

# Green Fleet Management Practices in Public Service Delivery by Urban Councils: Case of Makonde District in Mashonaland West Province of Zimbabwe

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## Abstract

The discussion of green fleet management has gathered much momentum in public sector organizations over recent decades. Green fleet management is broadly defined as a broad concept that includes different approaches by which companies work with their supplier and or customers in order to improve the environmental performance of their operations. Although knowledge base exists in Zimbabwean public sector on green fleet management, there has been no comprehensive studies on green fleet management which has been conducted. The government of Zimbabwe as a controller of public sector organization needs to find new ways, with limited resources, to achieve maximum efficiency in fleet management by managing available resources and related risks. The value of the research is a holistic approach to the analysis of fleet management which has never been undertaken by the public sector. The research employed a descriptive research design which comprised administering of questionnaires to the respondents. The sample was selected using non-probability technique and 80 respondents were selected from the entire District of Makonde. Findings show that there is an association between methods of practicing green fleet management and company performance as measured by sales revenue per year. Therefore, it is benefitting business wise to practice green fleet management operational principles in public service urban councils. The aim being to make sure that the fleet maximises fuel efficiency, minimise vehicle costs whilst improving the safety, welfare of employees and reducing exposure to environmental damage.

**Key words:** green fleet, public sector, fleet management, urban councils

**DOI:** 10.7176/JESD/11-10-20

**Publication date:** May 31<sup>st</sup> 2020

## 1. Introduction

Transportation is at the centre of logistics as it represents the physical movement of materials between points in a supply chain. High customer expectations and little tolerance for inadequate performance create a competitive environment for operating a fleet, which forces fleet managers to achieve high levels of reliability and cost-efficiency (Remy *et al.*, 2012). The research is motivated by the need for government to find new ways, with limited resources, to achieve maximum efficiency in fleet management by managing these resources and related risks. The value of the research is a holistic approach to the analysis of fleet management the public sector has never been undertaken. The study will also help the state to recognize the influence green fleet management has on the state's core activities and offer a tool for measuring fleet management performance. A sustainable fleet management strategy is one that aims to reduce environmental impacts through a combination of cleaner vehicles and fuels, fuel-efficient operation and driving; and by reducing the amount of road traffic it generates (Besiou, Martinez, and van Wassenhove 2012). The aim being to make sure the fleet minimizes fuel and vehicle costs and improves the safety and the welfare of employees especially in developing countries while reducing its exposure to the problems of congestion. Municipalities have been experiencing problems with the management of the fleet of vehicles for example vehicle maintenance. There is no vehicle maintenance and repair system in place to capture all aspects of this important function with regards to scheduling of repairs and maintenance and identification of a reputable garage for repairs. Time management is one of the greatest day-to-day challenges of public-sector fleet. A common problem is that many senior managers and elected officials do not perceive government fleet operations to be a core business. The number one headache for managers in urban councils is dealing with elected officials and politics. Cost saving strategies for fleets in the public service delivery sector has been to defer capital expenditures by postponing the purchase of replacement vehicles rather than implementing cost saving strategies to deal with an efficient and effective fleet size for the organization. (Rashid *et al.*, 2018). The study was guided by the following research objectives

1. To determine the green fleet management practices in public service delivery by urban councils in the Mashonaland West Province of Zimbabwe.

2. To examine the influence of green fleet management practices in public service delivery by urban councils in the Mashonaland West Province of Zimbabwe.
3. To identify the factors that influenced green fleet management practices in public service delivery by urban councils in the Mashonaland West Province of Zimbabwe.
4. To establish challenges faced by urban councils in Mashonaland West Province in green fleet management practices.
5. To suggest solutions on challenges resulting from green fleet management practices faced by urban councils in the Mashonaland West Province of Zimbabwe in the public service delivery sector.

## 2. Literature review

### 2.1. Green fleet management

Research in green fleet management has significantly expanded over the last decades in connection to the growing importance of the environmental components in the management of supply chains. The green fleet management is a broad concept that includes different approaches by which companies work with their supplier and or customers in order to improve the environmental performance of their operations. Two primary goals of fleet management are identified by Lu *et al.*, (2008:317) which include consistently meeting specified environmental performance criteria among the participants in the supply chain and promoting responsible corporate environmental behavior among all the players in the chain of products and services, and helping suppliers to recognize the importance of resolving environmental issues and support them in installing their own improvement initiatives. However, there is not an established definition of green fleet management initiatives in the current literature and as indicated by Sarkis (2009), the boundary of green fleet management is strictly dependant on the type and scope of initiatives adopted by companies participating in supply chain processes.

