycle anymore. Since the strict legislation about environmental issues expresses the extended producer responsibility, companies are responsible for recovering their products or accepting them back. More and more nations are enforcing extended producer responsibility regulations, which concern the manufacturer's duty to cover the expense of handling the disposal, collecting, and reuse of end-of-life products.[63] The prevention of waste and promotion of waste recovery is mandated by legislation like the End-of-Life Vehicles Directive (ELV), Waste Electrical and Electronic Equipment Directive (WEEE), Restriction of Use of Certain Hazardous Substances Directive (RoHS), and Packaging and Packaging Waste

Directive, which are particularly strict in the European Union. Since 2009, Turkey's electronic sector businesses have been governed by the Waste Electrical and Electronic Equipment Directive. According to the regulation, producers are responsible for everything from new product design to manufacturing methods to waste disposal.

The findings of studies demonstrated that in order for organizations to avoid punishment, regulation is the driving factor for RL activities.[64-67] Thus, we anticipate that:

H5: Regulation drivers have a positive impact on the implementation of reverse logistics in enterprises.

Environmental drivers. Today, waste generation rates have increased with rapid population and economic growth worldwide which is considered a major source of pollution globally.[68] According to Kaza et al[69], global waste output exceeded 2.01 billion tonnes in 2016 and is estimated to increase to 3.40 billion tonnes by 2050. Municipal solid waste (MSW) degradation at open landfills and dumps produces gas with a composition of around 60% methane (CH4) and 40% carbon dioxide (CO2). This results in greater climate change and air pollution. First, air pollution is a significant killer in the modern world. Globally, 6.4 million people died in 2015 as a result of air pollution.[70] In Vietnam, there will be 26 262 additional cases of lung cancer and over 23 000 fatalities from the disease in 2020.[71] Second, climate change has an impact on at least 85% of the world's population. According to Trinh et al[72], "Vietnam is one of 5 nations that are estimated to be among the most influenced by natural disasters and climate change because of its extensive coastlines, considerable population, and economic activity in coastal regions, which is heavily dependent on agriculture, natural resources, and forestry."

In light of the above-mentioned circumstances, the Vietnamese government is leading the transition to a green economy or a circular economy. At the COP 26 conference, Vietnam intends to have zero emissions of greenhouse gases by the year 2050. The effects of environmental pollution and climate change on people's health, as well as the environment in general, are highly published by the government. People become more environmentally conscious, which has a favorable impact on the environmental actions they take.

At the same time, RL which is seen as an important solution to the circular economy can lessen the demand for raw material harvesting and the environmental damage caused by the extraction and processing of raw materials. By recycling or reusing items to decrease the quantity of packaging and trash, product recovery might lessen the impact on the environment.[51,73] Additionally, RL practices assist the environment by cutting down on energy use, (CO2) emissions and road vehicle miles traveled each transaction.[51] Previous studies showed that environmental management is a crucial strategic issue that has the potential to impact organizational performance.[74,75] As a result, we think that enterprises will undertake RL efforts to lessen their influence on the environment and themselves once they are aware of the effects of air pollution and climate change on health and society as a whole.

H6: Environmental drivers have a positive impact on the implementation of reverse logistics in enterprises.

Method

Sampling and data collection

The survey questionnaires, which were created and sent to manufacturing organizations over 4 months from April to August 2021, included many RL activity-related characteristics. The list of manufacturers in the cities of Haiphong, Hanoi, Haiduong, Bacninh, and Bacgiang was used to identify the targeted manufacturing enterprises across 5 industries. As an acceptable starting point, we used businesses whose products are recyclable and recoverable after being used. Participants are those who work in management for businesses. We contacted business groups in cities or local governments to explain the goal of the research team and guarantee the responses would be kept secret and used solely for academic research in order to enhance response rates. In Table 2, the responses' characteristics are displayed.

The participants were divided into 2 groups: 63.34% were male and 36.66% were female. Division managers made up 55% of the responses, while senior executives and president or vice presidents made up 27% and 18%, respectively. 41.64% of participants work for firms with 6 to 10 establishment years, while 24.63% work for organizations with 0 to 5 establishment years. Meanwhile, 15.25% and 18.48% of participants worked at the firm for 11 to 15 years, respectively. Participants came from a variety of companies, including 24.34% from plastics companies, 23.17% from electronics companies, 21.99% from construction material companies, 18.18% from textile companies, and 12.32% from beverage companies. More than 36% of the manufacturers who participated in the study employed 500 to 1000 personnel, while more than 34% employed 100 to 500. Over 75% of businesses have been operational for over 5 years. A total of 341 of the 520 questionnaires that were issued were returned, and 287 of them were included in the final analysis (or 55.19% of the total). The response rate is acceptable.

