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EXPLORING THE CHALLENGES FACED BY MANUFACTURING COMPANIES IN IMPLEMENTATION OF GREEN TRANSPORTATION IN DAR-ES-SALAAM, TANZANIA. THE CASE OF BAKHRESA FOOD PRODUCT LIMITED

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ABSTRACT

Despite the crucial role that manufacturing companies have played in the adoption of green supply chains, it appears that manufacturing companies have not fully leveraged this duty to ensure green transportation. This study uses Bakhresa Foods Product Limited as a case study and offers guidance to better understand the challenges industrial companies encounter while implementing green transportation. Using a qualitative case study technique and a purposive sample size of 60 respondents, data was collected through in-depth interviews, focus group discussions and non-participant observation. The MAXQDA 20 application was used to conduct content analysis utilizing thematic analysis. Bakhresa Food Product Limited faces both internal and external obstacles, according to our findings. Internal obstacles included inadequate route planning and scheduling, poor vehicle maintenance, financial constraints, an under-resourced transportation planning department, a lack of a clear goal, poor teamwork, and outdated technology. External challenges are weak legal enforcement and assistance, poor infrastructure and inadequate cooperation between transport players, inadequate parking spaces, insufficient connectivity between the transport network, and unclear road use signs. The companies must maintain their cars and provide staff with training in order to overcome the aforementioned complications. Companies must therefore employ log books for accurate route planning and scheduling. Additionally, the Traffic Police should make sure that all rules and laws governing transportation are strictly enforced in order to control vehicles that do not adhere to the standards necessary to reduce the emission of harmful gases, such as the construction of well tarmac roads to facilitate the movement of raw materials and finished goods.

Keywords: *Challenges, Manufacturing Companies, Green Transportation*

1. INTRODUCTION

Green transportation provides significant role since its emphasis is on resuming an active and healthy lifestyle, as well as environmentally responsible by contributing to build a sustainable economy, improved health and better quality of life, reduce dependence on non-renewable energy

sources, reduce traffic congestion as well as enabling achieving few to zero emissions (Mahrous *et al.*, 2020) . In the sustainable supply chain, green transportation becomes a good strategy for the reduction of energy consumption for energy conservation and the reduction of exhaust emission for improving air quality (Sarkis & Dou, 2018; Sutherland, 2019). It is also helping in the reduction of carbon emission for decreasing the greenhouse effect, and the construction of livable cities for improving citizen health while, to some extent, facilitating the reduction and resolving traffic congestion (Lu et al., 2019).

The word "green transportation" in this context refers to transferring raw materials, people, or goods between locations while employing alternative energy sources (Wood, 2022). It is also encompassing the employment of physical human forces, electric cars, animal-powered vehicles such as carts, or any other power source with low environmental implications (Yu et al., 2022). To some extent many companies develop eco-friendly transportation options to reduce environmental damage, such as the use of bicycles, electric bikes, electric vehicles, green trains, electric motorcycles, multiple occupant vehicles, service and freight vehicles, hybrid cars, and monorail (Mahrous et al., 2020). All of these are extremely important in the implementation of green transportation (Psaraftis, 2015). Similarly, multimodal transportation such as using maritime, railways, road transport as well as navigable waterway has been employed in this context but there are constraints that are hampering from ensuring sustainable transportation such as inefficient service providers, road blocks, bureaucratic administrative and customs procedures, conflicting rules and regulations, poor transport network and connectivity issues, lack of modern fleet to provide reliable transportation services and poor infrastructure at the terminals (Okyere et al., 2019; Psaraftis, 2015; Li, 2016)

Furthermore, the history of green transportation may be traced back to the 1860s whereby public transport, walking and pedal bicycles were used (Garrett, 2014). Aside from that, these two forms of transportation were utilized to transport both people and raw materials, while other enterprises were carried utilizing both human and animal power (Mahrous et al., 2020). Moreover, as demand for transportation increased dramatically in Western Countries such as European and American countries, between the 1950s and 1970s, sustainable transportation emerged rapidly, perhaps policies, strategies and practices such as stakeholders collaboration, incentives, commitment, performance measures and strong leadership were adopted (Petty, 2001; Nagurney, 2002). This has put pressure on the government to build infrastructure and prepare for their construction in order to reduce the environmental impact of transportation (Zhao et al., 2021).

