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GREEN SUPPLY CHAIN MANAGEMENT AND FIRM PERFORMANCE: EVIDENCE FROM GHANA'S FOOD PRODUCTION AND PROCESSING INDUSTRY

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ABSTRACT

Based on the Natural Resource Based View (NRBV), this study examines the relationship between Green Supply Chain Management practices and Firm performance in response to calls for empirical evidence from developing country contexts, and the need to consider the Triple Bottom Line approach to sustainability performance measurement. The study is conducted among Food production and processing firms in Ghana. A structured questionnaire was administered to a Senior Manager in each of the respective organizations. Based on data collected from 94 firms, this study uses OLS regression to examine the relationship between GSCM implantation and operational, environmental, social, and economic firm performance. The results indicate a positive relationship between GSCM implementation and all four firm performance dimensions. This suggests that it is in the best interest of managers to deploy resources towards the implementation of green initiatives, as there are potential gains to be made in the long run.

Contribution/Originality: This study contributes to the scholarly discussion on whether it pays to be green. We provide empirical evidence from a developing economy in Sub Saharan Africa. The study is one of the few to include all dimensions of sustainability performance (environmental, social and economic) in a single model.

1. INTRODUCTION

There have been increasing concerns about the impact of business operations on the environment (Asif, Lau, Nakandala, Fan, & Hurriyet, 2020). Increasing levels of pollution, environmental degradation, greenhouse emissions and natural resource exhaustion are all evidence of the devastating effects business activities are having on the natural environment (Guo, Yu, & Gen, 2020). These issues will continue to rise because of increasing population growth, urbanization, increasing energy consumption, increasing transportation and sustained economic growth (Peprah, Brako, & Akosah, 2018). Because of this, companies have come under pressure from several stakeholders to consider the impact of the operations on the environment (Fang & Zhang, 2018; Mumtaz, Ali, Petrillo, & De Felice, 2018).

In response to these increasing pressures, several organizations have begun to implement environmentally friendly practices in their operations (Liu, Hu, Tong, & Zhu, 2020). Beyond their operations, green considerations have been extended to other partners in the supply chain. Since firms in the supply chain work together towards a common goal, sustainability initiatives taken at isolated stages may represent a below optimal solution. Therefore, "environmental impacts should be considered cumulatively over the supply chain life cycle of a product or service"

(Kumar & Chandrakar, 2012). This has been referred to as green supply chain management (GSCM). GSCM describes the consideration of environmental impacts of the supply chain's operations. Wang, Zhang, and Zhang (2020) defined GSCM as integrating green initiatives for use in the movement of goods or services from sources of origin to final consumers, and it includes green procurement, green manufacturing, packaging, green marketing and returns management.

Since its inception, GSCM has received considerable attention from researchers (Agarwal, Giraud-Carrier, & Li, 2018; Jemai, Chung, & Sarkar, 2020; Srivastava, 2007) and has seen a geometric rise in academic publications (Fahimnia, Sarkis, & Davarzani, 2015) even to the extent that disciplines like sociology that were not so concerned about studies on the physical environment, is now considering studies in the area (Bour, Asafo, & Kwarteng, 2019). The focus of research has been on drivers, enablers, implementation challenges and performance outcomes of GSCM implementation. Generally, there is an expectation that the implementation of GSCM has positive benefits for the supply chain and its actors. This is rooted in the Natural Resource Based View (NRBV) of the firm, as proposed by Hart (1995). According to the NRBV, firms that can develop environmentally sustainable strategies stand the chance of obtaining a sustained competitive advantage (Hart, 1995). There is rising evidence that implementing green supply chain management practices has economic and social benefits (Peprah et al., 2018). Some of the expected benefits include reduced resource usage, improved environmental performance, cost benefits arising from reduced wastage and use of renewable energies, and the overall financial performance of the organization (Quintana-García, Benavides-Chicón, & Marchante-Lara, 2020).