Scales and measures

The current study used quantitative research with a cross-sectional survey approach. The questionnaire was divided into 3 sections: (1) demographics, (2) drivers of RL, and (3) the implementation of RL. On a 5-point Likert scale with 1—strongly disagreeing and 5—strongly agree, respondents indicated how much each item best represented them. The operational definitions of each construct and reference are displayed in Table 3.

Table 2. Characteristics of the participants.

NO.	VARIABLE	CATEGORY	PERCENTAGE (%)	FREQUENCY
1	Gender	Male	63.34	182
		Female	36.66	105
2	Position	President/Vice president	17.60	51
		Division manager	55.43	159
		Senior leader	26.98	77
3	Establishment year	0-5	24.63	71
		6-10	41.64	120
		11-15	15.25	44
		Over 15	18.48	53
4	Number of employees	0-100	22.29	64
		100-500	34.31	98
		500-1000	36.36	104
		Over 1000	7.04	20
5	Types of companies	Beverage	12.32	35
		Plastics	24.34	70
		Construction materials	21.99	63
		Textile	18.18	52
		Electronic	23.17	67

Table 3. The measure of variables.

NO	CONSTRUCT	ITEM	DESCRIPTION	AUTHOR
1	Economic drivers	Economic1	Due to our RL operations, we are saving money.	Hammes et al[17]; Maheswari et al[25]
		Economic2	We save costs by using recycled inputs.	
		Economic3	Our RL program saves us money because of reducing inventory investment.	
		Economic4	Our returns handling strategy results in decreased compliance expenses with environmental requirements.	
		Economic5	Our approach to handling returned goods strengthens our cost position in comparison to our main rivals.	
		Economic6	Increasing customer satisfaction helps companies gain new customers and higher revenue.	
		Economic7	Increasing the competitive advantage helps the company achieve higher revenue and profits.	
2	Competitive drivers	Competitive1	RL activities increase customer satisfaction.	Aitken and Harrison[76]; Li and Olorunniwo[77]
		Competitive2	RL activities increase the competitive advantage through customer satisfaction.	
		Competitive3	RL activities increase the number of loyal customers.	
		Competitive4	Our products are cheaper than our rivals.	
		Competitive5	Our company is better than our rivals	

(Continued)

Table 3. (Continued)

NO	CONSTRUCT	ITEM	DESCRIPTION	AUTHOR
3	Reputation drivers	Reputation1	RL implementation improves our company's green image.	Carter and Rogers[78]
		Reputation2	RL implementation makes the company more attractive to customers.	
		Reputation3	RL implementation makes the company more attractive to suppliers.	
		Reputation4	RL implementation makes the company more attractive to employees.	
		Reputation5	RL implementation makes the company more attractive to shareholders.	
4	Outsourcing drivers	Outsourcing1	RL outsourcing reduces the cost of our RL activities.	Lahiri[79]
		Outsourcing2	By outsourcing RL, our businesses may avoid investing in asset bases and use the freed-up cash for other useful purposes.	
		Outsourcing3	Outsourcing RL increases delivery efficiency and cycle time, which boosts customer satisfaction with the after-sale experience.	
		Outsourcing4	RL outsourcing is cheaper than we do it ourselves.	
5	Regulation drivers	Regulation1	We comply with environmental regulations imposed by the government.	Eltayeb et al[27]; Laosirihongthong et al[26]
		Regulation2	We comply with other regulatory bodies on organizations to implement specific RL practices.	
		Regulation3	We adopt RL initiatives to avoid the threat of legislation.	
		Regulation4	We comply with environmental regulations to receive tax incentives.	
		Regulation5	We adhere to the circular economy growth orientation outlined by the government.	
6	Environmental drivers	Environmental1	Our RL program reduces energy and resource consumption.	Banihashemi et al[13]; Carter and Rogers[78]; Huang et al[80]
		Environmental2	Our RL program reduces waste in the environment.	
		Environmental3	Our RL program reduces pollution.	
		Environmental4	Our RL program protects the general populace's health.	
7	The implementation of RL	Reverse1	Our company implements RL	Chileshe et al[81]
		Reverse2	The company reuses materials from RL activities	
		Reverse3	My company advocates the use of salvaged materials and ingredients in the recalled product	
		Reverse4	The company's goal is to reduce waste in the environment	
		Reverse5	The company realizes the benefits of RL	

Economic drivers. We used 7 items to measure the economic driver scale.[17,25] The example statement is as follows: "Due to our RL operations, we are saving money"; "We save costs through using recycled inputs"; "Our RL program saves us money because of reducing inventory investment."