#### 2.1.2 Public sector

Dube and Danescu (2011) noted that a public sector organization is one that is owned and operated by the government on behalf of the public. Moreso Rainey and Bozeman (2009:448), postulated that private sector organizations are controlled by private individuals or entities and have to function within the government environments of politics, legislation and public administration. The World Bank (2014) denotes that public sector organizations commonly provide services for the public or citizens of a country regardless of an individual's ability to pay for the service. Effective governments seek to improve the standard of living of citizens through ensuring access to essential services, such as health, education, water and sanitation, electricity, and transport (World Bank 2014). Dube and Danescu (2011) articulated that in the public sector, services are subsidized. For instance public transport organizations, such as the railways, charge a minimal fee to the public, and the majority of the costs for sustaining the entity are funded from the central or local government. The responsibility for protecting the safety of local citizens is undertaken by public sector organizations such as the police and fire departments (Flynn 2009). However, the public sector also works with private sector organizations when a government contracts private business to perform work on a specific public project (Hilbert and Swindell 2013:242).

Barlow, Roehrich and Wright (2010) mentioned that many governments enter into various types of arrangements when building roads and bridges, for example, bringing in new sources of financing for funding public infrastructure and service needs, and the engagement of such contractors is done by the public entities through the public procurement system. In Zimbabwe, in terms of the Procurement Act (Chapter 22:14), (Act No. 2 of 1999), Section 2 (Zimbabwe Government 1999), public sector organizations are made up of ministries, departments or other divisions of government or statutory bodies, and local that is both urban and rural authorities.

### 2.2 Theoretical framework

#### 2.2.1 Theory of Replacement

Machine replacement problem has been studied by many researchers and is also an important topic in operation research and management science (Nahmias, 1997). The quantity-based replacement policy and time-based replacement policy for a single machine problem are reported. These two kinds of policies have been applied to inventory management problems. In a quantity-based replacement policy, a machine is replaced when an accumulated product of size  $q$  is produced. In this model, one has to determine the optimal production size  $q$ . In fleet a management an organization should determine the expected optimal workload of a particular fleet can handle depending on usage before it can be taken for repair and maintenance and later replaced. This should be done considering factors such as cost of running the fleet, repair and maintenance cost among others, it is important

to note that these costs should not be higher than the cost of service provided by the fleet. For this model, one has to determine the optimal replacement period  $T$  in each production cycle, (City of Seattle, 2014).

During the cycle however, the organization should also determine the appropriate intervals for repair and maintenance. In fleet management an organization has to project the optimal lifetime that a particular fleet should serve the organization after which it is replaced. This is crucial to ensure at all time the organization has a reliable capacity to serve its needs. This should be evaluated by experts for accuracy purposes. The time-based policy is more preferable than the quantity-based dispatch policy for satisfying timely customer service. Especially, time-based shipment consolidations have become a part of the transportation contract among the members of a supply chain. Two analytic models were compared according to their average long-run performance. Average long-run costs for both models have been developed by using replacement theory. The costs here include both the cost of a new machine and the machine maintenance cost (Bagui, Chakraborti and Bhadra, 2012). Replacement theory is generally concerned with the problem of replacement of machines, bulbs and men due to deteriorating efficiency, failure or break down. Replacement is usually carried out under the situations as: When existing items have outlived their effective lives and it may not be economical to continue with them anymore and When the items might have been destroyed either by accidents or otherwise. In fleet management fleet may be replaced if: the fleet performance have deteriorated with time; replacement of fleet which did not deteriorate but failed completely after certain use; replacement of fleet that became out of date due to new development; gradual diminishing of the existing working staff in an organization due to retirement, accidents among others (Bagui, Chakraborti and Bhadra, 2012).

