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Reverse Logistics, Stakeholder Influence and Supply Chain Performance in Ghanaian Manufacturing Sector

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Abstract

The study primarily aimed at assessing the perceived stakeholder influence on reverse logistics (RL) adoption and further examined how the adoption of RL influences supply chain performance, with a focus in the Ghanaian manufacturing sector. A total of 193 operation managers, logistics managers and production managers were carefully selected via stratified sampling technique for the study. A structured questionnaire was used for the primary data collection instrument. Formulated hypotheses were tested using Partial Least Squares structural equation modelling. The findings revealed that all the stakeholder variables (top management support, corporate citizenship pressure and customer pressure), except for environmental regulations, have a strong influence on RL adoption. Furthermore, supply chain performance is enhanced through RL. The results provide strategic insight for managers to willingly support RL and design effective product return policies that meet both customers and society's 'greening' expectation to enhance their supply chains. Governments and other environmental regulatory bodies should also design national waste management policies aimed at mounting pressure on manufacturing firms to comply and adopt RL into their operations.

Keywords: Stakeholder Influence, Reverse Logistics, Supply Chain Performance

Introduction

In recent years, manufacturing firms across geographical boundaries have shown keen interest in protecting and preserving the environment in which they operate. Thus, firms are not only interested in the conventional flow of products via the downward supply chain (i.e., from manufacturer to the customer), but proactively or reactively also consider eco-friendly initiatives that ensure the reverse flow of used products via the upward supply chain (i.e., from the final consumer to the manufacturer) (Mathiyazhagan & Hag, 2013). Consequently, reverse logistics (RL) has steadily become a unique competence in contemporary supply chain and gained ostensive industrial relevance, with Ghanaian manufacturing firms, not an exception.

Undisputedly, RL is getting special attention in the domain of industrial practitioners due to its perceived benefits to supply chain performance and the ever-increasing pressures from multiple stakeholders. For instance, Govindan et al. (2015) indicate that customers have over the years become more conscious concerning environmental issues, hence, exerting burden on firms to adopt RL. Similarly, other researchers (Zhu & Geng, 2013; Vanalle et al., 2017) highlight firms integrate RL into their supply chain in response to strict environmental regulations set by governments, competitive pressures and managers' willingness. Moreover, the communities in which firms operate expect them to adopt environmentally sound practices, thereby putting enormous pressure on firms to consider RL into their 'strategic thinking' and operations (Abdullah & Yaakub, 2017).

On the impact of RL on supply chain performance, Mandota (2015) opines that the adoption of RL has a positive influence on firm competitiveness, inventory management, a financial position as well as green outcomes. To Zhang et al. (2015), with RL adoption, manufacturing firms can minimise and eliminate waste, which subsequently leads to a reduction in end-to-end supply chain cost.

With the alarming rate of plastic waste generation in Ghana coupled with the porous nature of waste infrastructure in dealing with these drowning plastic wastes, RL is potentially serving as the obvious choice for manufacturing companies to capture value from

these plastic wastes. For instance, Accra Brewery Ltd. in 2017 successfully launched a new returnable glass bottle for its soft drink products. This initiative is in line with the company's environmental sustainability goals on recyclable or reusable policy geared towards capturing value from plastic waste and protecting the environment. Likewise, Voltic Ghana Ltd. has partnered other non-governmental agencies by introducing a policy dubbed 'IRecycle' aimed at collecting used plastic bottles. Despite these sustainable strategic initiatives taken by these manufacturing firms, little is known regarding what drives them to consider RL practices. Again, many Ghanaian firms are slowly implementing RL despite its perceived benefits to firms' supply chain.

This study, therefore, provides a substantial contribution to the existing pool of research on RL by focusing on Ghanaian manufacturing sector, a geographical area where limited empirical studies have been conducted on RL and its impact on supply chain performance. On this backdrop, it is, therefore, necessary to delve into the roles played by diverse stakeholders regarding the adoption of RL. Consequently, the aim of this study is in two-folds: (a) to examine the perceived effect of stakeholder influence on the adoption of RL and (b) to analyse the impact of RL adoption on supply chain performance.

The remainder of this study is organised as follows. Section 2 focuses on reviewing the literature on the thematic areas of the study (stakeholder theory, the concept of RL and supply chain performance). Section 3 concentrates on the research model and hypothesis development, while Section 4 deals with the methodology. Section 5 deals with the analysis and discussions. Section 6 focuses on the conclusion and highlights some practical implications for industrial practitioners. The final section provides some limitations and proposes an agenda for further studies.