Competitive drivers. The variable of the competitive drivers was measured by 5 items.[76,77] The example statement is as follows: "RL activities increase customer satisfaction", and "RL activities increase the competitive advantage through customer satisfaction."

Reputation drivers. The scale of reputation drivers was measured by 5 items.[78] The example statement is as follows: "RL implementation improves our company's green image"; "RL implementation makes the company more attractive to customers."

Outsourcing drivers. We used 4 items to measure this scale.[79] The example statement is as follows: "RL outsourcing reduces the cost of our RL activities"; "by outsourcing RL, our businesses may avoid investing in asset base and use the freed up cash for other useful purposes."

Regulation drivers. The regulation driver scale was measured by 5 items.[26,27] The example statement is as follows: "We comply with environmental regulations imposed by the government"; "We comply with other regulatory bodies on organizations to implement specific RL practices".

Environmental drivers. We applied 4 items to measure this scale.[13,78,80] The example statement is as follows: "Our RL program reduces energy and resource consumption"; "Our RL program reduces waste into the environment".

The implementation of RL. The dependent variable of this research is the implementation of RL. To measure this variable, we employed 5 items based on the questions developed by Chileshe et al[81]. The example statement is as follows "Our company implements RL"; "The company reuses materials from RL activities"; "My company advocates the use of salvaged materials and ingredients in the recalled product."

Analyses

We used SPSS 22.0 and AMOS 22.0 to conduct the statistical analysis for this study. We conducted the data analysis using a 2-stage methodology.[82] The proposed model's multiple-item scale's convergent and discriminant validity were first examined by data analysis. According to Bagozzi et al[83], these kinds of validity, or "the amount to which an operationalization measures the idea it is designed to assess," are what form concept validation. We used Principal Component Analysis (PCA) and Confirmatory Factor Analysis (CFA) using SPSS 22.0 and AMOS 22.0, respectively, to investigate the measurement model. Second, we tested structural models based on the cleaned measurement model using structural equation modeling (SEM).

Results

Principal component analysis (PCA)

We first analyze the data using Principal component analysis (PCA) with Promax rotation. PCA is a dimensionality reduction approach that is commonly used to reduce the dimensionality of big data sets by reducing a large collection of variables into a smaller one that retains the majority of the information from the large set. Smaller data sets are easier to examine and display, and evaluating data points is considerably easier and faster for machine learning algorithms without extraneous variables to analyze.[84]

There are determined to be 6 factors with eigenvalues greater than 1.0. A total of 62.4% of the variance is explained by all constructs. The seventh factor's eigenvalue is 0.92, though, and the screen plot depicts a 7-factor structure. We then adjusted the number of observed components to 7 and ran the PCA once again. The results show that Competitive5 cross-loads on 2 constructs whereas Competitive4 cross-loads on a different environmental aspect. We carefully considered the phrasing of these 2 items and decided to remove them for further data analysis. After these 2 things have been removed, all of the items are put into the designated structures. The total variance is explained by all constructs at 64.1%. After that, confirmatory factor analysis is performed.

The findings of factor analysis are presented in Table 4. Our findings revealed the presence of all 7 factors, including regulation drivers, environmental drivers, outsourcing drivers, economic drivers, competitive drivers, reputation drivers, and RL implementation. In which all factors had a loading factor greater than 0.6, except environmental drivers, which had a minimum loading factor of 0.537.

Confirmatory factor analysis

Confirmatory factor analysis (CFA) is a multivariate statistical approach for determining how effectively measured variables indicate the number of constructs. CFA allows researchers to determine the number of components that must be present in the data as well as which measurable variable is associated with whatever latent variable. CFA is a technique for confirming or rejecting measurement theories.[84]

Confirmatory factor analysis (CFA) is performed using AMOS 22.0. The data were well matched by the proposed 7-factor model ($\chi^2 = 868.825$, df = 474, $\chi^2/df = 1.833$, CFI = 0.920, TLI = 0.911, GFI = 0.848, IFI = 0.920, RMSEA = 0.054). A series of goodness-of-fit indices criteria have been described by prior research[85] as follows: the value of χ^2/df should be smaller than 3, a good fit for RMSEA is no >0.08, and the cutoff value of CFI and TLI is 0.90 or above. As a result, the fit indices of the 7-factor model proposed for this study are deemed to be satisfactory.