### 2.2.2 Resource Based View

The resource-based view comprises a rising and dominant area of the strategy literature which addresses the question of an organization's identity and it is principally concerned with the source and nature of strategic capabilities. The resource-based perspective has an intra-organizational focus and argues that performance is a result of firm-specific resources and capabilities (Wernerfelt, 2008). The basis of the resource-based view is that successful firms will find their future competitiveness on the development of distinctive and unique capabilities, which may often be implicit or intangible in nature. The essence of strategy should be defined by the firm's unique resources and capabilities (Rumelt, 2008). Furthermore, the value creating potential of strategy, that is the firm's ability to establish and sustain a profitable market position, critically depends on the rent generating capacity of its underlying resources and capabilities (Conner, 2010). For Barney (2010) if all the firms were equal in terms of resources there would be no profitability differences among them because any strategy could be implemented by any firm in the same industry.

The underlying logic holds that the sustainability of effects of a competitive position rests primarily on the cost of resources and capabilities utilized for implementing the strategy pursued. This cost can be analyzed with reference to strategic factor markets (Barney, 1986), that is markets where necessary resources are acquired. It is argued that strategic factor markets are imperfectly competitive, because of different expectations, information asymmetries and even luck, regarding the future value of a strategic resource. However, a serious resource-based approach omission is that there is not a comprehensive framework that shows how various parts within the organization interact with each other overtime to create something new and unique (Nonaka and Takeuchi, 2011). The resource based view (RBV) suggests that competitive advantage and performance results are a consequence of firm-specific resources and capabilities that are costly to copy by other competitors (Barney, 2010). These resources and capabilities can be important factors of sustainable competitive advantage and superior firm performance if they possess certain special characteristics. The implication of this argument is that efficiency rents stemming from such resources and capabilities could be categorized into two, interrelated dimensions (Spanos and Lioukas, 2001). Pure rents stemming directly from the efficient implementation of the given strategy currently pursued; it indicates that the more unique combination of resources the organization possesses in relation to rivals the higher is its performance. In this case firm effects are independent of strategy, and indirectly from enabling the firm to conceive and develop its strategy configuration; the more resources the better the ability of the firm for a strategy that fits better market demand and results in higher customers utility. The resource based view could be of great importance in fleet management to guide a better and smooth flow in service delivery. An organization should ensure that they have adequate fleet and it is maintained in to offer optimal service at any time, (Rashid *et al.*, 2018).

### 2.2.3 Technology Diffusion Theory

Researchers in technology diffusion have generally assumed that the ultimate user or beneficiary of the innovation is one and the same person as the decision-maker, or the "adopter" (Kotler, 1976). That is, an individual who

becomes aware of the new product, service or technology, seeks information about the innovation (often from interpersonal sources of communication) and, after considering the relative advantages of the new over the old decides whether or not to adopt. In such a model, the benefits of the decision to adopt accrue to the decision-maker, and the innovation decision is regarded as wise if over time, those benefits outweigh the costs paid by that same adopter. However, usually the organizational decision-maker or adopter of an innovation is not the ultimate user of that innovation, or at least is less directly interactive with the technology than are other users, as for example, drivers and fleet managers in the case of fleet management. The fact that adopter and primary user are not synonymous terms in such cases is obvious; the implications of that simple fact for the successful management of innovation development and Implementation are not so obvious (Barton, 2009). Fleet managers should ensure that the drivers and those charged in the maintenance of fleet do not interfere with the technology in the fleet for example vehicle tracking systems. This is because this is a technology that have proved to be beneficial especially when a vehicle theft has taken place as it aids in tracking the vehicles easily with the use of GPS technology. (Remy *et al.*, 2012).

#### 2.2.4 Human Capital Theory

Based on the transferability of the acquired skills, human capital theory distinguishes between investments in general-usage and specific human capital. As pointed out by Becker (1964), this distinction is important if these investments take the form of employer-provided training. While the returns to specific training can be realized only in an ongoing relationship with the training firm, general training increases the productivity of a worker in many firms besides those providing it. Becker's theory separately addresses these phenomena and draws two main conclusions. First, employers will share the returns and the cost of investments in firm-specific skills with their employees. Second, in a competitive labour market firms will not invest into general skills of their employees due to their inability to collect the returns from such investments. Therefore, workers will pay the full cost of general training. This theory will be used in the study to focus on driver management and training. The importance of training cannot be overlooked and it is important that every organization should strive to add value to the employees through training and this is reciprocated through better performance and evasion of costs that otherwise would have been incurred due to lack of sufficient training. The drivers need to be trained on how to detect certain hitches in the fleet and how they can quickly respond to them before consulting an expert to avert damage from occurring. The drivers also need sensitization on safe road use among other practices that will be of mutual benefit to the organization and to the drivers themselves. As in human capital theory this will better the performance of the organization (Franz and Soskice, 2011). However, the organization in this case should facilitate the training of the drivers without necessarily sharing the cost.