Literature Review

Stakeholder Theory

The stakeholder theory has received considerable prominence in green sustainability literature (Sarkis et al., 2010; Yu & Ramanathan, 2014) and hence is employed to explain how various stakeholders influence firms to adopt RL. Primarily, a stakeholder can be described as a person or group (within or outside an organisation) who can influence or be influenced by the activities of the organisation. Stakeholders include but not limited to employees and top management, customers, competitors, the media, suppliers, community, government and other non-governmental organisations. The theory holds that firms have a significant relationship with various key interest groups, and it behoves on firms to maintain this relationship by responding to their interest (Clarkson, 1995). Thus, the continued existence of a firm hinge on how well it can sustain the network of relationship with its key stakeholders. The adoption of eco-friendly policies like RL emanates from the enormous pressures exerted by stakeholders (Álvarez-Gil et al., 2007; Rebs et al., 2018). This study is anchored on this theory because it has been validated and extensively supported by other researchers as an explanatory theory for the relationship between stakeholder influence and adoption of eco-friendly practices like RL.

Reverse Logistics

RL has evolved as a significant research interest in the supply chain management literature over the last few decades. Despite its prominence among logisticians and industrial practitioners, the concept is relatively in its infant stage. As such, it has been heterogeneously defined. Most of the definitions have been coined to stress on the environmental or economic perspective of RL or a combination of both. For instance, Dowlatshahi (2011) delineate RL as the management process of taking back products (e.g., waste products) from the customer, with the aim of capturing value (gaining economic benefits) or ensuring the proper disposal of the returned products. Stock (1992) also viewed RL as all logistics activities (recycling, reuse of materials, etc.) that are related to the management of hazardous waste materials. This definition highlights the reason why RL is commonly referred to as an environmentally sustainable practice.

For this study, RL is explained as the process of gaining value from discarded or waste products or materials from the downstream of the supply chain to the upstream supply chain by deploying sustainable environmental practices like recycling, remanufacturing and reuse. Several scholars (Rogers & Tibben-Lembke, 2001; Hazen et al., 2011; Wainaina, 2014) have attempted to classify the RL activities. These activities include returns, salvage, landfill, remanufacturing, disposal, reuse, recycling, refurbishing and repackaging. This study, however, focused on remanufacturing, reuse and recycling since they constitute the fundamental rationale for returning used products into the forward supply chain as cited by Wells and Seitz (2005). These practices are also better suited for the study setting and mostly applied by Ghanaian manufacturing firms (see Table 1).

Table 1: Reverse Logistics (RL) Practices and Its Explanation

RL Practices	Explanations
Remanufacturing	Involves the collection of used products, evaluating its condition and replacing the obsolete component with refurbished or new parts. Here, the functionality, value and identity of the old product are kept intact.
Reuse	Involves the reintroduction of used or marginally used products back into the supply chain devoid of any processing. Here, the value of the product is reduced because additional processing is not needed.
Recycling	Involves the collection of used products, disassemble them (if need be), sorting out and reprocessing them into new forms. Here, the functionality, value and identity of the old product are lost.

Source: Adapted from Wells and Seitz (2005) & Wainaina (2014)

Supply Chain Performance

Today's dynamic business environment has triggered competition between firms and their respective supply chains. Hence, firms are increasingly concerned about enhancing the performance of their supply chains. While supply chain is described as a system of connected and mutually supporting organisations that work together to ensure the successful flow of products to the market, supply chain performance measures the efficiency and effectiveness of a firm's supply chain via predetermined yardsticks (Sillanpää, 2015). The current study describes supply chain performance as measuring the performance of a firm's entire supply chain by using both qualitative and quantitative measures.

The various metrics used in measuring the performance of supply chain have very significant roles in establishing objectives, comprehending supply chain process, assess performance and help the firm to take future initiatives and actions (Ambe, 2014). As such, it is imperative for firms to constantly monitor, control and evaluate their daily operations to get desired performance from their supply chains. Measuring supply chain performance is somewhat a daunting task because no single metric suffices for measuring the performance of a firm's supply chain (Sung, 2010). Thus, supply chain performance is best measured using a multi-dimensional approach. Ambe (2014) classified supply chain performance measurement models into cost, customer responsiveness, flexibility and active time. Other studies (Mandota, 2015; Khalili-Damghani et al., 2015) used financial indicators (e.g., profits and business growth), competitiveness, lead time and agility to measure the performance of the supply chain. Drawing from the various literatures, this study used responsiveness, lead time, profitability, competitiveness and cost (operating cost) in measuring the supply chain performance.