Two indicators are used to assess the consistency and reliability of the factors: Cronbach's alpha (α) and composite reliability (CR). Internal consistency is a broad word for determining the reliability of a measure by examining the within-scale consistency of the replies to the measure's components. It is only relevant to multiple-item instruments for measurement. According to Hair et al[84], 2 values have been utilized in place of one another. The values of the CR and Cronbach's alpha should be more than .7.[86] Table 5 demonstrates that all of the CR values for economic drivers (0.87), competitive drivers (0.86), reputation drivers (0.82), outsourcing drivers (0.82), regulation drivers (0.84), environmental drivers (0.81), and the implementation of RL (0.89), respectively, were higher than the cutoff value of 0.7. In addition, all of the items' Cronbach's alpha values—.87, .86, .83, .83, .84, .80, .88—exceed the value of .7 for each of the following: economic drivers, competitive drivers, reputation drivers, outsourcing drivers, regulation drivers, environmental drivers, and the implementation of RL (Table 5).

The average variance extracted (AVE) has frequently been used to test discriminant validity using the "rule of thumb" described below. Each latent variable's positive square root of the AVE should be greater than the greatest correlation with any other latent variable. The average variance extracted (AVE) value should, according to Fornell and Larcker[87], be more than 0.5. The results show that the AVE values of economic drivers, competitive drivers, reputation drivers, outsourcing drivers,

Table 4. Results of factor analysis.

	FACTOR						
	1	2	3	4	5	6	7
Economic7	0.774						
Economic2	0.754						
Economic6	0.716						
Economic4	0.688						
Economic5	0.686						
Economic1	0.679						
Economic3	0.617						
Reverse1		0.996					
Reverse3		0.881					
Reverse2		0.645					
Reverse4		0.630					
Reverse5		0.618					
Regulation4			0.883				
Regulation5			0.739				
Regulation2			0.704				
Regulation1			0.640				
Regulation3			0.621				
Reputation4				0.750			
Reputation3				0.716			
Reputation2				0.683			
Reputation1				0.681			
Reputation5				0.681			
Outsourcing1					0.879		
Outsourcing2					0.823		
Outsourcing4					0.691		
Outsourcing3					0.607		
Environmental1						0.805	
Environmental4						0.771	
Environmental2						0.719	
Environmental3						0.537	
Competitive2							0.869
Competitive3							0.848
Competitive1							0.756

Abbreviations: Regulation, regulation drivers; Environmental, environmental drivers; Outsourcing, outsourcing drivers; Economic, economic drivers; Competitive, competitive drivers; Reputation, reputation drivers; Reverse, the implementation of RL.
Extraction Method: Principal Axis Factoring. Rotation Method: Promax with Kaiser Normalization.
Rotation converged in 6 iterations.

Table 5. Results of convergent reliability testing.

NO	CONSTRUCT	ITEM	FACTOR LOADING	VARIANCE EXPLAINED (%)	CRONBACH'S ALPHA	C.R	AVE
1	Economic drivers	Economic7	0.748	58.7	.87	0.87	0.53
		Economic5	0.723				
		Economic1	0.717				
		Economic6	0.716				
		Economic2	0.709				
		Economic4	0.702				
		Economic3	0.616				
2	Competitive drivers	Competitive2	0.864	78.6	.86	0.86	0.52
		Competitive3	0.853				
		Competitive1	0.756				
3	Reputation drivers	Reputation4	0.865	61.4	.83	0.82	0.54
		Reputation5	0.733				
		Reputation2	0.695				
		Reputation1	0.658				
		Reputation3	0.644				
4	Outsourcing drivers	Outsourcing1	0.880	67.2	.83	0.82	0.54
		Outsourcing2	0.824				
		Outsourcing4	0.698				
		Outsourcing3	0.598				
5	Regulation drivers	Regulation4	0.739	59.7	.84	0.84	0.52
		Regulation3	0.721				
		Regulation5	0.694				
		Regulation2	0.691				
		Regulation1	0.677				
6	Environmental drivers	Environmental1	0.815	62.7	.80	0.81	0.51
		Environmental4	0.765				
		Environmental2	0.716				
		Environmental3	0.537				
7	The implementation of RL	Reverse1	0.913	68.3	.88	0.89	0.57
		Reverse3	0.850				
		Reverse2	0.731				
		Reverse4	0.696				
		Reverse5	0.690				

Abbreviations: Regulation, regulation drivers; Environmental, environmental drivers; Outsourcing, outsourcing drivers; Economic, economic drivers; Competitive, competitive drivers; Reputation, reputation drivers; Reverse, the implementation of RL; AVE, average variance extracted; CR, composite reliability.
N=287.

