



Challenges Faced by Manufacturing Companies in Implementation of Green Supply Chain: Evidence from the Bakhresa Food Products Limited in Dar es Salaam – Tanzania

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Abstract

Notwithstanding the role played by manufacturing companies in implementation of Green Supply Chain, it seems that, this role has not been fully practiced by manufacturing companies in ensuring green supply chain. Taking Bakhresa foods Product LTD as a case study, this paper is intended to get a better understanding of the challenges faced by manufacturing companies in undertaking green supply chain and recommends strategies for improving this role. Based on the Qualitative approach and a purposive sample of 60 respondents, data were collected using in-depth interview, focus group discussion, indirect observation and analysis of secondary data. Data were analysed based on the thematic analysis strategy through the aid of MAXQDA 10 software. Findings of the study revealed that, manufacturing companies faced a number of challenges towards implementing green supply chain. At the green sourcing and purchasing level the company was confronted with lack of sustainable practices in the organization vision and mission, poor commitment by the top management to source environmentally friendly materials, high operational costs. Moreover, challenges related to green manufacturing were; lack of knowledge by the staff on environmental practices and impacts as well as lack of demand for green manufactured products due to their expensive nature. Challenges related to green transportation and distribution included; irregular transportation by the vehicles, poor maintenance of the vehicles, and poor infrastructures. Finally, challenges related to green disposal and reverse logistics were lack of information sharing between the firms and suppliers, inadequate legal enforcement by the government specifically to protect environment, shortage of equipment, lack of knowledge of the workers about disposal processes and also manufacturing companies' failure to control customers after selling of the products. Hence, to improve

this situation we recommend that, to improve green sourcing, use of modernized machines and provision of relevant training. For the green transportation manufacturing companies required to conducting maintenance for motor vehicles, making consolidation of materials so as to reduce number of trips per day. Finally, to improve green disposal the manufacturing companies required; to establish the program of waste collection from the residential areas, as well as purchasing disposal equipment so as to avoid costs of outsourcing.

Keywords: *Challenges; Manufacturing Companies; Green Supply Chain*

1.0 Introduction

1.1 Background Information

Supply chain plays significant role in ensuring manufacturing companies provide and distribute products and commodities to the parties who need them (Christopher, 2014). This includes ensuring that companies adhere to the sustainable production and delivery of products to parties involved in supply chain (Chopra &Meindl, 2013). Also, supply chain brings about product chain, which is critical to the sustainability of manufacturing companies (Asgariet al., 2016; Jin & Wu, 2019; Vorst, 2004). Likewise, it is thanks to the supply chain functions such as sourcing, production, transportation, delivery and storage that the manufacturing firms are capable of maintaining green supply chain that are critical for sustainable supply chain (Zulkefli et al., 2019).

Broadly, Supply Chain consists of all parties involved, directly or indirectly, in fulfilling a customer request; notably manufacturers, suppliers, transporters, warehouses, retailers, and even customers (Chopra &Meindl, 2013). Supply chain management on the other hand would be understood as the management of upstream and downstream relationship with suppliers and customers so as to deliver superior customer value at less cost of products or services to the supply chain as a whole (Christopher, 2014). Within each organization, such as a manufacturer, the supply chain includes all functions involved in receiving and satisfying a customer request. These functions include, but are not limited to, new product development, marketing, operations, distribution, finance, and customer service (Chopra &Meindl, 2013).

One of the key roles played by manufacturing companies is that of ensuring sustainable green supply chain (Mohammad et al., 2016). Green supply chain is simply defined as the consideration of environmental issues in the context of supply chain management (Hassan et al., 2012); or rather a process of integrating sustainable environmental processes into the traditional supplies chain (Ninlawan et al., 2010; Hassan et al., 2012). This further includes aspects such as material sourcing and selection, product design, product manufacturing and assembling, distribution, delivery of the final product to the consumers as well as end-of-life management of the product after its useful life (Hassan et al., 2012; Bhattacharjee, 2017). When implementing green supply chain, manufacturing companies facilitate mitigation of environmental degradation, as well as air, water and waste pollution control (Hassan et al., 2012). It also reduces production costs, spurs economic growth, creates competitive advantages in terms of customer satisfaction, ensures positive image and reputation of the companies, and provides better opportunities to export of manufacturing products (Shamsuddinet al., 2017). To this end it also helps companies to design new products as well as reverse flow and waste management (Shamsuddinet al., 2017).