Research Model and Hypotheses Development

This section focused on analysing the role played by stakeholders in influencing firms in adopting RL practices. The section further looked at how the adoption of RL influences supply chain performance. Five hypotheses were proposed as depicted by the research model (see Fig. 1).

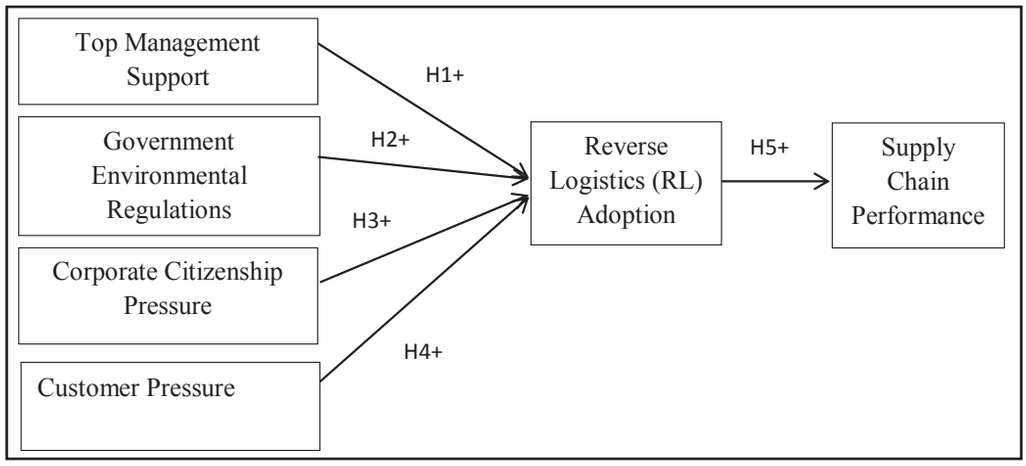

Fig. 1: Research Model

Top Management Support and Reverse Logistics

Top management plays an active and essential role in designing strategic objectives in organisations. The adoption of RL as a green strategy or initiative is a reflection of top management support. Top management support is conceivably the highest antecedent for the adoption of RL because they ensure the successful adoption of RL practices by developing a clear purpose for the system, and carefully examine the mechanism for product returns (Huscroft, 2008). For example, senior managers of some Ghanaian manufacturing firms like Nelplast Ghana Ltd., Voltic Ghana Ltd., Accra Brewer Ltd., among others, have in recent years demonstrated strong support for green initiatives, especially RL by developing practical organisational policies (plastic return, reuse and recycling policies).

There are several empirical studies regarding the influence of top management support on RL. Shafiq and Naqvi (2012) found the success of RL adoption to be significantly reliant on top management strategic focus and support. Sharma et al. (2011) further disclosed that one of the main failures of RL is the indifferent attitudes and lack of support from top management. Extrapolating from the empirical studies, it is inferred top management support has a potential and perceived influence on the adoption of RL. Hence, we proposed the first hypothesis:

H_1: Top Management Support has a positive and significant influence on reverse logistics adoption.

Environmental Regulations and Reverse Logistics

Environmental laws set by governments and other parastatal organisations are forcing firms to adopt green practices like RL. From the European perspective, there are clear-cut environmental policies that coerce manufacturing firms to conform to the adoption of environmental practices. A typical example is the Waste Electrical and Electronic Equipment (WEEE) directive, which mandates manufacturers of electrical and electronic products to collect, recycle and recover their products (Govindan et al., 2015). In the Asian sub-region, Japan has legislation on recycling (Containers and Packaging Recycling Act, 1997), which urges industry players to work together in ensuring the recycle and reuse of plastic resources. In Ghana, there is currently no concrete national law that allows manufacturing firms take back the product for recycling and reuse purposes (Azungah, 2014). However, the Environmental Protection Agency, with government's support, is relentlessly taking steps to consider producer responsibility in its laws. This is mounting pressure on firms, especially those in the manufacturing sector to turn their attention to adopting RL practices.