regulation drivers, environmental drivers, and the implementation of RL are, in that order, 0.53, 0.52, 0.54, 0.54, 0.52, 0.51, and 0.57. The standard factor loadings of these items are over 0.50 (ranging from 0.54 to 0.91). All constructs have explained variances that are higher than 50%.[88] As a result, it is possible to trust the convergent validity of all constructs. According to Fornell and Larcker[87], the variables of the model exhibit discriminant validity if the square root of AVE is higher than the inter-construct correlation coefficients of the variables. Additionally, the study's model suited the data well. According to the research results, the proposed model possesses discriminant validity.

Common method variance

Tehseen et al[89] defined common method variance (CMV) as the systematic error variation that develops when variables are assessed using the same source or technique.[90,91] Therefore, a bias might result from the systematic error variance. The projected association between variables might be exaggerated or deflated as a result of respondents' consistent responses to all survey questions.[89,91]

In this study, we employed and investigated CMV preventive techniques. We first used a set of mixed questions to prevent respondents from determining which features were related to which variables.[92,93] Additionally, to evaluate the CMV in our study, we used the most well-liked statistical methods, including Harman's single-factor test and partial elimination of the general construct.[89,94] The results of the computed principal component analysis (PCA) revealed 7 different variables that accounted for 64.1% of the overall variation (Table 6). Only 18.2% (less than 50%) of the data variance was explained by the first unrotated component. The first component does not account for the majority of the variance, and no single factor emerges. As a consequence, data analysis revealed that CMV was absent from this study.

Hypotheses testing

To examine the relationships between dimensions and run path analysis, structural equation modeling (SEM) was performed. Standardized coefficients were utilized to evaluate the direction of exogenous factors on endogenous variables, which were then used to test the hypothesis. According to the SEM test findings, the theoretical model's goodness-of-fit indices ($\chi^2 = 868.825$, df = 474, $\chi^2/df = 1.833$, CFI = 0.920, TLI = 0.911, GFI = 0.848, IFI = 0.920, RMSEA = 0.054) were acceptable (Figure 1).

The results of our hypothesis testing are shown in Table 7. Our findings demonstrate that economic drivers have a positive effect on the implementation of RL ($\beta = .64$, $P < .001$), supporting Hypotheses 1. In addition, our study showed a positive relationship between competitive drivers and the implementation of RL ($\beta = .15$, $P < .01$). Therefore, Hypothesis 2 was accepted. Our results indicated that outsourcing and environmental drivers were positively associated with the implementation of RL, ($\beta = .12$, $P < .05$) and ($\beta = .13$, $P < .05$), respectively. Thus, hypotheses 4 and 6 were supported.

Contrary to our predictions, Hypothesis 3 was rejected. Reputation drivers have no impact on the implementation of RL ($\beta = .08$, $P > .05$). In line with the above hypothesis, the drivers of environmental regulation are not correlated with the implementation of RL ($\beta = .08$, $P > .05$). This led to the rejection of hypothesis 6.

Discussion

According to Wu[95], "People's desires for commodity diversity and personalization have developed in lockstep with advances in science and technology, as well as improvements in people's living standards. Because distinct consumer groups are continually forming, and different groups have different consumption concepts, personalized and diverse demand is the key to leveraging the consuming potential of market segments". As a result, the rate of commodity replacement is growing, which means that a greater number of commodities are being eliminated and destroyed. In general, waste management reduces waste in industrial operations.[96] There are 2 methods to reduce waste: first, avoid garbage from being generated; second, transform waste into treasure, known as RL. In general, RL is the most effective approach to decrease waste created by the utilization of resources in the initial place of production. Reverse logistics is the component of the supply chain process that prepares, implements, and controls the efficient, effective reverse flow and storage of returned items. It deals with returned items in order to maximize value while minimizing environmental damage.[11]

An increasing body of research has demonstrated the value of RL activities for economic, environmental, and social performance.[11,16,18-20,22,23,28] First, firms can save money by reusing or remanufacturing items, gain revenue by selling reused or remanufactured products, boost labor productivity by enhancing production skills and staff creativity, and increase profitability.[19,20] Second, by developing the RL system, the company promotes environmental efficiency by decreasing waste to the environment, lowering emissions, conserving energy and natural resources, and improving enterprises' environmental image.[22,28] Finally, the social performance of applying RL is evidenced by better consumer satisfaction, such as product recalls and ecologically responsible items, hence enhancing customer loyalty. Furthermore, the application of RL creates an enjoyable working environment, improves employee health and safety, and leads to employee satisfaction.[20,24,26]

Because of the strict laws and regulations governing the safe disposal of waste once a product has completed its life cycle, developed countries are pushing hard to install RL systems in their companies.[21] However, in developing nations such as India, South Africa, and Vietnam, implementation of the RL is relatively limited and optional. Previous research has

Table 6. Results of total variance explained.