Nevertheless, land use planning and public transportation were constantly combined, and transportation planning arose as a subfield of urban planning as well as managing eco-efficiency (Zahedi, 2012). However, by combining these measures, green transportation grew rapidly between 1973 and 1979 (Demir et al., 2014). Additionally, in the 1980s, the issue of green transportation was modernized by the establishment of a bus rapid transit system as well as other transportation innovations, such as congestion pricing in Singapore, carpooling, and transportation demand management (Demir et al., 2014). In this time, a mobile transition has emerged, whereby

fusing technological, social, and political processes to change traffic and transportation, including shifting from traditions to modern freight transport and mobility to green transportation with application of renewable energy resources (Sutherland, 2019). Therefore, despite the shifting in method, transportation still has a negative impact on the environment (Mahrous et al., 2020).

As stated in the foregoing section, manufacturing companies must ensure that carbon emissions that hurt both people and the environment are decreased in transportation in order to follow in the footsteps of green transportation systems (Zhao et al., 2021). Companies are also expected to limit the environmental damage caused by all modes of transportation (Savadogo & Beziat, 2021). They must also insist on reaching zero greenhouse gas emissions in order to improve air purity and quality (Budi et al., 2020). Another crucial role to play is to spend their limited income on ecologically friendly vehicles by saving money and investing in a system to transition from normal gasoline vehicles to electric vehicles, conveyors, and multi-occupant automobiles (Khan et al., 2020)

Sidewise from the crucial role mentioned above, a number of additional stakeholders have agreed to collaborate efforts and policy advocacy for managing and supporting green transportation. For example, the European Conference of Transport Ministries improved decision-making by implementing best practices in cost-benefit analysis and environmental evaluation (Ibrahim et al., 2020). They are also cutting carbon emissions from road transport by encouraging the use of low-emission trucks and addressing disputes between transportation and sustainable development in urban contexts (Ibrahim et al., 2020).

Similarly, the United Nations calls for among other aspect of improving Sustainable Development Goals such as promotion of physical activities specifically promoting transport and urban design strategies and community-based programs (Salvo et al., 2021). Likewise, transportation as global policy of 2021 was committed for ensuring improved safety, lowering the impact on the environment and climate, and increasing resilience and efficiency (Sayyadi et al., 2018). On the other hand, the policy calls for a move to sustainable transportation in integrating methods by bringing together several stakeholders to achieve similar goals as well as covering a variety of issues, including vulnerability risks and environmental problems produced by transportation (UN, 2021; 2022). In the similar vein in 2021, the UN climatic change conference raised a matter of stakeholder's involvement such as governments, nations, and automobile manufacturer's efforts to develop zero-emission vehicle, remind fleet-owning enterprises and civil society organizations to implement measures to accelerate the adoption of zero emission automobiles, vans, buses, and trucks by 2035 or 2040 (Padilla et al., 2021; Padilla, 2019)

The same issue is widely addressed in Africa particularly Sub-Sahara African countries, where the performance of implementing international logistics and green transportation are worst due to low financial issues, poor logistics infrastructures and services, and ignoring environmental protection in transport management (Lu et al., 2019). Also, the same green transportation concern has been

revised in Ghana in which stakeholders facilitate green supply chain practices such as green distribution and transportation, yet there is a problem of limited resources such as lack of enough funds for implementation of green transportation (Agyabeng-mensah et al., 2020)

Apart from the above-mentioned global efforts, the Tanzanian government has made other agreed-upon measures, such as working with Tanzania National Roads Agency (TANROADS) to expand the notion of transportation as well as raised awareness on the environment and social management in relation to the limited constraints from using transportation which affect environment (URT, 2012;URT, 2021). Furthermore, TANROADS also understands that emissions from vehicles, generators, construction machines, plants, and fuel use all contribute to greenhouse effects, which in turn lead to climate change (URT, 2003). Another policy advocacy was established by Tanzania National Transportation policy to have efficient and cost-effective domestic and international transport services to all segments of the population, sectors of the national economy while its main purpose is to maximize safety and minimum environmental degradation (URT, 2003). Similarly, the policy intended to develop safe, reliable, effective, efficient and fully integrated transport infrastructure and operation for effectively maintaining economic and environmental sustainability (URT, 2003). Also, national environmental policy was initiated in Tanzania in which transportation aspect was among other aspects for maintaining environmental safety specifically in improving mass transport systems by reducing fuel consumption, traffic congestion and pollution, control and minimization of transport emission gases, noise, dust and particulates (URT, 1997). Unfortunately, despite the abovementioned initiatives and policies, Tanzania is still in the early stages of implementing green transportation, with some manufacturing companies unable to fulfil the role of green transportation adoption due to a variety of challenges that prevent them from adopting or rather implementation upon a green effort to transportation (Khamis et al., 2022).