Prior studies (Darnall et al., 2008; Laosirihongthong et al., 2013) have revealed most firms decide to adopt green practices such as RL because they want to avoid sanctions and legal penalties related to environmental regulations. Elsewhere in Malasia, Abdullah and Yaakub (2017) found regulatory pressure as significantly influencing RL adoption. From an African perspective, Somuyiwa and Adebayo (2014) found that Nigerian companies in the food and beverage industry are compelled to adopt RL practices and implement product return initiatives due to environmental regulations. Consequently, the second hypothesis was proposed:

H_2: Environmental Regulations has a positive and significant influence on reverse logistics adoption.

Corporate Citizenship Pressure and Reverse Logistics

Firms do not operate in a vacuum but a community. There is, therefore, an increased pressure from the members of the community for firms to act in a manner that is deemed socially responsible. Once firms respond to the demands of the community by acting socially responsible, they are said to be performing their corporate citizenship roles. Corporate citizenship deals with the positive contribution of a firm to its local community or society. Corporate citizenship is sometimes perceived as a firm's 'extended responsibility' towards the whole society (Álvarez-Gil et al., 2007). These extended responsibilities may include taking environmental initiatives, engaging in philanthropic activities, and meeting ethical responsibilities. It is crucial to appreciate that firms do not satisfy corporate citizenship demands at the detriment of their profit motives. Over the years, some Ghanaian manufacturing firms have demonstrated good corporate citizenship by empowering people on environmentally conscious practices, keeping waste bins at vantage areas to collect plastics and other solid wastes, and intensified their recycling activities.

Manufacturing firms exhibit good corporate citizenship by adopting RL. Supporting this claim, Govindan et al. (2015) highlighted that the promulgation of corporate citizenship is one of the key reasons why firms are adopting RL. However, Abdullah and Yaakub (2017)

found the importance of corporate citizenship very low among Malaysian manufacturing firms, hence accounting for an insignificant influence on these firms to adopt and improve their RL activities. This study focuses on the environmental aspect of corporate citizenship because the adoption of RL is perceived as a green initiative which is triggered by pressure from the community. Hence, the development of the third hypothesis:

H_3: Corporate Citizenship Pressure has a positive and significant influence on reverse logistics adoption.

Customer Pressure and Reverse Logistics

Customers are perhaps the most important stakeholder of every business entity because firms rely on customers to generate revenue. Karel and Ales (2012) indicate that a firm's product offerings are targeted at customers; hence, it is imperative for firms to prioritise the needs and concerns of customers. With the passage of each day, the level of customer awareness concerning sustainability issues continues to increase. As such, today's customers are not only looking up to firms for the delivery of products but also expect firms to consider green initiatives in their operations. Affirming this sentiment, Sarkis et al. (2010) aver customers prefer to purchase products from firms whose operations satisfy environmental quality criteria. This is invariably mounting enormous pressure on firms, including those in the Ghanaian manufacturing sector. One obvious way that firms can respond positively to this customer expectation is to adopt RL practices. Trivedi et al. (2018) claim that customers are always ready to pay more for an eco-friendly product, hence, causing firms to adopt best RL activities to sustain or increase their market share. In line with the above argument, the fourth hypothesis was proposed:

H_4: Customer Pressure has a positive and significant influence on reverse logistics adoption.

Reverse Logistics and Supply Chain Performance

The complexity of the firms' supply chain has necessitated the adoption of RL in recent times. This is primarily due to the perceived benefits firms accrue from the practice of RL. Effective management of RL practices leads to the minimization of logistics and operational cost, hence, improving firm supply chain performance. RL provides a cheaper alternative to securing new raw materials from suppliers. This subsequently helps manufacturing firms to reduce their cost of production, inventory shortages, etc. (Turrisi et al., 2013). Mandota (2015) found RL as a significant precursor of the supply chain performance of firms in the manufacturing sector of Malawi. Specifically, the study revealed that the adoption of RL influence profits and firm growth reduces the cost associated with the procurement of new raw materials, and enhances firm competitiveness via economic use of materials. David and Shalle (2014) further disclosed that the adoption of RL variable (product returns, product repairs and end-of-life management) had a significant impact on supply chain performance. Drawing conclusions from the empirical studies, the fifth hypothesis was proposed.

H_5: Reverse logistics adoption has a positive and significant influence on supply chain performance.