#### 2.3 The green fleet management practices

Murdy (2009) did a study to evaluate the effectiveness of the Fleet Support community's management practices in meeting the dynamic changes in the complex fleet support arena, while increasing its value to the Navy in the future. In this study the Fleet Support community's mission statement was used as a benchmark in the evaluation process. Data on billet base management, accession policies, education and the detailing process were evaluated against the mission statement to determine the extent to which these practices support it. The results of the study indicated that current practices provide limited support in meeting the Fleet Support community's mission statement. Soltun (2009) carried out a study on fleet management optimization which was built around the concept of fleet management, focusing on designing and implementing a solution for such a purpose. The study was approached as a combination between a literature study that is theory and business model creation and a software design process that is design and implementation. The study proposed that implementing the GIS functions was to be done after the proposed system was complete, and implementing the remaining functionality in co-operation with a possible customer. The process of monitoring and increasing efficiency of transportation problems is called fleet management (Ratcliffe, 2008). The services included in a fleet management tool vary depending on the organization in context. According to Ratcliffe (2008), there are five main fleet management activities, these are pointed out as being; Routing and scheduling, fuel management, vehicle acquisition, vehicle maintenance, driver briefing and debriefing. These activities are supervised by the fleet managers and primarily, a policy is formulated so as to serve as a guide for these activities. Ratcliffe (2008) emphasizes that the most important thing in fleet management is cost management. The fleet manager has to ensure that his or her activities are cost effective. Fleet managers oversee delegation of duties to large groups of personnel responsible for operating the vehicles within the fleet. Map, (2011) expounds that this may include coordinating the employee schedule, managing communication between the drivers and headquarters, planning driving routes or alternate routes, as well as referring or solving problems that may crop up during the day such as accidents, absenteeism and automobile

malfunctions.

#### 2.4 Factors that influenced the adoption of green fleet management practices

According to Ratcliffe (2008) there are a number of reasons why public service delivery may wish to adopt green fleet management principles; some could be based on purely commercial considerations, others on wider environmental, safety or transport policies. Rumelt, (2008) denote that these factors which include saving money, by making more efficient use of company transport, as a strategic business tool, where efficiencies in the fleet can be found to meet wider company needs, as part of a travel plan, where an organization intends to reduce the amount of traffic it generates, often because of planning needs or parking and traffic problems.

#### 2.5 Challenges associated with green fleet management practices

As much as fleet managers might wish, when a green fleet policy is enacted, the fleet does not magically change overnight to align to it. Rumelt, (2008) noted that instead, many areas of the fleet experience a ripple effect of change. Perhaps one of the biggest is vehicle procurement. To green their operations, fleets must rethink what types of vehicles they will now add to the fleet and how to do it. Along the way, there are challenges: what to do first, what vehicles to acquire and where and how to pay for it all. And then there is the people factor how to convince others that what the organization is doing is worthwhile, and that it will not impede their ability to do their jobs. Although these obstacles exist, fleets have found ways to overcome them. Several fleets share their challenges and how they have found success despite them all (Murphy, 2009).

##### 2.5.1 Fleet costs reduction

Cutting fleet costs is a daily challenge for all fleet managers in councils, reducing expenses is taken for granted, as well as delivering a good return on investment year after year. Fleet managers constantly need to research new ways of doing this, as cost cutting does not necessarily mean purchasing something cheaper the most obvious strategy but can also involve finding out new ways to save money, such as relocating vehicles, planning more efficient routes, adopting safer driving habits and so on.

##### 2.5.2 Ever-changing fuel prices

Fuel prices are constantly changing and it is a very difficult expense with which to allocate a fixed budget. Vehicles that are fuel efficient sometimes have extra servicing and purchasing costs. Saving money or cost cutting does not necessarily mean purchasing something cheaper or negotiating discounts, but could also mean switching to a strategy that could guarantee long-term savings adopting a safer driving style for instance.