Indeed, the emergent of green supply chain management has been rapidly growing for at least twenty years ago. This has indicated the relative importance of strategic supply chain management and environmental management practices which can be traced from the period of the environmental

management movement in the late 1960s (Sarkis& Dou, 2018). Green supply chain has emerged due to increased consumers concern about degradation resulting in the formation of the environment protection urgency in the early 1970s, with provision of directives of enforcing regulations covering industrial manufacturing of all firms along supply chain (EM Ojo et al., 2007). In this period, green supply chain has been successful by incorporating environmental performance standards such as incorporation of contracts guidelines for the supply chain partners (Simpson & Samson, 2007). Similarly, green supply chain has evolved in the reflecting environmental integration. This is through enforcing the companies to comprehend with products design, materials sourcing and selection, manufacturing processes, delivery final products to the consumers as well as end of life management of the products (EM Ojo et al., 2007). However, despite the incorporation of directives in the period above, green supply chain management has not been well practiced as evidenced by increasing environment degradation, diminishing natural resources as well as rising pollution (Fahimniaet al. 2015).

Furthermore, manufacturing companies such as the industries which involve transformation of goods, materials or substances into new products, such as baked goods, hand crafted jewellers, craft and arts, beverage products etc., are important strategy and component in implementing green supply chain (Lavinson, 2018). They further play critical role in ensuring environment safety and protection of consumers' health. These include but not limited to the implementation and promotion of green purchasing, green manufacturing, green transportation, green marketing, green storage and reverse flow to mention just a few in this concern (Nyakundi C.B, 2017).

Also, when implementing their role, manufacturing companies are faced with critical challenges that hinder smooth functions and sustainable green supply chain performance (Elizabeth Ojo et al., 2014). These include but not limited to financial constraint, lack of resources, lack of knowledge and experiences, lack of information, organizational and economic challenges, fears of failure, poor government supports, changes of mind-set and core features as well as lack of commitment from top management (Zulkefliet al., 2019).

Based on the foregoing evidence, it is clear that manufacturing companies are increasingly failing to practice green supply chain effectively as further manifested in a number of companies in developing countries particularly Tanzania that have failed to maintain sustainable supply chain (Pereseina et al., 2014). This show that failure of products or materials recycling, huge dumped of end-products, excessive of unwanted materials, failure of controlling water, noise and land pollution around the people residents, failure of abide government regulations as well as environmental management policy are the critical challenges in adoption and implementing green supply chain (Bhattacharjee, 2017).

Globally, green supply chain has been practiced to bring about sustainable supply chain. As noted by Chen et al., (2012) countries such as Greek, Singapore and Taiwan, adopted and implemented greening strategies like environment scanning, assurance of the firms to own its resources, transformation of the firms resources and capabilities, assurance of products life cycle, products design, purchasing, manufacturing, marketing, innovation based strategy, risks based strategy and efficiency in environmental pollution and other associated greenness (Baresel, 2016).

In the abovementioned countries, green supply chain in relation to the role played by manufacturing companies has been achieved through implementing green supply chain creating awareness to the customers, ensuring proper end life products management through safe disposal, adoption of new technological programs of reducing wastes, as well as ensuring relevant technological transfers, conducting environment auditing of purchasing and supplies (Hassan et al., 2012)

In Africa, particularly countries such as South Africa, Kenya and some part of West Africa, green supply chain in relation to the role and practices played by manufacturing companies has been implemented and well organized in ensuring safe products chain to final consumers (Mwirigi, 2007). In

these countries, green Supply Chains is highly attractive as addresses the problems caused by manufacturing companies like carbon emission and environmental pollution; not only that but also companies strive to optimize supply chain performance (Ojo *et al.*, 2014).