Furthermore, green transportation in connection with green supply chain is challenged by both internal and external issues (Zulkefli et al., 2019; Iqbal, 2017). Among the green transportation issues in the sustainable supply chain are poor sewage treatment and disposal, an increase in industrial and coastal pollution, persistent vehicle exhaust emissions, leaks and spills from cars, garages, and fuel storage facilities (Savadogo & Beziat, 2021). In terms of internal challenges, researchers discovered that green transportation challenges are all essential threats that occur within a company's limits. These include but are not limited to lack of a clear vision, machine faults, lack of vehicle maintenance funds, lack of an integrated strategy, lack of cooperation, lack of knowledge, economic limits, a disregard for land use planning, and technological deficiencies (Iqbal, 2017).

External complexity is created by environmental conditions that have an impact on the supply chain and transportation in particular, whether directly or indirectly (Forward et al., 2014). These are created by lack of regional and international coordination, as well as difficulties in empowering and educating the public (Iqbal, 2017). Inadequate transportation network links, unclear road use, a high reliance on vehicles, misunderstanding about environmentally friendly travel, lack of

parking spaces, lack of infrastructure, and a deteriorating travel environment to mention just a few (Li, 2016; Wang, 2016)

Separately from the above-mentioned challenges, several scholars have mentioned inadequate institutional arrangements, inconsistent or incompatible laws, regulations, and procedures, insufficient capacity caused by low levels of resource investment, and low levels of enforcement of safety, environmental sustainability, and gender issues (Khamis et al., 2022), inadequate management and expansion of the transportation sector, (Paul et al., 2014), and poor vehicle performance and lack of expertise (Rajabion et al., 2019) to the greatest challenges for implementation of green transportation.

Unfortunately, despite playing an important role in green transportation implementation and the efforts and initiatives that made Tanzanian government to manage sustainable supply chain to transportation, green transportation in manufacturing companies are not impressive enough at the moment (Khamis et al., 2022). This is because manufacturing companies generate significant greenhouse gas emissions when performing transportation tasks (Sarkis & Dou, 2018; Khamis et al., 2022). In fact, manufacturing companies are aware that there are critical rules and regulations to follow in order to keep the environment safe for companies and their vehicles (Li, 2016); they are also aware of the fines and complete bans that Tanzania's regulatory authority has imposed on businesses that violate the country's transportation laws (AFRODAD, 2017), but they have failed to implement green transportation to a large extent due to lack of competent pioneers who can carry it out (Sarkis & Dou, 2018; Sutherland, 2019). By focusing on the problems that are encountered when implementing green transportation by manufacturing companies, decision-makers, stakeholders, and government authorities are better able to revise and reform new policies and regulations that could help in implementing green transportation in order to protect the environment and living things in particular. Therefore, the current study's main objective was to explore the challenges that manufacturing companies in Dar es Salaam encounter while implementing green transportation and then to suggest recommendations.

2.0 Objectives of the study

Based on the aforesaid background, the main objective of this study was to explore challenges encountered by manufacturing companies in implementation of green transportation and finally to suggest strategies for improving green transportation by manufacturing companies in Dar es Salaam, Tanzania

3.0 METHODS

This section covers the research methodology. It included the study areas, participants of the study, sampling strategies, sample size, data collection procedures, research design and approach, and data analysis techniques.

3.1 The research approach

The study used a qualitative research approach, which in general allowed for the facilitation of producing in-depth information as well as aiding the research in understanding the challenges that manufacturing companies face in implementation of green transportation and how they could be assisted in overcoming them (Kothari, 2004). A qualitative approach was also adopted in the context of this study for the purposes of exploring, discovering, and comprehending the situation. The approach enabled the researchers to communicate with respondents, conduct in-person interviews with them, and obtain responses pertinent to their field of study (Astalin, 2013). The qualitative approach enabled the researchers to record respondents' perspectives, values, and experiences despite serious barriers to their participation in industrial enterprises in adoption of green transportation (Mohajan & Mohajan, 2018; Wisdom and Creswell, 2013).