TOTAL VARIANCE EXPLAINED							
FACTOR	INITIAL EIGENVALUES			EXTRACTION SUMS OF SQUARED LOADINGS			ROTATION SUMS OF SQUARED LOADINGS
	TOTAL	% OF VARIANCE	CUMULATIVE %	TOTAL	% OF VARIANCE	CUMULATIVE %	TOTAL
1	6.037	18.295	18.295	5.616	17.017	17.017	4.328
2	3.197	9.689	27.984	2.742	8.310	25.327	4.637
3	3.148	9.539	37.523	2.659	8.056	33.383	2.872
4	2.610	7.910	45.434	2.204	6.679	40.062	2.799
5	2.451	7.426	52.860	2.052	6.219	46.282	2.790
6	2.302	6.975	59.835	1.932	5.853	52.135	2.218
7	1.419	4.299	64.134	1.039	3.148	55.283	2.165
8	0.836	2.532	66.666				
9	0.737	2.235	68.901				
10	0.706	2.139	71.041				
11	0.675	2.044	73.085				
12	0.653	1.977	75.062				
13	0.604	1.831	76.893				
14	0.589	1.786	78.679				
15	0.536	1.625	80.304				
16	0.517	1.566	81.870				
17	0.493	1.494	83.364				
18	0.472	1.431	84.795				
19	0.453	1.372	86.167				
20	0.439	1.332	87.499				
21	0.432	1.310	88.809				
22	0.419	1.271	90.079				
23	0.389	1.179	91.258				
24	0.376	1.140	92.397				
25	0.363	1.100	93.498				
26	0.350	1.061	94.558				
27	0.324	0.981	95.540				
28	0.299	0.905	96.444				
29	0.294	0.889	97.334				
30	0.282	0.854	98.187				
31	0.255	0.773	98.960				
32	0.242	0.734	99.693				
33	0.101	0.307	100.000				