Despite the increasing attention of researchers towards GSCM, several key questions remain unanswered about the relationship between GSCM adoption and firm performance (Fang & Zhang, 2018). Although most studies found a positive relationship between GSCM and firm performance e.g. (Al-Sheyadi, Muyldermans, & Kauppi, 2019; Chien & Shih, 2007; Fang & Zhang, 2018; Green, Zelbst, Meacham, & Bhadauria, 2012; Pinto, 2020; Qorri, Mujkić, Gashi, & Kraslawski, 2018; Seman et al., 2019; Zaid, Jaaron, & Talib, 2018; Zhu & Sarkis, 2004) other studies found contrasting results. Zhu, Sarkis, and Geng (2005) found that there is no significant environmental or organizational performance improvement from GSCM implementation. In the study of Cankaya and Sezen (2019) whiles other dimensions of GSCM related positively with aspects of performance, green purchasing was found to have no significant impact on any organizational performance outcome. The results from previous empirical studies in the area are not pointing in the same direction, and this confuses practitioners when they are deciding on whether to take on GSCM, and also challenges the advancement of studies in GSCM (Fang & Zhang, 2018).

Also, there is a lack of consensus on what constitutes the dimensions of GSCM practices and firm performance measures. A scan of the literature reveals that several different items have been used to measure GSCM practices and Firm performance. Beyond the actual measurement items, the constructs used to assess GSCM performance have often focused on the environmental and economic aspects, whiles the social aspect still lags (Jia, Peng, Green, Koh, & Chen, 2020). However, the impact of GSCM has been professed to transcend economic and environmental benefits, to include social sustainability in the balanced manner of the triple bottom line framework (Wang et al., 2020).

The empirical literature on GSCM is skewed towards developed economies and upper emerging economies like China, India, and Malaysia. There is uncertainty around the implementation of GSCM in emerging markets because little effort has been made to conceptually the context in these settings, and the standards of implementation are not mature (Liu et al., 2020). This is problematic, as environmental problems are higher in developing economies with lag institutions and regulatory frameworks. Studies from the context of Sub-Saharan Africa are extremely limited, with only a few studies conducted in Ghana to date. As a developing country, Ghana has now begun industrialization, which is leading to high levels of environmental pollution. It is feared that cocoa production in Ghana and Cote Divoire is under threat of collapsing in 2050 due to the severity of environmental problems (Bour et al., 2019). A few earlier studies in Ghana are that of Peprah et al. (2018) who examined practitioners' awareness

of green procurement among procurement officers of district assemblies in the western region. The work of Peprah, Opoku-Fofie, and Nduro (2016) examined factors that affect GSCM in the mining industry of Ghana. Boampong-Ohemeng, Kusi-Sarpong, Saani, and Agyemang (2015) examined green procurement practices in polytechnics in Ghana. Other related studies include those of Bour et al. (2019); Kusi-Sarpong, Sarkis, Wang, and Filho (2014); Mensah and Ameyaw (2012) all of which examined sustainability organizational operations. None of these studies take a comprehensive view of GSCM activities that includes sourcing to reverse logistics. Also, most of these studies are descriptive and do not include an examination of firm performance.

There is a need for increasing empirical studies on environmental sustainability in Ghana to provide stakeholders with factual information on existing practices, and to drive future policies. GSCM implementation is in the primitive stages for many organizations in emerging markets (Liu et al., 2020). The government of Ghana has introduced an ambitious One district, one factory (1D1F) policy that seeks to increase the manufacturing capacity of the Nation tremendously. Such policies come are accompanied by environmental challenges that arise out of production. The need for studies on environmental issues cannot be underemphasized as a driver of policy. For instance, the Public Procurement Amendment Act 2016 (Act 914), introduced sustainable procurement (by calling for the inclusion of environmental and social considerations) to be made by procurement entities. Yet, the study of Peprah et al. (2018) showed that the members of the district assemblies appear not to understand/know the significance of public procurement as a means of protecting the environment.

Given these gaps, this study examines GSCM implementation in Ghana and how it impacts firm performance in Ghana. The study includes the social performance dimension, in response to calls from Jia et al. (2020); Lis, Sudolska, and Tomanek (2020); Panigrahi, Bahinipati, and Jain (2019) to move towards research, the integrates all dimensions of the triple bottom line (3BL) framework. Also, the study adopts a cradle-to-cradle approach of examining Green Supply Chain Management practices from product/process design to reverse logistics. This study seeks to examine the research question "what is the performance outcome of GSCM implementation?".