### 3. Methodology

#### 3.1 Research design

Burns and Grove (2013:195) define a research design as “a blueprint for conducting a study with maximum control over factors that may interfere with the validity of the findings”. Parahoo (1997: 142) describes a research design as “a plan that describes how, when and where data are to be collected and analysed”. Polit et al (2001: 167) define a research design as “the researcher’s overall for answering the research question or testing the research hypothesis”. Sidhu (1984 : 90) pointed out there are several research designs which researchers can use, these include descriptive, survey, case study, experimental and non- experimental designs. According to Burns and Grove (2003: 201), descriptive research “is designed to provide a picture of a situation as it naturally happens”. Haralambos (1991: 727) defines a survey as, “a research project which collects standardized data about large number of people usually in statistical forms.” The descriptive design uses data gathering instruments such as questionnaires and interview schedules. Descriptive design suits descriptive statistics and also seeks to describe phenomenon as it occurs. Leedy (1997) further describes a descriptive survey design as involving methods of research that look with accuracy at a phenomenon of the moment and the describe it. A descriptive research design was used in this research because there was use of questionnaires and an interview guide data instrument.

#### 3.4 Sample size and sampling technique

Saunders (2009) defines a sample as a subset of a population resembling the characteristics of the population under study. Hague (2010) notes that there is no standard sample size for quantitative research The sampling frame had public sector organizations that came from the same geographical part or province of the country. This was important in that the same public sector organizations faced the same challenges. It was therefore possible to use the same research instrument to measure the nature of their challenges facing public sector organizations to the

organization performance. To that end, 80 procurement managers were sampled from the list of 120 public sector organizations. There are two main sampling techniques which are probability sampling and non-probability sampling. Zikmund (2003: p.379) defines probability sampling as a sampling technique in which every member of the population has a known probability sample, in which each member has the chance of being selected. According to Leedy and Omrod (2005:p.199) probability sampling is a sampling technique which each member of the population has an equal chance of being selected. Trochim (2006) defined non-probability sampling as a technique which does not involve random selection and probability sample does. Non-probability sampling is a technique in which units of the sample are selected on the basis of personal judgement or convenience (Zikmund, 2003). Non-probability sampling techniques were employed in this study.

### 3.5 Instruments

The data collection instruments that this study adopted was the use of questionnaires to gather data from research participants. The research instruments was used to gather primary data from the field of study. It was conducted in Makonde district to obtain the information needed to conduct the study. Cresswell (2013) defined questionnaires as prepared set of questions which are used to obtain information from a respondent of the study. Open-ended questions were utilized because they allow a respondent to answer questions in their own words while closed-ended questions specified all the possible answers and respondent make choice among them. Questionnaires were selected because they provide answers that were easier to interpret and tabulate. The questionnaire approach was used to collect data for quantitative research. A questionnaire “is a research instrument consisting of a set of questions (items) intended to capture responses from respondents in a standardized manner” (Bhattacharjee, 2012: 74). Collis and Hussey, (2009) noted that a questionnaire is ‘list of carefully structured questions chosen after considerable testing with a view of eliciting responses. In this study “a group-administered questionnaire” was used to collect data from respondents (Bhattacharjee, 2012: 74). Other types of questionnaires, namely, “self-administered mail surveys” and “online or web survey” were not used.

### 3.6 Data collection procedures

Questionnaires were distributed to the respondents and then they were collected after a day giving the respondents ample time to complete the questionnaires. The researcher was booked for an appointment for carrying out interviews on the day and that they introduced themselves letting the authorities of their intentions to carry out their academic survey. The researcher managed to carry out only a handful of interviews with the marketing executives because the other respondents were not available for the interviews and or had other commitments. The respondents were selected using the judgmental sampling technique to save on time. Questionnaire QPSO (public sector organizations) was pilot-tested in order to unearth irregularities and vagueness in the questionnaire statements. The convenient sampling technique was utilized to select respondents for this exercise (Bhattacharjee, 2012: 78). Bhattacharjee (2012: 78) gives the following information on pilot studies when he mentioned that, always pre-test your questionnaire, at least using a convenience sample, before administering it to respondents in a field setting. Such pretesting may uncover ambiguity, lack of clarity, or biases in question wording, which should be eliminated before administering to the intended sample. The pilot study was done in Makonde District. The sample consisted of fifteen public sector procurement managers. Therefore, three participants were selected from the sample of fifteen participants. The responses of the respondents were checked for irregular answers, and vague statements were either removed or rephrased (Shukla, 2008; Bhattacharjee, 2012). The final questionnaire was then given to the “intended sample” to complete (Bhattacharjee, 2012: 78).