3.2 Research design

This study used a research design for case studies (Creswell & Creswell, 2018). This was done in an effort to understand more about a scenario that was either obscure or poorly understood. A case study approach is used to examine extreme cases, to confirm or refute theories, or in situations in which a researcher has never had access (Denzin et al., 2018). Additionally, it implied that a case study of Bakhresa Food Product Limited was an empirical analysis of phenomena within the context of their environment, where the relationship between the phenomena and the environment was ambiguous (Neuman, 2014). In order to comprehend a problem or contribute to an established theory or a new theoretical concept, a case study was explored (Astalin, 2013; Hancock, 2009; Khan, 2014). Utilizing case study made it simple to gather comprehensive data from a range of qualitative research techniques (Wisdom & Creswell, 2013). Moreover, a case study approach enabled the researchers to understand the topic, the context, and the challenges that manufacturing companies encounter in their everyday operations (Rose et al., 2015**;** Haron, 2012; Generally speaking, a case study approach was ideal for this study since researchers wanted to uncover more specific details and shed light on the difficulties that industrial companies had when implementing green transportation.

3.3 Areas of the study

The study was carried out in Dar-es-Salaam using Bakhresa Food Products LTD as an example. The authors specified this study area due to that Bakhera Food Product Limited differs from others since they have own transport vehicles as well as arrange their own fleets and vehicles schedules for transporting food products to customers. Also, this helped the authors to get the data which were easily accessible, available, easily located, and reliable and even explored easily transportation challenges facing Dar es Salaam city made by manufacturing companies when implementing the issue of green transportation. On the other hand, the company, located at Vingunguti Industrial Area, Plot No. 4A Nyerere Road, produces a variety of food and beverage products and distributes them to almost all regions of Tanzania, consists of five divisions: Azam dairy products, Ice cream division, Water division, Juices division, and carbonated soft drinks division.

3.4 Participants of the study

Accordingly, the five units from Bakhresa Food Products ltd that were included in this study were, Azam dairy Products, Azam ice cream division, water division, juices division, and carbonated soft drinks division. 60 respondents were used in this study due to the exact sampling frame from Bakhresa Food Products Limited not being available, as well as the use of judgmental sampling techniques and an infinite target population. Azam dairy products contributed 10 employees, Azam ice cream contributed 10 employees, water contributed 10 participants, juices division contributed 15 respondents and soft drinks or beverages contributed 15 participants.

3.5 Sampling Procedures

Purposive sampling techniques were adopted, considering the respondents' backgrounds and their capacity to provide insightful information on the challenges that manufacturing companies faced while implementing green transportation. By considering the respondents' experience with the implementation of green transportation in industrial enterprises, the use of purposeful sampling was utilized to help with the selection of respondents. The authors employed a purposeful sampling technique to pick each division purposely to provide data hence enabled to facilitate report writing. Moreover, the author selected this technique so as to select the case by considering the illustrative and respondents experiences on the challenges that manufacturing companies encountered in implementation of green transportation. Also, purposive sampling was adopted when the authors were working with small samples particularly when adopting case study research. However, this form of sample enabled to select the case that was particular informative in sight of obtaining information from five divisions of Bakhresa Food Products Limited in Dar es Salaam.

3.6 Sample Size

As for application of the infinite population from Azam Food Product Limited, the study used a purposive sample of 60 relevant employees from the five divisions of Bakhresa Food Products limited They were all requested to take part in the study by providing information regarding the complications that manufacturing companies face while implementing green transportation. According to Kothari (2004), a sample size between 10% or 20% is considered adequate for in-depth studies and if the researchers would reach that percentages, the study would be meaningful. Therefore, the current study adopted both FGDs and interview to reach the sample size of 20% of infinite targeted population of 300 staff which was equal to 60 respondents.