2. LITERATURE REVIEW AND HYPOTHESIS

2.1. Environmental Concerns and the Supply Chain

Environmental sustainability has become a prime issue due to the increasing deterioration of the physical environment, owing to business activities. The current transformation taking place in the world is destructive, and this is fueled by the growing population, unsustainable production and patterns of consumption (Peprah. et al., 2016). The increasing emission of greenhouse gases, climate change, natural resource exhaustion, pollution, and land degradation are all evidence of the impending problem (Sharma, Chandna, & Bhardwaj, 2017). Government regulations, environmental pressure groups, consumer movements, local communities and other agencies are piling pressure on organizations to implement environmentally conscious practices in their operations. Firms are now under pressure to move beyond their operations to incorporate green practices into their supply chain partners as well (Fang & Zhang, 2018).

2.2. Green Supply Chain Management (GSCM)

GSCM describes the integration of environmental considerations into the management of supply chains, from the design of the product, procurement system, production process, and delivery to the final consumer (Srivastava, 2007). Full consideration of the environmental impact of the product is made at the stages of design and material procurement, to reduce the cost of treatment and improve environmental and economic performance (Ying & Li-Jun, 2012). A supply chain is "green" when the focal firm collaborates with upstream partners to improve the environmental impact of products and processes (Ashby, Leat, & Hudson-Smith, 2012). A green supply chain is not about making the operations of a single entity environmentally friendly, but rather the entire supply chain. The aim is to achieve a total greening of all the operations in the supply chain (Ying & Li-Jun, 2012).

2.3. Green Supply Chain Management Practices

Given the extensive scope of green practices, many studies attempt to categorize them comprehensively (Fang & Zhang, 2018). GSCM practices, including green purchasing, eco-design, customer cooperation, and investment recovery, are designed with the specific aim of improving environmental performance (Green et al., 2012). Green(Eco) design describes the consideration of environmental safety and health issues over the life cycle of the product at the design stage (Srivastava, 2007). Green purchasing is the means of adding environmental considerations into a firm's procurement decisions and relationship with long-term suppliers (Wu, Tseng, & Vy, 2011). Customer cooperation calls from collaborating with a firm's customers to design cleaner packages the increase environmental sustainability (Zhu, Sarkis, & Lai, 2008). Reverse logistics describes the means of recollecting used products and moving them from the consumption point back into the supply chain for either reuse, recycling, or remanufacturing (Kafa, Hani, & El Mhamedi, 2013).

2.4. The Natural Resource Based View

The NRBV is an extension of the Resource based view (RBV) proposed by Hart (1995). From a resource-based view perspective, resources and capabilities that are rare, indispensable, valuable, and non-substitutable leads to achieving competitive advantage (Barney, 1991). Hart (1995) proposal of the NRBV takes into account the limitations of the natural environment and situations such as the depletion of natural resources, noting them as potential threats to firms' resources and capabilities. The NRBV considers environmental applications such as GSCM, a strategic resource that could lead to performance improvement (Cankaya & Sezen, 2019). Since GSCM practices are knowledge and experience-based, it is often difficult to be imitated by competitors. According to the NRBV, a firm's competitiveness results from its possession of environmental resources and capabilities that it can devote to dealing with pollution, product stewardship, and sustainable development (Aboelmaged & Hashem, 2019). GSCM practices are considered capabilities developed from a given set of firm resources (Schmidt, Foerstl, & Schaltenbrand, 2017). A firm's ability to align with supply chain partners to develop superior environmental management practices stand the chance of gaining the attention recognition of external stakeholders including the commitment of customers, reducing waste in its production leading to efficiency and improving its employee satisfaction, all of which provides an advantage over the competition.

2.5. Linking Green Supply Chain Management to Organizational Performance

Regularly, green supply chain management is expected to achieve operational, social, environmental, and economic performance (Qorri et al., 2018; Zaid et al., 2018). These expectations are based on the concept of the Triple bottom line framework. The triple bottom line (3BL), proposed by Elkinton (1997) is the key foundation in sustainability research. The 3BL argues that minimum performance has to be achieved in the environmental, social, and economic performance of the firm, for it to be considered sustainable (Seuring & Müller, 2008). GSCM adoption helps to minimize waste in operational processes such as toxic chemicals, emissions, energy consumption, and solid waste generated in the supply chain at various stages of the product design, procurement of material, production process, and delivery to the customer (Peprah et al., 2016).