Methodology

The causal research design was adopted for the study because this design helps predict phenomenon: establish a cause-effect relationship between variables of interest. Samples for the study were drawn from manufacturing firms within the food and beverage industry and the plastics manufacturing industry. These firms were located in Accra and Kumasi metropolis because they represent two of the major cities in Ghana, where most of these firms are saturated. A total of 193 operation managers, logistics managers and production managers from these firms were selected via a stratified sampling technique. A structured questionnaire was used for the primary data collection through self-administration. Constructs related to the study were measured based on adapted validated scales developed by prior researchers (see Table 2). Before self-administering the questionnaires, they were pre-tested to ensure clarity and functionality regarding the structure of questions. A five-point Likert scale (from 1 = strongly disagree to 5 = strongly agree) was employed to assess all the constructs which had a total of 34 indicators.

Table 2: Source of Constructs for Questionnaire

Constructs	Prior Literature
Reverse logistics	Hazen et al. (2011), Wainaina (2014)
Top Management Support	Gattiker and Carter (2010), Shafiq and Naqvi (2012)
Environmental Regulation	Darnall et al., (2008), Abdullah and Yaakub (2017)
Corporate Citizenship Pressure	Abdullah and Yaakub (2017)
Customer Pressure	Álvarez-Gil et al (2007), Sarkis et al. (2010)
Supply Chain Performance	Mandota (2015); Khalili-Damghaniet al., (2015)

Hypotheses were tested using Partial Least Squares structural equation modelling (PLS-SEM) via the statistical software SMART PLS 3. PLS-SEM was employed due to its perceived unique and ubiquitous advantages over other analytical tools. Firstly, the sample size for the study was relatively small thus making PLS-SEM the most preferred option. In order to reduce biases in the parameter estimate for the reflective model due to the relatively small sample size, the number of indicators per construct was taken into consideration during the questionnaire design. According to Peng & Lai (2012), using relatively more indicators for a given construct is one of the best approaches to moderate the biasness of parameter estimate for reflective constructs in PLS. Secondly, comparative to other analytical tools, PLS-SEM can accommodate reflective models with multiple measurements and structural model relations (Hair et al. 2016). Lastly, PLS-SEM is more suitable for explanatory research due to its robust nature in handling predictive relations (Bodoff & Ho, 2016). Consistent with this statement, several researchers (Peng & Lai, 2012; Hair et al., 2017) opine that researchers should consider their research objectives before choosing between PLS and other analytical tools. They suggest that the objective of PLS is to measure the extent to which one part of a model predicts the values of the other parts of a research model; hence, making PLS a predictive-oriented tool.

The reliability and validity of the reflective model measurement were assessed by considering the construct reliability (Cronbach's alpha and composite reliability), convergent validity (outer loadings and average variance extracted: AVE), discriminant validity (Fornell-Lacker criterion and Heterotrait-Monotrait Ratio: HTMT). Sarstedt et al., (2016) claim that reflective models are prone to errors and bias; hence, there is a need to test for collinearity statistics (VIF). Consequently, the collinearity statistics values were tested for the reflective model to assess common method bias. These were measured by considering the measurement thresholds stipulated by several researchers. For instance, Henseler et al. (2009) indicate that Cronbach's alpha should be greater than or equal to 0.7. Hair et al. (2016) also indicate that composite reliability and factors loadings should be greater than or equal to 0.6 and 0.7, respectively, while AVE should be greater than 0.5. Nonetheless, Henseler et al. (2015) suggest that a model's HTMT (which is regarded as a new approach for testing discriminant validity) ought to be less than 0.85. Lastly, Kock (2015) propose that the VIF values should not exceed 3.3 (see Tables 3, 4, 5, 6 and 7 in Section 5, for results).

Analysis and Discussion

Construct Reliability and Convergent Validity

As aforementioned, the construct reliability and convergent validity were considered in evaluating the performance of the reflective model. An estimation of the Cronbach's alpha indicates that all the constructs were greater than or equal to the acceptable threshold of 0.7 as stipulated by Henseler et al. (2009). Again, the composite reliability values were greater than or equal to the threshold of 0.6. An assessment of the convergent validity showed that the AVE of the respective constructs was above 0.5, while the outer loadings were greater than or equal to 0.7 as recommended by Hair et al. (2016). Indicators that had outer loadings less than 0.7 were cautiously eliminated to strengthen the model's composite reliability and AVE. Thus, it can be inferred that the model was adequately valid and reliable (see Tables 3 and 4).