3.7 Methods of data collection

In-depth interviews, focus group discussion, non-participant observation, and documentary reviews were used to collect the data. The interviews probably lasted between 20 and 30 minutes. Respondents were free to carry on with the interview while working as quickly as possible to

conduct manufacturing-related activity. The researchers were able to learn more about the challenges that manufacturing companies have while implementing green transportation through these interviews. The authoring of reports was made much easier with this technique. Given that, obtaining detailed information about the challenges that Bakhresa Food Product Limited as a manufacturing companies face when implementing green transportation was the major goal of interviewing respondents. The interviews made communication between respondents and researchers simpler. During the in-depth interview, the researchers reconstructed the interview questions and repeated responses in accordance with best practices for qualitative research in light of the respondents' expertise, conceptions and opinions (Haron, 2012; Astalin, 2013). Additionally, in-depth interviews were required to properly comprehend the part the organization performed in guaranteeing environmentally friendly transportation (Astalin, 2013; Saunders et al., 2009).

The researchers conducted three focused group discussions (FGDs) to make sure there were checks and balances during data collection. The FGD sessions were co-facilitated by two researchers, one of whom served as the crucial group chairman while the other recorded the participants' voices and talks (Creswell, 2013). In order to increase the data's dependability and legality, FGD had additionally created checks and balances. FGD was used in the context of this study to help bring back memories, ideas, and experiences of employees who use green transportation in manufacturing companies. In order to understand how transportation affected the environment and how the company reacted to the situation, the researchers included non-participant observation. They did this specifically to investigate types of vehicles that make delivery of goods to customers, frequently vehicles entry and exit from the Azam Product Company limited. Understanding vehicle types, the noise they make, the cargo they load and unload, and how well they follow transportation and environmental regulations regarding the emission of carbon and smoke into the air were all on the non-participant observation check list.

The researchers used documentary review in this context by looking at numerous government policies, strategies, and development plans that have an effect on the introduction of green transportation. These included Environmental and Social Management Policy, the second worldwide policy created by the UN Climate Change Conference of the United Kingdom in 2021. Also, National Transportation Policy, National environmental policy as well as Environmental and Social Management Plan (ESMP), were among the documents that the researchers adopted. Furthermore, this method was used to learn about the topic thoroughly and aided in sight of in-depth of the background information. The method helped the researchers simplify to do the content analysis. Using documentary data, the researchers were able to determine whether any more researches, studies, reports, strategies, or government policies had been conducted in the area of green transportation in relation to environmentally friendly.

3.8 Data analysis

The authors strategically used qualitative content analysis since the study used a qualitative design to compile, arrange, organize, interpret, analyze, and present the findings in accordance with the

study's objective. The handwritten content analysis data were saved, translated into English, and then inserted into MS Word documents. Thematic analysis was used to examine the data (Mohajan & Mohajan, 2018; Wisdom & Creswell, 2013). These were subsequently rationally divided into categories, which provided details on the challenges manufacturing companies faced when implementing green transportation. The facilitation and analysis of qualitative results were done using MAXQDA 20 [VERBI Software, Marburg, Germany]. Inductive reasoning was used to achieve a level of comprehension that did not always require statistical analysis or involve mathematical manipulation. Peer debriefing, triangulation, longer interaction with respondents, data auditing, and member verification were used to assure the quality and dependability of the data.

4.0 FINDINGS AND DISCUSSION

This section explored the challenges that manufacturing companies face when implementing green transportation, using Bakhresa Food Product limited as a case study. It concentrated on both internal and external challenges. This is in response to the preceding part, which demonstrated that increasingly green transportation posed challenges based on the aforementioned factors. Internal challenges, on the other hand, are those that are caused and originate within the companies (depending on how the companies operate and are always within their control), whereas external challenges are those that stretch outside of the companies.

Internal Challenges faced manufacturing companies Implementing Green Transportation

The study looked at a number of internal challenges faced by manufacturing companies in implementing green transportation, including inadequate route planning and scheduling, poor vehicle maintenance, financial obstacles (low budget in transportation), and lack of personnel in the transport planning department who are adequately trained and experienced, lack of a clear vision, machine defects, lack of cooperation, lack of expertise, and technology deficiencies (Khamis et al., 2022; Zulkefli et al., 2019; Iqbal, 2017)

The study found that majority of the respondents stated that there was irregular and unnecessary transportation and distribution made by vehicle drivers in the organizations, commencing with poor route planning and scheduling in company logistics. This difficulty led to higher fuel usage or consumption, which negatively impacted the environment by increasing the emission of hazardous gases and ultimately lowering the air quality. As an illustration, one respondent herein provided testimony of;

> *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, soft drink)***

Poor vehicle maintenance was another challenge. Simply, majority of respondents stated that Bakhresa Food Product Ltd. was unable to perform proper or routine maintenance on their vehicles that the company utilized for food transportation instead they were doing vehicles maintenance

when they are broke down. Moreover, absent of vehicles maintained led significance noise pollution and excessive smoke which pollute ozone and are harmful to human health and contributes to environmental pollution. Correspondingly, this finding is well capture by Khamis, et al., (2022) who noted that companies fail to plan for vehicles maintenance due to absent of preventive maintenance for vehicles as well as vehicles drivers ignore daily logbook which direct vehicles routes and schedules for easily distributing food to customers.