Nevertheless, some African countries have adopted managing strategies for sustainable supply chain especially green supply chain. These include the green supply chain in Transport, automobile and consumers' goods in South Africa (Ittman&King, 2010). Indeed, the adopted green supply chain created opportunities for the companies by enabling them to save a lot of money, decreasing the amount spent on scrap, generating income from harmful by-products as well as increasing their competitive advantage (Ojo *et al.*, 2014).

Based on the above noted role as well as challenges associated with manufacturing companies in implementing sustainable or green supply chain, the government of Tanzania and other stakeholders have made several initiatives aimed at promoting, implementing and improving green supply chain country wide. For example, different governmental organs, ministries and professional bodies have been established in a bid to ensure environmental issues, especially in manufacturing industry through adoption of environmentally friendly practices (Mkami S, 2019). Moreover, global health and environmental legislations and standards have been established for the purpose of ensuring compliance by manufacturers, retailers, traders and distributors to the practices greet supply chain throughout the Supply Chain Management process (Mkami S, 2019).

Other initiatives with regards to the enhancement of green supply chain have been covered in the National Environmental Policy as well as Environmental Management Act, 2004, which clearly provide guidelines relating to environmental protection, as we well as reduction, control and limitation of damage, and minimization of the risk from the generation, management, transportation, handling and disposal of hazardous waste. The policy on the other side guide manufacturing industries to minimize adverse effects on the environment at all stages of green supply chain notably location, waste disposal, use and disposal of product as well as enabling the industries to control emission; be applicable in environmental impact assessment (EIA) on harmful activities; conducting environmental audits; installation of resource-saving and waste-recycling facilities, clean technology safe production with less toxic products; ensuring adequate protection from environmental health hazards as well as reviewing the regulation, laws and rules governing importation, manufacturing, transportation, handling, use, storage and disposal of toxic chemicals, and dangerous products, hazardous wastes and hazardous substances, as appropriate (United & Of, 1997).

Moreover, Tanzania Bureau of Standards (TBS) has been established to among other things, enforce industrial production standards. The TBS standards provide environmental friendly standards to the manufacturing companies which include but not limited to the approval, register and controlling use of standard marks, undertake measures for quality control of commodities, services and environment of all descriptions and to promote standardization in industry and trade. Others are to assist industries in setting up and enforcing quality assurance and environmental management systems procedures (Standards, & Financial, 2009). The Standard Act also, perform a critical role on establishing the supply chain of manufacturing companies by insisting implantation and abiding with laws and policies that guide and enhance smooth operation of the manufacturing companies such as beverage products (TBS, 2010).

Other strategy in this aspect is adopted by East African Community which has established Protocol on Environment and Natural Resources Management for the purpose of adopting environmental management measures, conducting environmental impact assessments and environmental audits. The has been also an initiative to support scientific studies and develop appropriate technologies relating to sound environmental management (Bakibinga-ibembe *et al.*, 2011; People & Destiny, 2016). Similarly, the strategy seeks to harmonize policies and laws for protection of human health and environment against any

adverse effects of toxic chemicals as well as products containing toxic substances. This is coupled with sharing information on hazardous wastes, including their trans-boundary impacts, importation, exportation, manufacture, transportation as well as storage (Protocol on Environment and Natural Resources, 2006.)

1.2 Research problem

Owing to the critical role played by the green supply chain and for the environmental in particular, various stakeholders and the government of Tanzania through its various organs have made several initiatives aimed at promoting, implementing and improving green supply chain country wide. Unfortunately, despite the critical role played by the green supply chain as well as initiatives and strategies made by the government towards supporting the same, the role of manufacturing companies to manage and implement green supply chain is still regarded as minimal or non-existent as predicted and expected by stakeholders such as manufacturing companies and the government in particular. This is a clear indication that, manufacturing companies still contributes to environmental pollution when it owing to their failure to practice green supply chain functions (Elizabeth Ojo *et al.*, 2014; Mwirigi, 2007). By addressing challenges related to green supply chain therefore would facilitate formulation of relevant policies by decision makers for planning, thereby ensuring development and implementation of more appropriate measures that could help to protect environment and people in general but also to help manufacturing companies to achieve competitiveness.