Table 3: Construct Reliability and Convergent Validity

Constructs	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Corporate Citizenship Pressure	0.776	0.870	0.692
Customer Pressure	0.711	0.835	0.628
Environmental Regulations	0.760	0.862	0.675
Reverse Logistics Adoption	0.785	0.875	0.699
Supply Chain Performance	0.815	0.871	0.574
Top Management Support	0.701	0.833	0.625

Source: Field Data

Table 4: Outer Loadings

Constructs	Corporate Citizenship Pressure	Customer Pressure	Environmental Regulations	Reverse Logistics	Supply Chain Management	Top Management Support
CCP2	0.867					
CCP3	0.850					
CCP5	0.775					
CP1		0.847				
CP3		0.778				
CP4		0.750				
ER1			0.813			
ER2			0.847			
ER3			0.804			
RL2				0.859		
RL3				0.825		
RL6				0.824		
SCP1					0.765	
SCP3					0.813	
SCP4					0.723	
SCP7					0.743	
SCP8					0.742	
TMS3						0.809
TMS1						0.715
TMS4						0.843

Source: Field Data

Discriminant Validity

The discriminant validity was examined to ensure the uniqueness and distinctiveness of each construct relative to other constructs in the model. The present study used Fornell-Lacker criterion and HTMT ratios to measure the discriminant validity of the model. The Fornell-Lacker criterion, as a conventional approach of evaluating discriminate validity, ensured that the square root associated with each construct's AVE was greater than the correlations of the latent variable. Moreover, the HTMT served as the yardstick for testing the model's discriminant validity. The HTMT ratios of the reflective model showed that all constructs were less than the recommended 0.85 thresholds (see Tables 5 and 6).

Table 5: Fornell-Larcker Criterion

Constructs	Corporate Citizenship Pressure	Customer Pressure	Environmental Regulations	Reverse Logistics	Supply Chain Management	Top Management Support
Corporate Citizenship Pressure	0.832					
Customer Pressure	0.627	0.793				
Environmental Regulations	0.615	0.662	0.822			
Reverse Logistics Adoption	0.754	0.745	0.709	0.836		
Supply Chain Performance	0.671	0.755	0.760	0.659	0.758	
Top Management Support	0.703	0.811	0.738	0.793	0.761	0.791

Source: Field Data

Table 6: Heterotrait-Monotrait Ratio (HTMT)

Constructs	Corporate Citizenship Pressure	Customer Pressure	Environmental Regulations	Reverse Logistics	Supply Chain Management	Top Management Support
Corporate Citizenship Pressure						
Customer Pressure	0.824					
Environmental Regulations	0.803	0.840				
Reverse Logistics Adoption	0.831	0.765	0.710			
Supply Chain Performance	0.841	0.797	0.837	0.817		
Top Management Support	0.824	0.822	0.71	0.658	0.720	

Source: Field Data

Collinearity Statistics (VIF)

As aforementioned, reflective models are prone to errors and biases. Hence, it is essential to test for collinearity statistics. Hair et al. (2016) claim that when dealing with reflective models, the Inner VIF values can be used to confirm the biasness of the model. Generally, collinearity statistics above 3.3 implies that the model is likely to be affected by common method bias. Conversely, when the collinearity statistics is below 3.3, which is the required threshold suggested by Kock (2015), then, the reflective model is said to be without common method bias. A careful look at Table 7 shows that all the inner VIF values fall between 1.000 and 2.331. This shows that the model is without common method bias.

Table 7: Inner VIF Values

Constructs	Reverse Logistics Adoption	Supply Chain Performance
Corporate Citizenship Pressure	2.082	
Customer Pressure	2.032	
Environmental Regulations	2.331	
Reverse Logistics Adoption		1.000
Supply Chain Performance		
Top Management Support	1.119	

Source: Field Data

Hypotheses Testing

In testing the hypotheses of the study, the path coefficient in the model was estimated. It detailed the Beta coefficient values, t-statistics and p-values (see Table 8 and Fig. 2). The findings show that all hypotheses of the study were supported at a p-value < 0.05. Thus, H_1, which advanced that top management support has a positive and significant influence on RL adoption, was supported ($\beta = 0.262$, t-value = 2.691, $p = 0.007$). Also, H_2, which advanced that environmental regulation has a positive and significant influence on RL adoption, was supported ($\beta = 0.172$, t-value = 2.274, $p = 0.023$). Additionally, H_3, which advanced that corporate citizenship pressure has a positive and significant influence on RL adoption, was supported ($\beta = 0.333$, t-value = 5.126, $p = 0.000$). Furthermore, H_4 which advanced that customer pressure has a positive and significant influence on RL adoption ($\beta = 0.210$, t-value = 2.460, $p = 0.014$). Finally, H_5, which advanced that RL has a positive and significant influence on supply chain performance was supported ($\beta = 0.659$, t-value = 11.583, $p = 0.000$).