Another internal challenge to green transportation was financial complications; the majority of respondents elaborated that in order to implement green transportation, companies needed good incentive programmes, but most manufacturing companies, particularly Bakhresa Food Product LTD, lack funds because transportation budgets are not allocated enough funds for implementation of green transportation. As a result, the company failed to implement green practices in transportation such as using electric conveyor and charger forklift. The findings correspond with the work done by Zulkefli et al., (2019) who revealed that lack of enough fund hinders smooth function to implement greening issue. Furthermore, Mathiyazhagan & Haq (2013) revealed that insufficient funds as well as fear of failure to implement green supply chain within which transportation is among is a significant challenge.

The majority of respondents agreed that most employees in transport planning department units were not well trained and many of them were senior drivers. As a result, they failed to carry out their daily tasks in a professional manner, which led to lack of implementation of environmental policies and guidance, especially those related to the planning and development of transportation. According to several of the respondents, studies about this matter showed that vehicle drivers' actions impede green distribution and transportation. The respondents underlined that logbooks that provide routes and schedules for the distribution of commodities are ignored by drivers of vehicles. For instance, one respondent described things in the other way;

> *Sometime it happens that vehicles drivers ignore company's logbook as well as rules when it comes to transportation of goods in long distance. They normally steal fuel filled in tanks of truck or lorry. They also provide wrong data on fuel utilization reports to the companies transport officer* ***(Male respondents (32), Azam ice cream division)***

Findings also show that most manufacturing companies lack important and clear vision of ensuring awareness of green transportation of their vehicles when it comes to transporting goods from one location to another as elaborated by the respondents. The respondents further narrated that, lack of clear organization vision for specific role such as that of implementing sustainable transportation jeopardize the effort of company's trust to its customers and government in particular. Another complication in this aspect was the lack of modern technology as far as ensuring green transportation as confirmed by majority of the respondents. They further stated that, most manufacturing companies use outdated technology for minimizing greenhouse emissions as well as when maintained vehicles to reduce carbon and gases emission. For example, one respondent text hereunder;

Companies which directly manufacture foods and beverage commodities seem to lack new technological devices that reduces harmful gas, smoke and carbon to their trucks. If you look at the types of vehicles that load and transport goods, you will notice that they are old ***(Production employee (36), Bakhresa Food Product Limited)***

The finding was corroborated by Li (2016), who stated that green transportation awareness has yet to be formed, the quantity of pedestrian and bicycle infrastructures is insufficient, and the traveling environment is deteriorating, as well as the presence of disorderly parking are examples of the organization's lack of vision to implement green travel.

According to several respondents, another factor preventing manufacturing companies from implementing green transportation is lack of internal specific experts capable of managing green transportation activities. They also stated that while companies attempted to manage almost all activities that harmed both employees and the environment, special treatment from competent expertise to handle all types of vehicles to treat well green transportation were almost non-existent in Bakhresa Food Product Limited, despite the fact that the company followed the footsteps, rules, and regulations related to the environment enacted by the Tanzanian government. However, the finding is related to Zulkefli et al., (2019), who showed that lack of knowledge and experts, which is related to lack of information, are almost entirely internal aspects of the green supply chain, of which green transportation is a major component.

Furthermore, as mentioned by the majority of respondents, manufacturing companies are unable to implement sustainable transportation due to lack of coordination among many stakeholders. Cooperation, for example, between internal stakeholders such as institutions dealing with the environment and transportation, as well as company to company, was lacking. According to the respondents, stakeholders do not use their time to share the idea of green transportation, and they do not even call for a conference among themselves to share the ideas of sustainable supply chain in which green transportation is one of them, except that this task was operated only by the company and the government to link the role of the company in minimizing the environmental risks derived from the company's operations.