2.6. Green Supply Chain Management and Operational Performance

Operational performance describes a plant's efficiency in production and delivery to customers (Zhu et al., 2008). GSCM adoption improves the capabilities of the organization to contribute to sustainable development, as well as to strengthen its economic viability (Green et al., 2012). Green supply chain management can improve firm competitiveness in areas of product quality, efficiency, and productivity increments (Chien & Shih, 2007). By being the first to adopt environmentally sustainable operations via the implementation of GSCM practices, an organization can obtain a competitive advantage (Green et al., 2012). Available evidence point to the fact that the

adoption of a proactive GSCM initiative can serve as a preparatory step for organizations to obtain superior long-term performance by managing the environmental risks associated with their operations (Zhu & Sarkis, 2004). GSCM implementation requires an organization to maintain close connections with its supply chain partners, and this makes it easier to pursue other management strategies such as TQM and JIT, all of which promise a higher performance operationally. On the premise of the above statements, it is hypothesized that

H1: Green supply chain management is positively related to operational performance.

2.7. Green supply chain Management and Environmental Performance

Prior studies have identified a significant relationship between internal environmental management and green performance (Fang & Zhang, 2018). The ecological impact of firm operations can be reduced through the adoption of GSCM, without having to sacrifice any of quality, reliability, and efficiency (Srivastava, 2007). Green supply chain practices can improve environmental performance via a reduction in waste generated and emissions from operations, as well as through the increment of environmental commitment (Chien & Shih, 2007). Green supply chain management ensures that a firm and its suppliers conform to environmental standards. It is expected that implementing GSCM practices will result in improved environmental performance concerning emissions, waste, and the usage of hazardous materials (Green et al., 2012). Interactions between supply chain partners and joint research and development programs all lead to environmental performance improvements (Zhu & Sarkis, 2004). GSCM implementation also potentially reduces the impact of an organization's product offering on the environment (Ashby et al., 2012). The following hypothesis is presented;

H2: Green supply chain management is positively related to environmental performance.

2.8. Green supply chain Management and Economic Performance

Firms that are successful in dealing with environmental opportunities obtain new opportunities in the market (Zhu & Sarkis, 2004). Greening activities often save resources, eliminate waste and improve productivity. Srivastava (2007). Also, adopting GSCM can reduce procurement costs, consumption of energy, avoid environmental fines and reduce waste treatment expenditure. Chien and Shih (2007) all of which improve the economic performance of a firm. GSCM enables an organization to meet its environmental obligations, as well as leads to overall economic profitability (Srivastava, 2007). The focus of GSCM practices is on the elimination of wastes associated with sustainability, and this should lead to a reduction in costs, and an improvement in economic performance (Green et al., 2012). Adopting green supply chain practices provides organizations with cost advantages, reduces wastes, and leads to improvements in the quality of processes (Cankaya & Sezen, 2019). Based on the above, it is hypothesized that:

H3: Green supply chain management is positively related to economic performance.

2.9. Green Supply Chain Management and Social Performance.

The social sustainability dimension refers to managing social resources, such as the skills and abilities of people, institutions, and social values (Ashby et al., 2012). By adopting green supply chain management practices, a firm will obtain a positive image from the view of external stakeholders (Cankaya & Sezen, 2019). In the social realm, supply chain management enforces the values of a firm and its standards with its supply chain partners with an emphasis on the development of long-term relationships (Ashby et al., 2012). Socially responsible purchasing exists, which uses the power of procurement to source only products that have a positive impact on society (Ashby et al., 2012). Further, GSCM adoption can improve the brand of the firm, improve its relationship with stakeholders and increase the motivation of personnel (Cankaya & Sezen, 2019). Based on the above, it is hypothesized that:

H4: Green supply chain management is positively related to social performance.