1.3 Research Objective

Based on preceding background, the main objective of this study was to assess the role of manufacturing companies in implementation of green supply chain with the view to establishing why the manufacturing companies fail to practice their principal role and eventually recommend the measures to improve the situation. Specifically, the study aimed at examining the challenges faced by manufacturing companies in implementation of green supply chain and finally to recommend strategies to fighting the situation above.

2.0 Literature Review

In This section undertakes a critical literature review on challenges facing manufacturing companies in implementation of Green Supply Chain. It focuses on the.

Generally, literature shows that manufacturing companies are increasingly incapable of practicing their core roles of ensuring green supply chain through green sourcing and purchasing, ensuring green manufacturing, facilitating green packaging and packing, adoption of green transportation and distribution as well as adoption of green disposal. Specifically, the companies are incapable of sourcing and purchasing of products due to; lack of enough funds to buy relevant and adequate materials (Ojo *et al.*, 2014; Zulkefli *et al.*, 2019) and poor commitment by the top management when it comes to sourcing specific materials for implementing green supply (Agi & Nishant, 2017; Zulkefli *et al.*, 2019). Another challenge that deters this role is lack of organisational visions and mission that would facilitate sourcing of innovative materials for maintaining greening supply chain (Zulkefli *et al.*, 2019; Elizabeth Ojo *et al.*, 2014) as well as higher operation costs when it comes to implementation of green supply chain activities (Zulkefli *et al.*, 2019).

On the other hand, Green Manufacturing implementation has been constrained by lack of demand for green manufactured products (Shamsuddin *et al.*, 2017), as well as inadequate equipment and tools when producing goods or products (Luthra *et al.*, 2013; Agi & Nishant, 2017). Moreover, green manufacturing is confronted with the lack of knowledge by workers on environmental impacts when

undertaking production activities (Agi & Nishant, 2017) as well as poor commitment of the top management in engaging in green manufacturing (Agi & Nishant, 2017; Zulkefli *et al.*, 2019). Also this practice deterred by the lack of public awareness on green manufactured products (Elizabeth Ojo *et al.*, 2014).

Empirical studies further show that manufacturing industries are increasingly incapable of implementing green transportation due challenges related to lack of knowledge on environmental impacts by workers (Odoyo, 2020; Elizabeth Ojo *et al.*, 2014), lack of legal enforcement by the government to adopt and implement green distribution and transportation (Zulkefli *et al.*, 2019; Ojo *et al.*, 2014) as well as unpredictable transportation and distribution vehicles (Bhattacharjee, 2017). This is mostly caused by poor route planning and scheduling of business logistics and poor maintenance of the vehicles

Finally, implementation of green disposal and reverse logistics has been hampered by lack of markets for recyclable materials (Agi & Nishant, 2017) and lack of information sharing between manufacturing firms and suppliers (Odoyo, 2020; Agi & Nishant, 2017), as well as inadequate legal enforcement by the government specifically to protect environment (Agi & Nishant, 2017; Zulkefli *et al.*, 2019).

Based on the above reviewed literature, no much knowledge on the role played by manufacturing companies in implementing GSCM more especially in the context of Tanzania (Linah, 2015; Shamsuddin *et al.*, 2017; Amemba, 2013; Makima, 2019; Odoyo, 2020; Agi & Nishant, 2017). Furthermore, these existing studies have focused on other field of green supply chain and paid very little attention or none at all in the manufacturing companies which was one of the biggest challenges in the sustainable supply chain in Tanzania. Also, other studies had captured some green practices while neglecting other important practices in green supply chain like disposal and manufacturing. While some studies observed some practices, but still did not confirm enough on how green supply chain plays with challenges facing most of the manufacturing companies. Therefore, this current study is intended to bridge this knowledge gap by specifically assessing the role of manufacturing companies in implementation of green supply chain in Tanzania.

3.0 Methodology

The study focused on the Bakhresa Food Products Company Limited in Dar es Salaam city in Tanzania which is located at Vingunguti Industrial Area, Plot No. 4A Nyerere Road, Dar es Salaam. The company processes a number of food and beverage products, organised in five units notably Azam Dairy Products, the Azam Ice cream Division, the Azam Water Division, the Azam Juices Division and Carbonated soft drinks division. This kind of production may lead or contribute to the environmental challenges currently facing the world and Dar es Salaam city in particular. The study employed Qualitative approach through a case study strategy which generally facilitated deeper investigation as well as listening to the respondents as well as useful in providing insight about practices and challenges of manufacturing companies in connection to the implementation Green Supply Chain Management (GSCM).