In conclusion, inadequate route planning and scheduling, poor vehicle maintenance, financial obstacles, lack of personnel in the transport planning department, lack of a clear vision, strategy, lack of cooperation, insufficiency of special experts as well as outdated technology are all internal complications related to implementation of green transportation. Concerning these obstacles, our current findings do not exhibit a fully internal complications, except that it demonstrates those that directly affect the company's operation when it comes to implementing green transportation. This is because essentially identical conclusions were achieved in several investigations done by Zulkefli et al., 2019; Mathiyazhagan & Haq, 2013; Iqbal, 2017). An interesting aspect of the conversation was lack of specific workers/experts who could handle vehicles for aiding green transportation exclusively in industrial firms, as well as lack of cooperation between companies to share the notion of green transportation. Furthermore, findings concerning irregular and unnecessary transportation and distribution by vehicle drivers, as well as lack of training from

transport planning department units, were not adequately captured in the literature study. This could be the study's unique worth.

External Challenges faced manufacturing companies Implementing Green Transportation

The study examined a number of external challenges facing manufacturing companies in implementing green transportation, such as lack of parking spaces, lack of infrastructure for walking and bicycling, a deteriorating travel environment, a weak legal framework, infrastructure issues, poor collaboration between transport players, insufficient links between the transport network, unclear road use, and ignorance of environmentally friendly travel (Khamis, et al., 2022) (Mahrous et al., 2020; Wang, 2016;URT, 2003)

One of the external challenges faced by manufacturing companies in implementing green transportation was inadequate legal encouragement and support (poor legal framework on transportation). The majority of respondents clarified that, transportation laws and by-laws made by transport authorities in Tanzania were poorly performed by the company. This discovery is consistent with the above findings and consistent with (Khamis et al., 2022), who discovered that in Tanzania, there is weak, or even lack of legal enforcement by the government on issues related to green distribution and transportation, which makes the company to disregard transport regulations for green transportation implementation. For instance, the respondent provided the following testimony;

> Since there are few standardized and accepted contracts for implementing green transportation practices, such as appropriate contracts for implementing intermodal transportation, and since there is no legal guidance or directive for poorly maintained vehicles (such as providing punishment and fines for those companies which use vehicles under poorly maintained conditions), the Land Transport Regulatory Authority (LATRA) is not in favour of the implementation of green transportation. Due to the fact that their cars make noise and emit more greenhouse gases as a result of the aforementioned situation, manufacturing enterprises have significantly increased their contribution to pollution **(Operations Manager, Azam Juice)**

Another challenge was an infrastructure issue. According to the majority of respondents, the current infrastructures were insufficient to support efficient operations for the distribution and transportation of materials and goods from manufacturing firms. The reason is that many roads were in poor condition due to potholes and other rough surfaces, forcing truck drivers to use more fuel than necessary and ultimately increasing air pollution. In keeping with this, the respondents added that gridlock also prevents manufacturing firms from acting as green carriers and distributors of goods to consumers. Due to this difficulty, supply delays and heavy fuel usage were frequent consumed when transporting goods to customers. As a result, this finding is consistent with Mahrous et al., (2020), who discovered that transportation master plans are important for improving quality of life, but they are not less important than urban master plans, and many cities

lack the preparation of these plans, resulting in increased traffic congestion, road accidents, public transportation decline, environmental degradation, climate change, and energy depletion.

According to the majority of respondents, another external issue in terms of green transportation were poor cooperation and among transportation players. Each transportation and distribution participant in the distribution channel, such as suppliers' tiers from upstream logistics and wholesalers, retailers, and consumers from downstream, works separately and makes decisions in isolation in manufacturing companies, obstructing the efficient flow of logistics. Because each player presents his or her position in the transportation of products, the corporation and network is compelled to convey items independently to their consumers, which may need the use of a number of vehicles. As a result of this finding, it is evident that inadequately formalized coordination and consultation among principal actors is the root cause of Tanzania's transportation issue (URT, 2003).