3. RESEARCH METHODS

3.1. Sample and Data

The food production and processing industry in Ghana serve as the empirical setting for this study. By definition, this industry comprises firms that produce food products, beverages, and drinking water. The sampled firms in the industry range from large manufacturers that process raw materials e.g. Cocoa processors, alcoholic and non-alcoholic beverage companies, and Canneries to Small and Medium Enterprises (SMEs) involved in small scale bottling of products like Fresh Yoghurt, Sobolo (Local name for a juice extract from the Hibiscus plant), etc. The data was collected through an author-designed survey. A structured questionnaire, that requested respondents to indicated the extent of their GSCM activities and to rate their organization's performance was used to collect the data. Following the steps of earlier studies conducted in the GSCM arena, the questionnaires targeted senior management respondents that are presumed to have the requisite information to provide valid responses. Due to movement restrictions in the COVID-19 era, this study was conducted among firms in the Ashanti region of Ghana between April 2020 and July 2020. A list of firms was obtained from www.businessghana.com, a trusted business directory. A search for food production, food processing, food products, and food supplies (according to the categories available on the site) in the region yielded 340 search results. The screening revealed that 127 firms appeared as duplicates, (having appeared under more than a single classification) and were removed. The final list contained 213 firms eligible for participation. An initial email was sent by the researchers to these firms to increase awareness of the study before the final questionnaire was delivered by research assistants. Owing to restrictions on access to firm premises, only 114 firms out of the 213 accepted to participate in the study (by taking delivery of the study questionnaire). After four months had elapsed from the time the questionnaire was distributed, and several rounds of reminders being sent, a total of 98 responses were retrieved. Out of the 98, 4 had been answered by respondents that did not have the requisite qualification (which was already indicated in the preamble of the questionnaire) and thus were eliminated from the analysis. A total of 94 usable questionnaires was considered for further analysis.

3.2. Construct Operationalization and Measures

Green Supply Chain Management was operationalized as the extent to which upstream, internal, downstream, and reverse flow decisions included considerations of environmental impact. To provide a comprehensive supply chain focus on green activities, GSCM in this study comprises green purchasing, eco-design, environmental collaboration with customers, and reverse logistics. All items were measured on a 5-point scale anchored on "not at all" to "to a large extent".

Four firm performance measures were considered in the study. Operational performance describes a firm's efficiency in production and delivery to customers (Zhu et al., 2008). Environmental performance measures the impact of a corporation's activity on the natural environment (Chien & Shih, 2007). Economic performance concerns the ability of the organization to reduce the costs incurred in purchasing materials, providing energy, treating waste, and paying environmental fines (Zhu et al., 2008). Social performance describes the firm's ability to satisfy the expectations of the internal and external society. All firm performance items were measured on a 5-point scale anchored on "not at all" to "to a very large extent".

Firm size (measured by the number of full-time employees) and firm age (measured by how long the firm has been in operations) were used as control variables in the study. The focus of the study was to examine the impact of GSCM on performance, and thus these two variables, with the potential to influence the relationship, had to be controlled for. To ensure the validity of the scales, all measurement items were adapted from previously validated scales in the literature. The Table 1 below provides the sources for the items.

Table-1. Sources of Measurement Items.

Construct	Sub Constructs	No of Items	Source
GSCM	Eco- design	3	Green et al. (2012)
	Green Purchasing	5	Cankaya and Sezen (2019)
	Environmental Cooperation	4	Green et al. (2012)
	Reverse Logistics	4	Laguir, Stekelorum, and El Baz (2020)
Firm Performance	Environmental performance	4	Laguir et al. (2020)
	Economic Performance	4	Cankaya and Sezen (2019)
	Social Performance	3	Cankaya and Sezen (2019)
	Operational Performance	4	Green et al. (2012)

4. ANALYSIS AND RESULTS

4.1. Descriptive Statistics and Reliability tests

The descriptive statistics, correlation coefficient, and Cronbach's Alpha coefficient for the control variables, independent variables, and dependent variables are presented in Table 2 below. All Cronbach's Alpha values exceeded the acceptable threshold of 0.7 (Hair, Black, Babin, & Anderson, 2014) except for operational performance (CA = 0.668). According to Hair et al. (2014) CA values closer to 0.7 are acceptable for "exploratory studies" and scales whose items are not many. Given that the operational performance scale has four items, we decide to accept the CA value of 0.668. The average firm size is 182.5 ranging from 15 to 450. The average firm age is 5 years, ranging between 2 years and 11 years of operations.