The study employed a purposive sample of 60 relevant staff from the five units of Bakhresa Food Products LTD notably 15 respondents from the Azam Dairy Products, 15 respondents from the Azam Ice cream Division, 15 respondents from the Water Division, 15 respondents from the Juices Division and Carbonated soft drinks division. Data was collected using interviews and Focus Group Discussion (FGD). In addition, the researchers engaged in non-participant observation to ascertain how production affected environment as well as ways in which the company reacted to the situation. Specifically, while In-depth interviews were useful in getting deep understanding of the role played by the company in ensuring green supply chain, FGD were critical for providing checks and balances during data collection (Saunders *et al.*,

2009; 2012; Astalin, 2013). The researchers conducted three FGDs. In addition, critical analysis of the relevant secondary data was undertaken. Data was analysed using thematic analysis strategy (Hancock, 2006; Mohajan & Mohajan, 2018; Cresswell 2013). This was done inductively to facilitate deep understanding that did not necessarily require statistical procedures or mathematical manipulation. The collected data were transcribed and translated into English and thereafter the typed handwritten transcripts were saved as documents in MS word, and the thematic analysis was undertaken through MAXQDA 10 software.

4.0 Findings and Discussion

In this section we present findings on the challenges experienced by Bakhresa food product Ltd in implementation of Green Supply Chain focusing on the aspects of green sourcing and purchasing, green manufacturing, green transportation and distribution as well as green disposal and reverse logistics.

4.1 Challenges Related to Green Sourcing and Purchasing

Findings revealed a number of challenges related to green sourcing and purchasing at the Bakhresa food product Ltd. One of the challenges related to green sourcing and purchasing was shortage of funds to buy adequate and environmental friendly materials to undertake production as evidenced by around 33.33% of respondents. Another challenge as far as this particular role was concerned was poor commitment by top management to source green materials as reported by around 70% of the respondents for example of non-green materials are Nylon rolls packaging, plastic bottles with nylon labels, and non-disposal diary packaging. These respondents felt that top management was unable to consider environmental hazards that would be brought by acquisition of such materials as stated by one of the respondents here under:

...Management together with procurement department decide to purchase the raw-materials that will result in getting high returns rather than focusing on quality and other green related factors. This is this is because even when you want to buy materials with high quality you don't get them due to the sabotage from suppliers who put stones and other particles in the wheat so as to increase weight. (Purchasing staff (42), Bakhresa Food Product Ltd.).

Another challenge that deterred green sourcing and purchasing was the lack of sustainable practices as well as green procurement focused mission and vision as further confirmed by over 80% of the respondents. These respondents complained that the mission and vision statements did not adequately address environmental issues in relation to green sourcing and purchasing.

Furthermore, green sourcing and purchasing at the Bakhresa food product Ltd. was confronted with high operation costs for purchasing and sourcing green and environmentally friendly related materials from different sources as confirmed by around 65% of respondents, for example of these materials are containers and unique paperboard ice cream carton for ice cream package, cake boxes and paper bowls. They admitted that manufacturing industries were unable to ensure or secure adequate green sourcing and purchasing materials partly because it included many evaluation stages. The summary of the challenges related to green sourcing and purchasing is summarized in table 1 below

Table 1; Summary of challenges related to green sourcing and purchasing

Challenges related to green sourcing and purchasing	Responses	Percentage	Rank
Lack of enough funds to buy adequate materials	20	33.34%	4
Poor commitment by the top management to source materials	42	70%	2
Lack of sustainable practices and vision and mission	48	80%	1
High operation costs	39	65%	3

Source; field Data 2022

Therefore, concluding from the above findings it is apparent that major challenges for green sourcing and purchasing in the context of green supply chain were related to lack of enough funds to buy adequate materials, poor commitment by the top management to source materials, lack of sustainable practices, vision and mission as well as high operation costs. These findings correspond well with some previous studies by (Zulkefli *et al.*, 2019; Agi & Nishant, 2017; Ojo *et al.*, 2014; Aroonsrimorakot & Laiphrakpam, 2017). This is a clear indication that the current work genuinely contributes to the existing knowledge.