### 3.7 Data analysis

According to [www.unststs.org](http://www.unststs.org), data analysis refers to the process of transforming raw data into usable information, often presented in the form of a published analytical article in order to add value to the statistical output. In this study, the researcher will make use of the following to present and analyze data. Tabulation- data is arranged in simple table form. Simple tabulation was done when the researcher counted the number of responses and placed them in a table. Graphic or Pie Chart presentation- these help to facilitate summarization as well as communication of the meaning data.

## 4 Results

### 4.1. Response rate

The response rate was high with 80 questionnaires being returned out of 80 that were distributed. The reason could have been that the researcher went around distributing each questionnaire in person. Therefore the respondents were afforded the opportunity to ask questions and get clarity on issues that they did not understand.

### 4.2 Responses

Of the 80 respondents who completed and returned the questionnaire, 40(50%) were males while 40(50%) were females. Therefore the data obtained revealed that all the respondents comprised of both males and females were the same. The reason could be that at Urban councils the researcher considered gender equality when distributing questionnaire. 21 (26.4%) were managers whereas 59(73.6%) were employees at Urban councils in Nemakonde district. It was noted that that the majority of the respondents were the managers. The managers had the power to make decisions for their companies. It can be concluded that the answers given to the questionnaire were much reliable. 8(10%) were in the age range of below 40 years, 64(80%) in the age range, 40-46 years, while 8(10%) were in the age range of 47-52 years. From the data obtained it can be inferred that the majority of the respondents were in the age range of 40-46 years. The respondents were matured enough to give honest and truthful answers. 32(40%) of the respondents have diploma, 40(50%) had first degrees and 8(10%) had masters as their academic qualifications. This implies that respondents had the capacity to answer questions in the questionnaire. 32(40%) of the respondents had spent a minimum of 3 years in the organization and some were students on apprentice, 40(50%) had spent 4 to 6 years and 8(10%) had spent 7 to 12 years in the organization. This implies that most of the respondents have enough experience to give information on green fleet management practices and related costs in public service delivery by urban councils in Makonde District in the Mashonaland West Province of Zimbabwe. 7 (7.5%) of the respondents defined green fleet management as approaches by which companies work with their supplier; 5(7.0%) defined green fleet management as approaches by which companies work with their customers; 8 (10.9%) defined green fleet management as consistently meeting specified environmental performance criteria among the participants in the supply chain; 4(4.5%) defined green fleet management as promoting responsible corporate environmental behavior among all the players in the chain of products and services; whereas 56 (70.1%) defined green fleet management as initiatives adopted by companies participating in supply chain processes. The results show that the most cited definition of green fleet management was initiatives adopted by companies or councils. This means that urban councils in Makonde district define green fleet management in terms of what they do. The results also show that there is no standard definition of green fleet management at urban councils in Makonde district.

64(80%) of the respondents were aware that there is a supply chain management department at the organization and some, 16(20%) were not aware that there is a supply chain management department in the organization. Some employees did not have much knowledge about urban council supply chain management as they are new to the organization and some are students on attachment. The majority of the respondents 64(80%) were aware that there is a supply chain management department at urban councils which entails that at most urban councils there is a supply chain management department to manage all green fleet management activities. According to Jaine et al., (200) all firms have supply chains of varying degrees, depending upon the size of the organization and the type of product manufactured. These networks obtain supplies and components, change these materials into finished products and then distribute them to the customer. Managing the chain of events in this process is what is known as supply chain management. Effective management must take into account coordinating all the different pieces of this chain as quickly as possible without losing any of the quality or customer satisfaction, while still keeping costs down". The supply chain not only includes the manufacturer and suppliers, but also transporters, warehouses, retailers, and customers themselves. It is clear that supply chain management has a significant role to play and needs critical attention in the corporate setting. 64(80%) of the respondents said that urban councils in Makonde district do not practice green fleet management and some, 16(20%) were aware that urban councils in Makonde district practices green fleet management. Some employees do not have much knowledge about green fleet management practices as they are work in different departments and some do not have must vested knowledge. 72(90%) of the respondents indicated that they are some factors which are influencing green fleet management which 8(10%) indicated that they are not familiar with the factors which are influencing green fleet management.