Table-2. Descriptive statistics, correlation, and Reliability tests.

	CA	MEAN	SD	CORRELATIONS						
				OP	ENP	SP	ECP	SIZE	AGE	GSCM
OP	0.668	4.10	0.57	1						
ENP	0.775	3.99	0.74	0.586**	1					
SP	0.832	4.17	0.81	0.811**	0.679**	1				
ECP	0.708	4.02	0.56	0.709**	0.706**	0.580**	1			
SIZE		182.65	105.15	-0.148	0.097	-0.141	0.209*	1		
AGE		5.03	2.60	-0.283**	-0.393**	-0.320**	-0.179	0.071	1	
GSCM	0.81	3.71	0.53	0.562**	0.712**	0.676**	0.565**	-0.082	-0.337**	1

Note: **. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
NOTE:
OP = Operational Performance, ENP = Environmental Performance, SP = Social Performance, ECP = Economic Performance, SIZE = Firm Size, AGE = Firm Age, GSCM = Green Supply Chain Management

Table-3. OLS regression results.

	Outcome Variable			
	Operational Performance	Environmental Performance	Economic Performance	Social Performance
	β (t)	β (t)	β (t)	β (t)
Control Variables				
Firm Age	-0.017 (-.876)	0.000 (.730)	0.001 (1.88)	-0.024 (-.988)
Firm Size	-0.001 (-1.94)	-0.047* (-2.339)	0.004 (.220)	-0.001*(-2.369)
Main Predictor				
GSCM	0.563** (5.635)	0.856** (8.391)	0.583**(6.316)	0.634**(7.788)
Model Fit				
R^2 (Adjusted)	0.329	0.521	0.324	0.480
F	15.547	33.328	15.241	28.332
p	0.000	0.000	0.000	0.000

4.2. Hypothesis Testing

The analysis is conducted using Ordinary Least Squares (OLS) regression in SPSS. Each hypothesis is tested using a separate model. The control variables (firm size and age) are included in all the tests. The Table 3 below presents the results of the OLS regression results, including model fit results and beta estimates. The GSCM construct is created as a composite of the variables that measure eco-design, green purchasing, environmental collaboration, and reverse logistics.

Hypothesis one of the studies proposed that GSCM practices are positively related to the operational performance of an organization. From the output of the regression analysis (β =.563, t = 5.635, R^2 = .329, p≤ .001), the findings of the study confirm hypothesis one. In hypothesis two, it was proposed the GSCM practices positively affect the environmental performance of the organization. The findings of the study support this proposition (β =.856, t = 8.391, R^2 = .521, p≤ .001), and confirm hypothesis two of the study. The third hypothesis of the study proposed that green supply chain management practices are positively related to the social sustainability performance of the organization. The findings from the regression analysis (β =.634, t = 7.788, R^2 = .480, p≤ .001), indicate that indeed using the data obtained from the field study, the social performance of an organization is influenced by the deployment of green supply chain management practices. Thus, hypothesis 3 of the study is supported. Hypothesis four of the study proposed that green supply chain management practices are positively related to the economic performance of an organization. From the results of the regression analysis (β =.583, t = 6.316, R^2 = .324, p≤ .001), there is support for the proposition that green supply chain management practices positively influence organizational economic performance. The summary of the Hypothesis test is presented in the Table 4 below.

Table-4. Summary of Hypothesis test.

Path	B (Unstandardized)	*t*	R^2 *(Adjusted)*	*p*	Decision
GSCM→ OP (H1)	0.563	5.635	0.329	0.000	Supported
GSCM → EP (H2)	0.856	8.391	0.521	0.000	Supported
GSCM → SP(H3)	0.634	7.788	0.480	0.000	Supported
GSCM →ECP(H4)	0.583	6.316	0.324	0.000	Supported.