4. 2 Challenges Related to Green Manufacturing

Again a number of challenges were associated with green manufacturing as one of the key practices for ensuring green supply chain by the Bakhresa food product Ltd. One of the challenges established was lack of demand of green manufactured of products as confirmed by 65% of the respondents who specifically felt that green manufactured products were more expensive than the normal products, and most customers prefer to use cheap products. The second factor that challenged this aspect was inadequate equipment and tools when it comes to produce green goods or products as approved by around 45% of the respondents who maintained that manufacturing companies were confronted with poor working equipment and tools for sustaining green supply chain. For example, some respondents reported that manufacturing companies simply used outdated manufacturing tools that automatically guaranteed poor outcomes as further testified in this statement:

...Some of the equipment has already been worn off (used for long time), so they have started to produce amount of noise affects the health of the workers and the people around this locality (Operations Manager (38), Azam juice).

Moreover, another challenges related to green manufacturing at the Bakhresa food product Ltd. was lack of knowledge by the workers on green manufacturing as attested by around 73.34% of the respondents. They emphasised that the company was unable to implement green manufacturing due to lack of knowledge and skills as well experiences related to green operations. This further suggests that workers failed to cope with environmental measures and practices during the production processes. Moreover, green manufacturing at the company was impeded by poor commitment of top management to introduce and enforce this aspect as attested by over 70% of the respondents. They confirmed that top management did not put the deserved emphasis on green practices. Similarly, their intention was focused on manufacturing products but rather maximizing companies' profits. Green manufacturing at the company was further constrained by lack of public awareness on environmental impacts caused by less green products as confirmed by around 65% of the respondents. For instance, it was made clear that public and customers needed to know and consume various products but they were unaware of environmental or green supply chain criteria when selecting or buying various products. This made fuelled production of less green products by the company. Summary of constraint to green manufacturing is summarized here:

Table 2; Summary of challenges related with green manufacturing

Challenges related green manufacturing	Responses	Percentage	Ranks
Lack of demand in green products	39	65%%	3
Inadequate equipment and tools	27	45%	5
Lack of knowledge by workers	44	73.34%	1
Poor commitment of the top management	42	70%	2
Lack of public awareness on environmental	39	65%	3

impact**Source; field data 2022**

As can be seen in the above presented data, challenges related to green manufacturing at the Bakhresa food product Ltd were lack of demand in green products, inadequate relevant equipment and tools, lack of correct knowledge and skills by workers, poor commitment of the top management as well as lack of public awareness on environmental impact. Accordingly, these have been presented various previous studies as reported by (Shamsuddin et al., 2017), (Luthra et al., 2013), (Agi & Nishant, 2017), (Bhattacharjee, 2017), (Zulkefli et al., 2019) and (Mkami S, 2019). Again this clearly proves the contribution of the current work on the existing knowledge as well as debate in this particular subject matter.

4.3. Challenges Related to the Green Transportation and Distribution

This study established a number of challenges related to the green transportation and distribution at the Bakhresa food product Ltd. One of this challenges was lack of legal enforcement by the government on issues related to green distribution and transportation as revealed by around 35% of the respondents. This further meant that, government authorities such as police and other transportation establishments such as the Tanzania's Land Transport Regulatory Authority (LATRA) and the Tanzania National Roads Agency (TANROADS) did not put in practice transport regulation for governing transportation and distribution of products. This aspect made transportation users such as vehicles drivers to ignore this role in green supply chain. Moreover, 70% of the respondents reported that green transportation and distribution was impeded by unreliable transportation and distribution. This was caused by vehicles drivers and companies in particular who would make poor route planning and scheduling in business logistics as attested by one of respondents hereunder:

“In our company there are many trips concerning with inward movement of raw-materials and out-ward movement of manufactured goods or products, these trips are estimated to be 115 up to 120 per day for transporting and distributing products to customers (Transport Officer (28), Azam Pay (Sarafu division))”