72(90%) of the respondents indicated that they are some challenges affecting the organization in supply chain management which 8(10%) indicated that they are not familiar with the challenges facing the supply chain management. Therefore, the data reveals that many respondents are aware that there are some challenges affecting

the supply chain management. Chopra and Meindl, (2008) noted that global supply chains are more difficult to manage than domestic supply chain. Substantial geographical distances in these global situations not only increase transportation costs, but complicate decisions because of inventory cost trade-offs due to increased lead-time in the supply chain.

As pointed (Tang ,2006) since nobody gets credit for fixing problems that never happened, firms do not invest in supply risk assessment exercise. Chopra and Meindl, (2008) mentioned that Supply chain management executives face unique challenges, with respect to integrating supply chain specific strategies with the overall corporate business strategy. In recent years, given changing business realities related to globalization, the supply chain has moved up on the chief executive officer' s list of priorities, but it is not always for the right reasons, in many cases, CEOs only pay attention to the supply chain when they want to cut costs or when something is wrong. Since the supply chain essentially moves the lifeblood of the organization, process efficiency on a global scale is essential to optimized business operations. The importance of global integration to the Multi-National Company lies in the differential advantage to be gained from the ability to exploit differences in capital and product markets, to transfer learning and innovation throughout the firm, and manage uncertainty in the economic or political environment in different countries or regions.

However, the general understanding of the business environment in most industries is that competition has increased and the conditions under which business is made are more turbulent. Many researchers have mentioned a classification of supply chain integration challenges. Supply chain integration challenges can be classified through the challenge of system relationships; the supply chain management system has two kinds of relationships, which are the relation between sub-systems, and the relationship between supply chain management system and the business strategies, This classification emphasizes the technical challenges that came from the relation between supply chain management system and internal business strategy. Information sharing in a supply chain faces several hurdles. The first and foremost challenge is that of aligning incentives of different partners. It would be naïve of a partner to think that information sharing and cooperation will automatically increase his or her profit. In fact, each partner is wary of the possibility of other partners abusing information and reaping all the benefits from information sharing. For example, supply chain partners seldom share information that relates to sensitive cost data, for example production yield data or purchase price of parts. 12 (14.9%) of the respondents cited saving money as one of the factors that influence adoption of green fleet management practices in urban councils at Nemaokonde district; 18 (23.4%) cited efficient use of transport; 13 (15.4%) cited meeting company needs; 23(30.3%) cited reducing amount of traffic problems; and 14(15.9%) cited planning needs. The majority of employees 23 (30.3%) cited reducing amount of traffic problems as one of the factors that influence adoption of green fleet management practices. 35 (46.3%) noted that Urban councils face challenges such as high cost when they tend to adopt green fleet management, 22 (24.4%) wrong decision making, 8(10.4%) limited resources, 8(10.4%) convincing management challenge, whereas 7 (9.0%) ever-changing fuel prices. From the data obtained it can be inferred that the majority of the respondents (46.3%) regarded high cost as a major challenge associated with green fleet management. 35 (46.3%) strongly agreed that green fleet management increases cost, 22 (24.4%) agreed, 8(10.4%) were not sure, 8(10.4%) disagreed, whereas 7 (9.0%) strongly disagreed. From the data in obtained it can be inferred that the majority of the respondents (46.3%) regarded green fleet management as highly costly to the councils. 30 (14.9%) of the respondents cited spare part management as one of the solution on challenges resulting from green fleet management practices faced by urban councils in Nemaokonde district which is followed by the organization; 47 (23.4%) cited fuel sourcing; 31 (15.4%) cited fuel monitoring; 61(30.3%) cited maintenance and scheduling; and 31(15.9%) cited driver management. The majority of urban councils 61 (30.3%) cited maintenance and scheduling as a solution on challenges resulting from green fleet management practices faced by urban councils. From the results obtained in this study it can be concluded that Nemaokonde urban councils follow maintenance and scheduling to solve green fleet management challenges.

**Table 3.1 Direction of the relationship between ways of practicing green fleet management and company performance**

Chi-Square Tests	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	44.028 <sup>a</sup>	4	.000
N of Valid Cases	80		
a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 3.45.			
		Value	Approx. Sig.
Ordinal by Ordinal	Gamma	-.812	.000
N of Valid Cases		80	
a. Not assuming the null hypothesis.			
b. Using the asymptotic standard error assuming the null hypothesis.			