5. DISCUSSION

Owing to the increasing pressure from the external environment, several firms have begun to take into consideration the impact of their supply chain activities on the environment (Bastas & Liyanage, 2018; Castillo, Mollenkopf, Bell, & Bozdogan, 2018; Cousins, Lawson, Petersen, & Fugate, 2019; Sajjad, Eweje, & Tappin, 2020). This finding provides empirical evidence that firms in Ghana have also begun to join the green movement. Aside from the external pressures, it is also known the several organizations have recognized the need to green their operations, as a means of achieving long-term financial rewards (Chen & Kitsis, 2017; Matthews, Power, Touboulic, & Marques, 2016). Even though the examination of the green supply chain management practice drivers is not within the scope of this study, the practices – firm performance relationship could be employed to possibly explain the rationale for which some firms adopt. It is worth noting that even though the average scores on the green supply chain management construct shows that these practices have been set off, it is noticeable that the standard deviation on the reverse logistics construct is higher than the average of all the others. This plausibly means that there exists a higher variability in the firm responses concerning their deployment of reverse logistics practices. Such a finding is not surprising, as much of supply chain focus, in practice and research, is often devoted to the forward flow in the logistics process, much to the neglect of reverse logistics (Gohoungodji, N'Dri, Latulippe, & Matos, 2020).

The study found that green supply chain management practices are positively related to operational, environmental, social, and economic performance. These findings corroborate many in the literature (Green et al.,

2012; Vanalle, Ganga, Godinho, & Lucato, 2017; Yang, 2018; Zhu & Sarkis, 2004; Zhu et al., 2005) and form the conceptual reason often behind the reasons for organizations to adopt green supply chain management practices.

First, the impact of green supply chain management on operational performance stems from the fact that environmentally conscious operations enable organizations to reduce resource wastage, eliminate waste processes and enhance the utilization of capacity. Operationally, firms in the supply chain benefit from improved resource usage and higher yields from operational processes. Perhaps the highest impact of green supply chain management practices in an organization is on the environmental performance measures. The majority of studies in the area often measure environmental performance (Lis et al., 2020) since it is the direct reflection of the firms' green supply chain efforts. Firms that invest in green technologies, initiatives, and innovations often obtain excellent results in terms of environmental performance measures (Al-Sheyadi et al., 2019). These measures, such as reduction in emissions, solid wastes, hazardous materials, and reduction in environmental accidents are the direct results of investing in green supply chain management practices. Environmental performance reflects most, among all the performance measures, the level of investment an organization has made in greening the supply chain.

Social performance, which used to be neglected in the literature, is gradually emerging as a key performance measure in the sustainability literature (Bhatia & Gangwani, 2020). Since an organization exists in society and is managed by people who are drawn from the society, the deployment of environmentally friendly operations has a great impact on the members of the society. Firms obtain the social benefits of GSCM through the improvement of ties with community stakeholders and the improvement in the health and safety of employees (Cankaya & Sezen, 2019). Environmentally friendly operations enable a firm to avoid clashes with surrounding communities, as well as complaints and harm from its employees.

Conceptually, the biggest motivation of firms to deploy green supply chain management practices is the belief that it will result in a long term economic gain (Green et al., 2012). Resultantly, the relationship between green supply chain management and economic performance has been of key interest. In essence, green supply chain management practices often come at a cost, at least in the initial stages and most firms would avoid these practices unless they can be sure of gaining a long-term benefit (De Haan-Hoek, Lambrechts, Semeijn, & Caniëls, 2020). The positive impact of green supply chain management practices on economic performance is conceptually and theoretically grounded. Conceptually, it is believed that green supply chain management practices lead firms to reduce costs in the form of adopting less material and resource-intensive operations, as well as avoidance of regulatory fines (Laguir et al., 2020). It is also believed the market will support green firms through higher patronage, all of which improve economic performance. Theoretically, the Natural Resource Based View (NRBV) of the firm views the firm's ability to deploy green supply chain management practices as a capability (Hart, 1995) that can help it to obtain a competitive advantage in the market place. With this advantage, the firm can command premium prices in the market and obtain economic benefits.