Another issue that many respondents mentioned was lack of parking spaces. They claimed, however, that while the company claims to do numerous tasks such as manufacturing, storage, packing, loading and unloading, parking reserves have become an issue, jeopardizing the role of transportation. As a result, this information corresponds with Wang's (2016) study, which showed that lack of parking spaces is also an urban issue because land is extremely costly in town centre, which is surrounded by commercial buildings. For example, one respondent narrated hereunder with testimony: -

> *It is common for a variety of operations and vehicle kinds to arrive here and wait for the products to be loaded until one is completely loaded. You can notice all of our divisions that space is a source of dispute and discussion when we perform everyday routine functions. Not only that, but when our driver approaches the majority of clients, their (customers') premises or property appear to lack suitable parking spaces for the cars to enter and exit when unloading the goods* ***(Production worker (31), Bakhresa Food Product Limited).***

According to the findings, inadequate connectivity between the transportation network as well as unclear road use signals for vehicle drivers hampered the company to implement green transportation, as told by respondents. They simply mentioned that the company was occasionally charged by police authorities for disobeying traffic signs and symbols when approached to carry items and distribute them to target clients. On the one hand, poor transportation networks and linkages between the company and customers allowed vehicle drivers to require longer route planning as compared to clients in neighboring town regions. They concluded by depicting that clients were located in far geographical areas such as Arusha, Mwanza, and Mbeya, causing our vehicles' drivers to transfer heavier loads and consume more fuel than usual. As a result, in this instance, fuel consumption, noise, and toxic smoke emissions are unavoidable during transportation operations. As a result, this truth is supported by Wang's (2016) study, which revealed lack of good transit network connection, insufficient bus stops, and uncleared road use function, while URT's (2003) report revealed inadequate infrastructure and facilities to cater for

non-motorized transport such as carts, bicycles, and also simple motorized equipment such as motorcycles, motor tricycles, and similar intermediate technology facilities.

Drawing conclusions from the findings, it can be said that complications of implementation of green transportation include lack of parking spaces, a weak legal framework, infrastructure issues, poor collaboration between transport players, insufficient links between the transport network and unclear road use. Several academics agreed on these complexities.

CONCLUSION

The major objectives of this study were to explore the challenges that manufacturing companies encountered in the implementation of a green transportation with the intention of determining why manufacturing companies fail to play green transportation, and then to suggest measures to improve the issue. Accordingly, findings revealed numerous internal and external challenges as summarized here under which are confronting manufacturing companies during implementation of green transportation; -

The internal challenges were related to poor route planning and scheduling, poor vehicle maintenance, and financial barriers (low budget allocation in transportation), lack of personnel in the transport planning, lack of a clear vision, lack of cooperation, lack of expertise, and inadequate modern technology. However, respondents indicated that many manufacturing companies believe that these challenges led to the failure to implement green transportation to the efficient manners.

The external challenges were found outside of companies and these include lack of parking spaces, a weak legal framework, infrastructure issues, poor collaboration between transport players, insufficient links between the transport network and unclear road use.

Based on the aforementioned results and significant conclusions, the following recommendations should be carefully considered to ensure that the green transportation at the Bakhresa Food Product Ltd, is implemented successfully by minimizing the above challenges to the great extent as possible as required; -

Firstly, manufacturing companies are required to perform regular maintenance of their trucks and vehicles, especially conducting preventive maintenance, after every planned interval of time or kilometres, and the transportation inspecting officers must issue licenses for those vehicles after maintenance, for those that pass the emissions standards testing, providing drivers with training on fuel management.

Second, in order to limit the number of trips, manufacturing companies must employ log books for vehicle drivers that track routes and kilometres travelled. They must also encourage fast and complete delivery. A transportation master plan which will serve as the strategy for a specific time period and provide a basis and direction for transportation infrastructure needs through broad areas must be prepared by manufacturing companies in collaboration with transportation stakeholders and regulatory authorities. When creating the necessary Transportation Master Plan, designers had

to consider a sustainable and green future by including sustainable modes of transportation including non-motorized transportation and cars that release little greenhouse gases.

Thirdly, in order to simplify the movement of raw materials and finished goods, government authorities like TANROADS and LATRA are also obliged to upgrade infrastructures like the construction of tarmac roads. In a similar vein, Traffic Police and LATRA can work to guarantee that all regulations and rules governing transportation are strictly adhered to in order to control and outlaw cars that do not meet the criteria necessary to limit the emission of dangerous gases.

Lastly but not least, by allocating a certain number of points to each driver, the new traffic law will aim to reduce carbon emissions and increase safety. Each time a driver violates the law, he or she will lose points; in some circumstances, a driver will lose points and pay a fine; if a driver loses all of his or her points, the driver's driving privileges will be suspended for a certain period of time.

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