Table 8: Path Coefficient

Path	Beta Coefficient	Standard Deviation	T Statistics	P Values	Results of Tested Hypotheses
Corporate Citizenship Pressure -> Reverse Logistics Adoption	0.333	0.065	5.126	0.000	H3: Supported
Customer Pressure -> Reverse Logistics Adoption	0.210	0.085	2.460	0.014	H4: Supported
Environmental Regulations -> Reverse Logistics Adoption	0.172	0.076	2.274	0.023	H2: Supported
Reverse Logistics Adoption -> Supply Chain Performance	0.659	0.057	11.583	0.000	H5: Supported
Top Management Support -> Reverse Logistics Adoption	0.262	0.097	2.691	0.007	H1: Supported

Source: Field Data

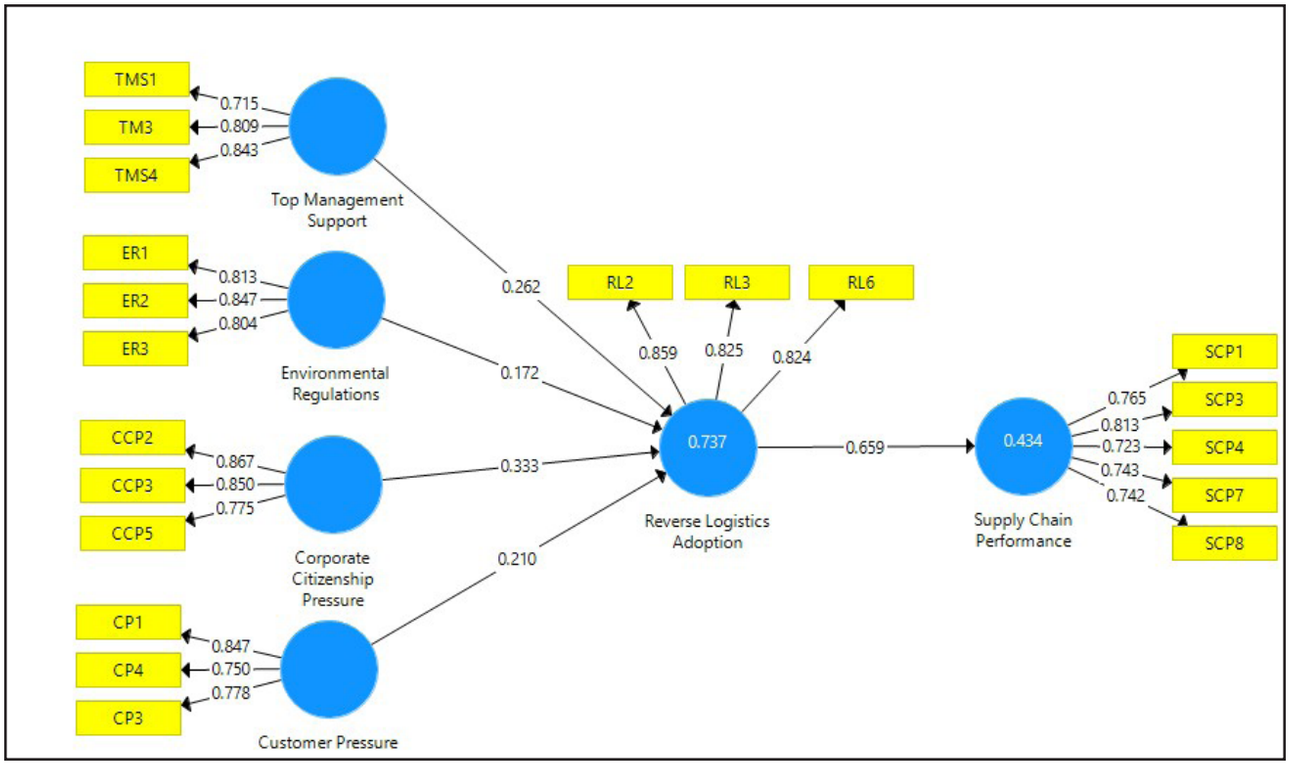

Fig. 2: Structural Model

The R-squared, which explains the percentage of variance in the dependent variables explained by the independent variable, was also estimated. A close look at Table 9 indicates all the stakeholder variables (top management support, environmental regulations, corporate citizenship pressure and customer pressure) combined, explained 73.7% variance in RL adoption by Ghanaian manufacturing firms. Likewise, RL adoption explains 43.4% variance in the performance of firms' supply chain.