6. CONCLUSION AND IMPLICATIONS

Calls for the consideration of environmental impacts of business operations are at an all-time high due to increasing concerns about the rate of resource depletion and pollution levels. In the supply chain arena, green supply chain management has emerged as a strategy used for dealing with the environmental impacts of supply chain operations. This study has examined the impact of green supply chain management practices on organizations' performance among firms the food production and processing firms in Ghana. We respond to calls from Liu et al. (2020) on the need to conduct empirical studies on GSCM in developing economy settings. We also follow the recommendations of Jia et al. (2020); Lis et al. (2020); Panigrahi et al. (2019) to include a performance measure that integrates all dimensions of the triple bottom line framework. Some implications can be formulated for practice, based on the findings of this study. First, we call for managers to pay more attention to their reverse logistics function as it is required to complete the cycle of green supply chain management practices. A truly green

supply chain is one that "closes the loop". Whiles perusing the various sub-dimensions of GSCM, the authors noticed higher variability in the responses on the Reverse logistics dimension. We argue that too much focus on greening the forward supply chain will only succeed in pushing environmental problems downwards the supply chain. The ability to move products back into the upstream for recycle, remanufacturing or proper disposal contributes a lot towards the utilization of resources and pollution prevention. Managerial efforts should be made towards collaborating with downstream supply chain partners to design logistics avenues for moving used products and packaging back to the upstream chain for reuse. Second, the study provides empirical evidence on the positive impact of green supply chain management on firm performance. This provides insights to managerial decision making. Managers must be guided by this when making environmentally oriented decisions, with the view that the long-term benefits of their initiatives is positive. This implies that it is in the best interest of managers to deploy resources towards the implementation of green initiatives, with the aim of obtaining its future benefits. In the future, it is likely that firms that take proactive steps towards environmental management will obtain an advantage over the competition in terms of cost reduction and customer patronage.

7. LIMITATIONS AND RECOMMENDATION FOR FUTURE STUDIES

This study has provided valuable insights on the state of GSCM implementation and its performance implications for firms in Ghana's food production and processing industry. The study has some limitations that could serve as motivation for future studies. First, the study is conducted using a limited sample of 94 firms, and the authors agree that larger sample size can provide a more generalizable result. Also, this study was conducted in a single industry setting and thus does not represent the general state of GSCM practices among firms in Ghana. We encourage future studies to also consider other industries, and if possible conduct multi-industrial studies to advance scholarly knowledge in this area. Further, we propose that future studies delve deeper into reverse logistics practices among firms in Ghana, to examine the current state and challenges as it is a key part of environmental management. Finally, future studies should consider other factors that could potentially influence the GSCM and firm performance relationship to improve the state of knowledge in the area.

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APPENDIX – MEASUREMENT ITEMS

GSCM (1 = Not at all, 5 = To a large extent)

Eco-Design

ED1 We design of products for reuse, recycle, recovery of material and/or component parts.

ED2 We design of products to avoid or reduce use of hazardous

ED3 We adopt environmentally friendly product design

Green Purchasing

GP1 Design specification to suppliers include environmental requirements

GP2 We Cooperate with suppliers for environmental objectives

GP3 We choose suppliers by environmental criteria

GP4 Our Key Suppliers' have obtained ISO14000 certification

GP5 We conduct environmental audit for suppliers' internal management

Environmental Cooperation with customers

EC1 We Cooperate with customers for eco design.

EC2 We Cooperate with customers for cleaner production.

EC3 We Cooperate with customers for green packaging.

EC4 We cooperate with customers to use less energy during product transportation.

Reverse Logistics

RL1 We have implemented a Waste transportation and disposal system

RL2 We Recycle materials whenever possible

RL3 We reduce Consumption whenever possible

RL4 We Reuse materials whenever possible

Operational Performance

OP1 Increase in the amount of goods delivered on time

OP2 Decrease in inventory levels.

OP3 Increase in product quality.

OP4 Improved capacity utilization

Environmental Performance

EP1 Reduction of air emissions

EP2 Decrease in consumption for hazardous/harmful/toxic materials

EP3 Decrease in frequency for environmental accidents

EP4 Improvement in an enterprise's environmental situation

Economic Performance

ECP1 Decrease in cost of materials purchased

ECP2 Decrease in cost of energy consumption

ECP3 Decrease in fee for waste discharge

ECP4 Decrease in environmental fines

Social Performance

SP1 Improvement in relations with community stakeholders

SP2 Improvement in occupational health and safety of employees

SP3 Improvement in overall stakeholder welfare or betterment