On the other hand, poor maintenance of vehicles was another challenge as far as implementation of green transportation and distribution was related. In this component, about 60% of the respondents admitted that Bakhresa food product Ltd. was unable to undertake maintenance of vehicles that ensure transportation of goods. The respondents further attested that companies fail to the extent to plan for vehicles maintenance such as absent of preventive maintenance for vehicles, as a result transportation and distribution to some extent were hampered by manufacturing companies themselves. For example, poor maintenance of trucks which emits a lot of smokes and noise seemed to be the challenge in implementation of green supply chain. Moreover, the problem in this challenge also affects the peoples' health and lead to environment pollution. With regard to this role, findings showed that behaviours of vehicles drivers hamper green transportation and distribution as attested by around 5% of the respondents. The respondents emphasized that vehicles drivers ignore logbook which direct the routes and schedules for the distribution of goods. One respondent narrates it below;

Sometime it happens that vehicles' drivers ignore company's logbooks as well as rules when it comes to transportation of goods in long distance. They steal fuel from truck tanks. They also provide wrong data on fuel utilization reports to the companies transport officer (Male respondents (32), Azam Kipawa warehouse)

Another challenge closely related to the above one was related to poor physical infrastructure for implementing green transportation and distribution as ascertained by 10% of the respondents. These

respondents explained that traffic jams as well as rough roads hampered manufacturing companies from effectively playing their role of transportation and distribution of goods to customers. Summary of challenges associated with green transportation and distribution is presented here under.

Table 3; Summary of challenges related to green transportation and distribution

Challenges to Green Transportation and distribution	Responds	Percentage	Ranks
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Challenges to Green Transportation and distribution	Responds	Percentage	Ranks
Lack of legal enforcement by the government	21	35%	3
Unreliable transportation and distribution	42	70%	1
Poor maintenance among the vehicles	36	60%	2
Behaviours of vehicles drivers	3	5%	5
Poor infrastructure	6	10%	4

Source; Field data 2022

In summary challenges to implementing green transportation and distribution in the context of green supply chain are lack of legal enforcement by the government, unreliable transportation and distribution, poor maintenance among the vehicles, behaviours of vehicles drivers and poor infrastructure. These challenges correspond well with existing literature whereby notably (Bhattacharjee, 2017; Zulkefli et al., 2019; Elizabeth Ojo et al., 2014; Chen et al., 2012). This indicates that the current work fairly contributes to the existing knowledge concerning this subject matter.

4. 4 Challenges related to green disposal and reverse logistics

Findings revealed a number of challenges related to green disposal and reverse logistics at Bakhresa food product Ltd. Firstly, the company was confronted the challenge of lack of market for recyclable materials as attested by around 70% of the respondents. They explained that, they were in a danger of losing potential customers as the majority of the customers did not prefer recyclable materials. Secondly, disposal and reverse logistics was hampered by lack of information sharing between the firms and suppliers as ascertained by 66.67% of the respondents who basically admitted the absence of sharing information between upstream suppliers and companies in particular. They also complained on the lack of information from particular suppliers that related to disposing of certain products. On the other hand, this challenge was caused by failure of the companies to make follow-up as well as asking environmental information to suppliers for disposing materials or goods.

Another challenge that deterred this role was inadequate legal enforcement by the government specifically to protect environment as confirmed by 60% of the respondents. Further, respondents mentioned as well as acknowledged, the laws and policies which governs materials disposal and reverse flows have a little influence as far as directing manufacturing industries to play their role of assuring green disposals. Closely related to this was shortage of disposal equipment for disposing goods or materials as confirmed by over 67% of the respondents. Here respondents complained about the costs incurred by manufacturing companies when outsourcing professionals and equipment from some government regulatory authorities.

Another challenge was the failure of manufacturing companies to control customers' behaviour as confirmed by over 53.33% of the respondents. They further mentioned that Bakhresa food product Ltd. has failed to make follow-up for the disposal process after products are consumed by final consumers. Similarly, this failure was confronted by manufacturing companies to ignore all sold products and the ways of expediting the same when they were on the hand of intermediaries. Last but not list, poor knowledge by the workers on disposal processing further deterred manufacturing companies from completing disposal and reverse of materials as confirmed by 51% of the respondents. Respondents added that most of workers do not put much emphasis on disposal while the core activity was manufacturing and

not disposal. Summary of the challenges related to green disposal and reverse logistics is presented below.