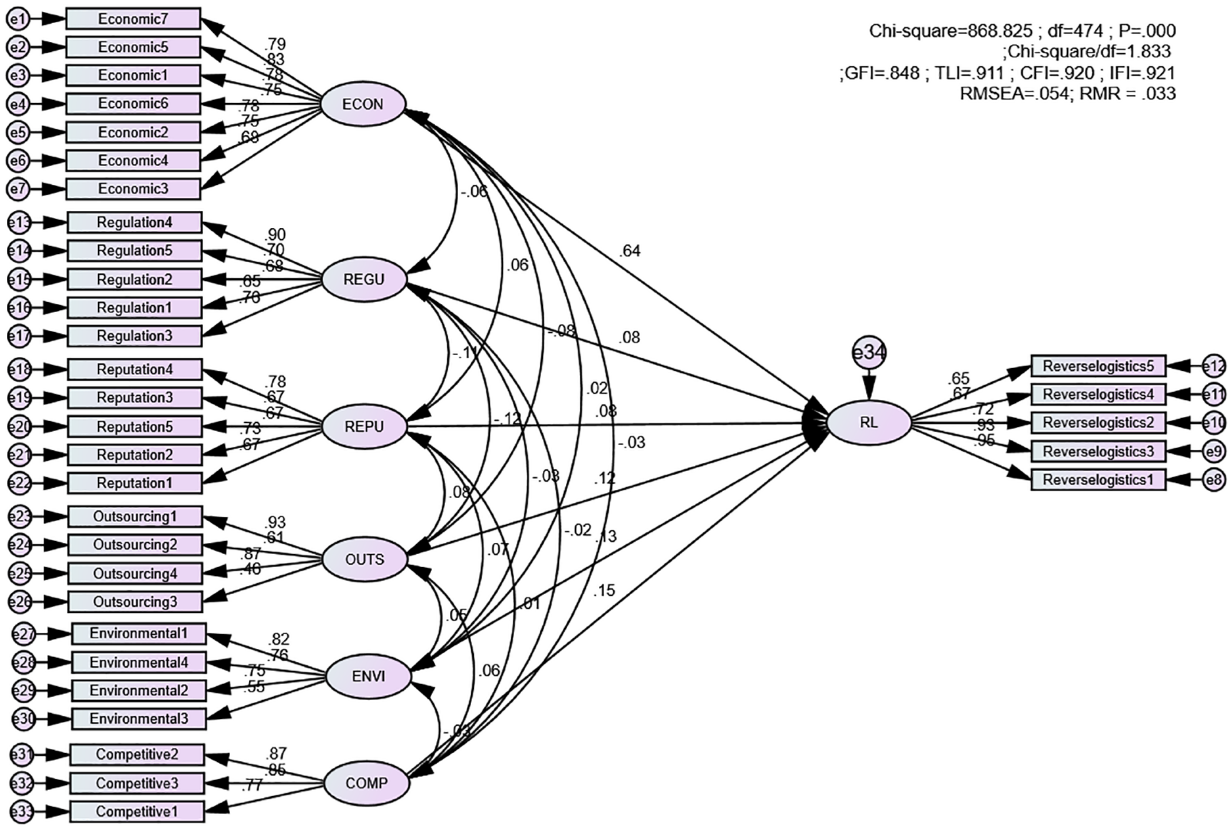

Figure 1. The standardized path coefficient of the suggested model.

Table 7. Hypothesis testing results.

HYPOTHESIS NO.	INDEPENDENT VARIABLE	DEPENDENT VARIABLE	BETA	*P*-VALUE	SUPPORT HYPOTHESIS
1	Economic	Reverse	0.64	***	Yes
2	Competitive	Reverse	0.15	.002	Yes
3	Reputation	Reverse	0.08	.137	No
4	Outsourcing	Reverse	0.12	.017	Yes
5	Regulation	Reverse	0.08	.125	No
6	Environmental	Reverse	0.13	.010	Yes

Abbreviations: Regulation, regulation drivers; Environmental, environmental drivers; Outsourcing, outsourcing drivers; Economic, economic drivers; Competitive, competitive drivers; Reputation, reputation drivers; Reverse, the implementation of RL.
N = 287.
***$P < .001$.

highlighted the major barriers to RL implementation in nations that are developing. There is, however, a shortage of research showing reasons for RL execution. As a result, our findings have made significant contributions to the theoretical foundations of RL, particularly for emerging economies.

Our findings indicate that economic drivers have a major impact on RL execution. This finding is consistent with earlier research.[24,25] [20,28] The implementation of the RL system assists enterprises in recovering a huge amount of material, allowing them to save cost on the costs of materials. According to the findings of the study, the valuable resources recovered encouraged companies to engage in RL operations. Furthermore, RL's efforts contribute to the company's revenue growth through the sale of restored products and competitive advantages. Previous research has shown that RL activities assist firms in boosting consumer satisfaction and loyalty, giving them a competitive advantage over competitors.[17,24,28] Our findings show that the economic effectiveness of RL activity is vital for any firm, whether it is in a developed or developing nation. It appears that the motivation for firms to be environmentally responsible is linked to economic advantages.

Our findings demonstrate that competitive drivers improve RL performance, which is consistent with the studied literature.[7] Companies in an environment of competition search for ways to strengthen their competitive advantage. Wongsansukcharoen and Thaweepaiboonwong[97] define competitive advantage as positioning excellence based on outstanding customer lifetime value and/or the achievement of lower comparative cost structures with rivals, higher market shares in market segments, and attaining commercial success. A company has a competitive advantage if it can generate more economic value than the product market's marginal (breakeven) rival.[98] In this study, the adoption of the RL system assists companies in gaining a competitive advantage through cost savings, improved after-sales service, and increased customer satisfaction. Companies in developed countries seek a competitive advantage by promoting a corporate image of high social responsibility through the implementation of RL actions.[20,23] Companies in developing nations seek to gain an advantage by reducing costs via the reuse of materials and goods. Our findings contributed to the theoretical foundation of factors influencing RL activity. Our findings added to the theoretical foundation by explaining the influence of lowering product costs, increasing corporate image, and upgrading firm technology on reverse logistics activity implementation, which supports previous research.[44,46]