Tables 3.1 show that there is an association between methods of practicing green fleet management and company performance as measured by sales revenue per year, Gamma -.812 shows a very strong relationship although in the negative direction. The results show that as methods of implementing green fleet management become more and more formal, sales revenue per year decreases. In an empirical research which has been conducted by John *et al.* (2008) on the relationship between green fleet management and its impact on the financial performance of the firm, they concluded that there is an association between the methods of implementing green fleet management and company performance as measured by sales revenue per year.

#### 4. Conclusions and Policy Implications

##### 4.1 Conclusions

This study established that, urban councils in Makonde District in the Mashonaland West Province of Zimbabwe attach many meanings to green fleet management. The majority of urban councils associate the meaning of green fleet management with initiatives adopted by companies or councils. Other meanings of green fleet management are in line with consistently meeting specified environmental performance criteria among the participants in the supply chain. This lack of a clear meaning on green fleet management means that urban councils in Makonde District, in Zimbabwe do not undertake strategic Green fleet management. Green fleet management is not guided by policy. The fact that the concept of green fleet management is known in many ways means that green fleet management activities and practices cannot be expected to be the same in different companies. The nature of the industry and the culture of the country housing the company affect the way green fleet management practices are understood and practiced (Karin Stahl, 2012).

Urban councils in Makonde district, Zimbabwe which participated in this study consider Green fleet management as a programme that creates unnecessary expense in their operations. Green fleet management is seen as something that has no quantifiable benefits to the organization. It was also noted that Urban councils in Makonde District do not deliberately do Green fleet management to boost performance. Green fleet management is done for survival purposes. Therefore an increase in the performance of urban councils can be explained in terms of other factors outside green fleet management. Urban councils in Makonde district, Zimbabwe do not have specialized departments to implement green fleet management.

This study noted that urban councils in Makonde district, Zimbabwe are experiencing financial constraints and they are incurring higher cost if they wish to adopt green fleet management. Green fleet management practices are added financial burdens to their operations. Other challenges which are associated with green fleet management they face include being costly to the organization, wrong decision making, limited resources, convincing management and authorities and ever-changing fuel prices. It is also noted that urban councils in Makonde district, Zimbabwe do not have the capacity to measure the benefits of green fleet management programs and this is a significant obstacle to green fleet management adoption.

#### 4.2 Recommendations

Urban councils in Makonde district, Zimbabwe are encouraged to adopt a strategic approach to green fleet management practices. This is possible when urban councils in Makonde district create a green fleet management department that creates and implements strategic green fleet management plans. Strategic green fleet management means adopting a green fleet management policy and reporting all green fleet management practices in the media. This arrangement would help urban councils in Makonde district, Zimbabwe to generate more information on green fleet management practices and to clearly understand the meanings attached to green fleet management by other partners in business. Urban councils in Makonde district, Zimbabwe should deliberately adopt green fleet management practices to enhance organizational performance. This means that Urban councils in Makonde district, Zimbabwe should formalize their green fleet management practices in order to adopt a professional stance to green fleet management. Formalization of green fleet management entails the incorporation of green fleet management objectives in mission statements, creating separate budgets for green fleet management, involving workers in green fleet management, having a specialized department that deals with green fleet management issues and making meaningful corporate plans. Green fleet management should be treated as a serious matter of supply chain.

The results generated by this study are important for Urban council managers in Zimbabwe. The results are also important for green fleet management practices by Urban councils in Makonde district, Zimbabwe. The results have confirmed that Urban councils in Makonde district, engage in green fleet management. Urban councils in Makonde district in Zimbabwe consider green fleet management as a concept that has many meanings. In other words, there is no standard meaning for green fleet management in Zimbabwe. Urban councils define green fleet management in respect of what they do in green fleet management. Urban councils in Makonde district, Zimbabwe consider green fleet management as an expense. The insights generated by this study help Green fleet management practitioners to adopt creative green fleet management policies and strategies. The results can also be used to strengthen managerial capacity in crafting and implementing green fleet management programmes that are relevant to the green fleet management needs of Zimbabwe's communities. The results of this study showed that urban councils need information and education related to green fleet management practices in Zimbabwe. This study provides that information.

#### 4.3 Limitations and Directions for Future Research

Although the sample size was deemed acceptable, a larger sample would have allowed us to run more powerful analyses on green fleet practices. Due to our sample constraints, we could not measure non-response bias, a potential threat to the validity of our results. Future work should examine other potential factors that might influence fleet management sustainability. In particular, sustainability of fleet operations in small to medium transport operators offer fruitful avenues for future research.

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