Table 4; Summary of the challenges to green disposal and reverse logistics

Challenges to green disposal and reverse logistics	Response	Percentage	Ranks
Lack of market for recyclable materials	18	30%	6
lack of information sharing between firms and suppliers	40	66.67%	2
Inadequate legal enforcement by the government to protect environment	36	60%	3
shortage of disposal equipment	41	67%	1
failure of companies to control customers' behaviour	32	53.33%	4
poor knowledge of the workers about disposal processing	30	51%	5

Source; field Data 2022

In a nut shell therefore, challenges to green disposal and reverse logistics included, lack of market for recyclable materials, lack of information sharing between firms and suppliers, inadequate legal enforcement by the government to protect environment shortage of disposal equipment, failure of companies to control customers' behaviour, and poor knowledge of the workers about disposal processing. These findings correspond well with some of the former findings by such as; (Zulkefli *et al.*, 2019), (Agi & Nishant, 2017), (Amemba, 2013), (Odoyo, 2020), and (Mwirigi, 2007). These could be among the unique contribution of this current study for matter of debate and discussion; suggesting that the current work fairly contributes to the existing knowledge concerning this subject matter.

5.0 Conclusion and Recommendation

5.1 Conclusion

The overall objective of this study was to assess the role of manufacturing companies in implementation of green supply chain with the view to recommend the measures to improve the situation. Specifically, taking a case study of Bakhresa food product Ltd the study aimed at examining the challenges faced by manufacturing companies in implementation of green supply chain and recommend strategies to fighting the situation above. Accordingly, findings revealed that challenges Bakhresa food product Ltd experienced a number of challenges in implementation of Green Supply in the aspects of green sourcing and purchasing, green manufacturing, green transportation and distribution as well as green disposal and reverse logistics. Specifically, major challenges for green sourcing and purchasing in the context of green supply chain were related to lack of enough funds to buy adequate materials, poor commitment by the top management to source materials, lack of sustainable practices, vision and mission as well as high operation costs. Moreover, challenges related to green manufacturing at the Bakhresa food product Ltd were lack of demand in green products, inadequate relevant equipment and tools, lack of correct knowledge and skills by workers, poor commitment of the top management as well as lack of public awareness on environmental impact. On the other hand, challenges to implementing green transportation and distribution in the context of green supply chain are lack of legal enforcement by the government, unreliable transportation and distribution, poor maintenance among the vehicles, behaviours of vehicles drivers and poor infrastructure. Moreover, findings further revealed that challenges to green disposal and reverse logistics included, lack of market for recyclable materials, lack of information sharing between firms and suppliers, inadequate legal enforcement by the government to protect environment shortage of disposal equipment, failure of companies to control customers' behaviour, and poor knowledge of the workers about disposal processing.

5.2 Recommendation

Based on the above findings and major conclusions, the following strategies should be taken into account in a bit to ensure effective implantation of green supply chain at the Bakhresa food product Ltd

- Firstly, in alleviating challenges related green sourcing and purchasing; the company is required to assess quality of raw-materials before purchasing.
- Secondly, in alleviating the challenges related to green manufacturing; the company check the quality of manufactured goods in every stage of production, adopt modernized machines and clean technology to control noise pollutions and less toxic products caused by old machines as well as conducting preventive maintenance for the machines.
- Thirdly, in eradicating the challenges related to green transportation and distribution; the company is required to conduct maintenance for their motor vehicles, provide training to drivers on fuel management as well as encourage use of log books for vehicles drivers against routes and kilometres
- Also, government through responsible authorities such as TANROADS are required to improve transportation infrastructures such as roads so as to facilitate the movement of raw-materials and finished goods.
- Lastly, in reducing the challenges related to green disposal and reverse logistics, the company is required to establish program of waste collection from residential areas, provide training to workers so as to give them knowledge and awareness about disposal process and reverse logistics. This can be done by regulators and law enforcers such as NEMC to provide guidelines to manufacturing companies with the same purpose of environmental protection.

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