Outsourcing may be defined as obtaining services from outside service providers.[53] According to the findings of this study, outsourcing drivers have a good influence on the execution of RL operations in less developed countries. This is a significant difference when compared to industrialized countries where enterprises have sufficient financial resources to establish a system for recovering materials and damaged goods. According to Rebehy et al,[99] developing the RL system requires investments in transportation, sorting, and recovery machines. Grabara and Kot[60] show that outsourcing operations not only help firms reduce the number of challenging tasks and focus on core competencies, but they also have a favorable influence on their costs and revenues. Outsourcing RL will benefit companies that have recently deployed a recovery operation by lowering investment costs while maintaining RL activities. These businesses can reduce their asset base by outsourcing RL and then use the funds they've saved for more profitable purposes. Our findings have substantial implications for identifying feasible solutions for medium-sized and small-sized companies that seek to implement RL activities. Our findings confirmed the academic literature's argument that a lack of supply chain partner integration may be a barrier to reverse logistics adoption, but the availability of reverse logistics outsourced service providers is a driver.[100]

According to our findings, the environment has a positive impact on the application of RL. According to the studied literature, RL practices allow the organization to lessen their environmental effect by cutting down on the number of cars on the road, the number of miles driven, and the vehicle's (CO_2) emissions.[51] Despite the fact that Vietnam is a developing country, the effects of climate change on people and the economy are obvious. Every year, Vietnam experiences damage by storms, droughts, and floods, which severely disrupt company activities. Natural disasters appear to cause significant damage to enterprises, such as production stopping and housing destruction. This has had an influence on awareness of environmental issues and has a big impact on the execution of RL efforts to minimize waste and protect the environment. Our findings supplement Chen's[101] research regarding environmental awareness in reverse logistics activities. While Chen et al. (2019) believe that consumer environmental awareness has a positive impact on the firm's reverse logistics activities, our results show that company environmental awareness also plays a role crucial in the adoption of reverse logistics.

Our findings show that regulation drivers have little impact on the RL implementation, in contrast to early predictions. One main cause can be the absence of regulations governing the application of RL techniques in Vietnam.[63] In general, there are not many laws requiring firms to recycle their waste and recall their products. Also, absent from this study was any relationship between reputation and the implementation of RL. It has not been seen to be crucial to the creation of a competitive advantage for the company's reputation. One significant reason that could contribute to this is the fact that a company may get unconcerned with its reputation because it takes several years of consistent RL activity to establish one.

Managerial implications

Managers have excellent opportunities to advance and improve the effectiveness of their RL operation in developing nations with high growth rates like Vietnam. The results of this study suggest that managers should keep allocating capital and human resources to the RL operation in order to reduce expenses and increase revenue. By utilizing the advantages of RL practices' cost-saving and recovery advantages, RL operations will only gain significance and are one of the keys to sustaining price competitiveness in the market. Damages and returns will always happen, therefore improving the RL process's effectiveness is crucial.

Managers should also understand that RL operations may considerably boost a company's competitive advantage. Businesses will probably find it extremely challenging to attract and keep clients if they lack a competitive advantage. Managers are advised to understand that RL operations boost customer satisfaction with the organization, hence increasing the number of loyal consumers who generate significant revenue for the organization.

In the industrialized business world, outsourcing has become a buzzword among corporations and academics. Companies are placing a greater emphasis on outsourcing other tasks and developing their core strengths. It was noted that RL is a possible area for outsourcing because it is often not a fundamental business function for many companies. Managers can choose partners to outsource RL in order to lower the investment in infrastructure systems and human resources for establishing RL operations. Businesses that outsource RL not only boost stakeholder satisfaction and ensure product recall, but they also don't have to focus much on RL.

Limitations and directions for future research

This study has a number of drawbacks that have been noted. First of all, this study ignored all other industries inside Vietnam and focused only on 5 of them. To expand the body of information about RL practices, future studies should do more qualitative research across a range of businesses. Second, because only Vietnamese firms took part in the study, the sample size was small. Because the study's generalizability is hampered by the small sample size, future research should concentrate on the factors that motivate RL practices in other developing countries to produce a more accurate picture of the problem in this sector. Finally, this study investigated the motivations for the implementation of RL. Future studies should look at the factors that encourage and hinder RL adoption in developing nations, which have greater difficulties defending the environment than industrialized nations do.

Conclusion

The primary contribution of this study is to investigate the drivers of RL activity adoption in developing nations, particularly Vietnam. This study pioneered the use of quantitative research methodologies to achieve research goals. The findings of a survey of 287 managers from 5 different types of companies revealed 4 factors that positively promote RL activities in enterprises: economic drivers, competitive drivers, outsourcing drivers, and environmental drivers. The regulation and reputation drivers had little influence on RL activity, contrary to expectations. Our study has offered a unique viewpoint on RL activities from developing nations where limited resources must be allocated for economic and environmental objectives. The findings have offered vital recommendations to policymakers in boosting RL activities. Furthermore, the work indicates potential research possibilities to improve the theoretical foundation of RL.

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