Table 9: R-Square and Adjusted R-Square

Constructs	R Square	R Square Adjusted
Reverse Logistics Adoption	0.737	0.732
Supply Chain Performance	0.434	0.431

Source: Field Data

Discussion

The results of this study affirm that perceived stakeholder influence account for the adoption of RL adoption. Corporate citizenship, top management support and customer pressure have a strong influence on the adoption of RL. This is consistent with prior studies like Johnson (1997) who disclosed that path coefficient values which exceed 0.2 signify a strong relationship between variables under study while path coefficient values between 0.1 and 0.2, as well as less than 0.1, signify a moderate relationship and weak relationships, respectively. This finding is parallel to Shafiq and Naqvi (2012), who disclosed that the success of RL adoption is heavily reliant on top management strategic focus and support. Sarkis et al. (2010) supports this finding by indicating that firms are under enormous pressure to adopt RL because customers have become conscious of sustainability issues and therefore prefer to buy products from firms whose operations satisfy environmental quality criteria. Likewise, Govindan et al. (2010) found corporate social responsibility as one of the main drivers of RL adoption. However, Abdullah and Yaakub (2017) found that corporate citizenship pressure has no significant influence on the adoption of RL. Environmental regulations show weaker influence on the adoption of RL in this study probably because Ghana lacks clear-cut RL policies (notably, on solid waste like plastics) that put pressure on manufacturing firms to take back their products beyond the point of sale. In contrast to these findings, Abdullah and Yaakub (2017) found environmental regulations as having a strong influence on RL adoption.

The results further indicate that RL adoption strongly influences the supply chain of Ghanaian manufacturing firms. The adoption of RL shortens lead time and reduces the procurement of new raw materials needed for production. Thus, with the adoption of RL, firms can rely on the return of products as a source of secondary material rather sourcing for new raw materials. This eventually leads to a reduction in the cost of operations, enhance firm competitiveness and increase profits. This is consistent with the findings of prior studies (Turrisi et al., 2013; Mandota, 2015) that revealed RL adoption as an approach to reduce inventory shortages, reduce the cost associated with the procurement of new raw materials, influence profitability and growth, and enhances firm competitiveness via economic use of materials.

Conclusion and Practical Implications

The study was primarily conducted to assess the perceived stakeholder influence on RL adoption and further examine how RL adoption influences the supply chain performance of Ghanaian manufacturing firms. Based on the results, we conclude that firms are adopting RL in response to varied stakeholder influence (top management support, environmental regulations, corporate citizenship pressure and customer pressure). Likewise, RL adoption is significant in enhancing supply chain performance. The findings provide significant strategic directions and insights for managers of manufacturing firms. Managers are entreated to willingly support RL practices by designing effective product return policies that make it easy for customers to return used products for recycling, reuse and remanufacturing purposes. The return policy should also be adopted to meet customers' 'greening' expectations. Managers must not treat RL with triviality but should holistically embrace it by committing time and other organisational resources to enhance their supply chain. Government and other environmental regulatory bodies should rely on this finding to design effective national waste management policies aimed at mounting pressure on manufacturing firms to comply and take responsibility for their products even after its use. For the academic community, the study provides both supporting and contradictory empirical results that add up to the pool of research on RL.

Limitations and Suggestions for Further Studies

Similar to other studies, this study is fraught with a few limitations that could serve as an impetus to undertake further research. Firstly, the current study narrowed stakeholder influence to only four variables. However, based on the stakeholder theory, firms face pressure from diverse stakeholders in response to adopting green practices. Hence, future studies can consider the influence of other relevant stakeholders such as suppliers, media, competitors and non-governmental organisations on the adoption of RL. Secondly, the study results cannot be generalised due to the relatively small sample size and the focus of the study in the manufacturing industry with particular attention on the food and beverage as well as plastic manufacturing firms. Further studies can, therefore, be conducted with larger sample size and in other industries to compare results and provide new insights. Lastly, studies should be conducted to test the moderating effect of organisational culture or firm size on the RL and supply chain performance relationship.

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