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### RESEARCH ARTICLE

#### VEHICLE FLEET MANAGEMENT PRACTICES: A SYSTEMATIC REVIEW

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#### Abstract

The purpose of this paper reviews the influence of Vehicle Fleet Management Practices, (VFMP). A systematic review of papers was performed analysing 56 articles from year 2014 to 2021. Vehicle Fleet Management Practices research has garnered interest from both academics and industrialists in both the public and private sector. This is demonstrated by the increasing number of academic papers published in recent years. The article discusses interesting findings, suggests and lays down a number of directions for future research. In addition, limitations of this work are presented. The conclusion of this study provides sufficient evidence on the need for further research addressing the interaction between vehicle fleet management practices and service delivery in public entities.

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#### Introduction:-

This systematic review seeks to examine the recent literature on vehicle fleet management practices. Vehicle Fleet Management (VFM) can include a range of fleet management practices such as maintenance, fuel management, vehicle replacement (Milenkovic et al., 2020), safety and vehicle drivers' management, (Sun et al., 2021) and vehicle routing (Makarova et al., 2020 and Adam, 2020). Vehicle Fleet Management function has had its fair share of customer complaints in terms of services rendered, (Baffour-awuah, 2018; Nguyen, 2021). As such Giglio et al (2018) suggests that organizations should holistically include vehicle maintenance in their business model in order to respond quickly to the needs of its customers. Similarly, Gitahi and Ogollah (2014), and Özener et al., (2020) assert that vehicle spare parts management positively influences the way an organization respond to the needs of its customers.

Correspondingly, Hu et al (2018) explained that the availability of spare parts reduces the consequences of vehicle downtime, playing an important role in achieving the desired equipment availability at a minimum economic cost. Gitahi and Ogollah (2014) noted that fuel management is one of the most important vehicle fleet management practices. They emphasized that without proper fuel management, it is not possible to install and implement other fleet management practices. Pedraza-Martinez and Van Wassenhove (2012) assert that the implementation of fuel management strategies should aim to reduce costs of fuel for operating an organization's fleet in order to ensure quality service delivery. They further remarked that fuel management practices do not only enhance consumption control but enable cost analysis. Emphasizing the importance of driver management, Fahim (2018) noted that an organization should ensure that it obtains and retains skilled, committed and well-motivated workforce it needs.

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Driver management involves driver recruitment, driver education and recognition (Begashaw, 2018; Ampiah, 2018; Aflabo et al, 2020). Osborne and Hammoud (2017) noted that driving training programs allow drivers to directly upgrade their knowledge, skills, abilities, attitudes and professionalism which they require to meet the needs of customers, and respond better to customers' requirements. Ludbrook, Meehan and Mason (2016) state that good planning prevents the organization from losing money, as it would ensure that only the right vehicles are procured in the right amount and at the right time. On the other hand, Meehan, Ludbrook and Mason (2016) noted that a vehicle replacement policy that endeavours to anticipate future needs of the customer also endears customers and leads to customer satisfaction. By the same token, Sahling and Kayser (2016) observed that vehicle procurement planning enables the company to anticipate the future and hence procure vehicles that would lead to customer satisfaction. The preceding thoughts are highlighting that poor planning is not an option as that affects the specifications regarding vehicle models which addresses good matching of vehicles' tasks to manage fuel consumption,

### Research Method:-

This paper seeks to provide a rigorous, critical analysis of the state-of-the-art research into the effect of vehicle fleet management practices. The articles selected for inclusion in this review were restricted to English-language studies only. Academic peer-reviewed articles, articles from the 'grey literature' were also included. The researcher conducted the search for peer-reviewed articles indexed in Elsevier, ScienceDirect and Journal Storage (JSTOR) databases published between 2014 and 2021. Those articles with a broader focus on vehicle fleet management were only considered. The keywords used for the selection of articles are: "Vehicle Fleet Management", "Vehicle Maintenance", "Fuel Management", "Vehicle Replacement" and "Driver Management". The papers selected for the analysis based were characterized as to their research methods, such as systematic literature reviews, and papers employing empirical approaches based on surveys, case studies and interviews (Carter & Easton, 2011). To ensure reliability, all the authors were involved in searching and selecting papers independently. After searching and selecting papers, the authors compared notes and reached agreement on the selection and all the coding of papers. Based on this approach, 56 papers were finally identified and subsequently analysed.

### Results:-

The results comprise of descriptive analysis of the 56 articles. The descriptive analysis consists in identifying and classifying the articles by sectorial framework and analysis of research variables.

#### Analysis of articles by sectorial framework

Table 1 shows the sectorial framework of articles used to analyse the vehicle fleet management practices.

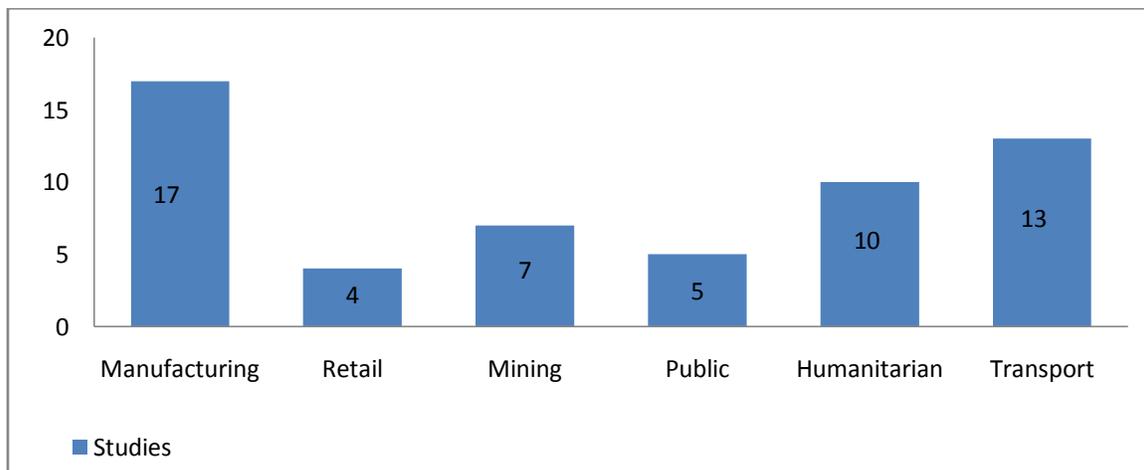


Figure 1:- Distribution of articles by sector.

The sectorial distribution shows that the most studies on the research topic have been conducted in the manufacturing, transport and humanitarian sectors. Some notable studies include a study by Musau et al, (2017) who studied the effect of transport management on supply chain performance in textile manufacturing firms in Kenya. Begashaw (2018) investigated the effect of fleet management on fleet efficiency of the World Health Organization in Ethiopia and they found a positive correlation among repair and maintenance, fuel management, vehicle tracking,

drivers' management and supply chain dimensions. Similarly, Gitahi and Ogollah (2014) examined the influence of fleet management practices on service delivery to refugees in United Nations High Commissioner for Refugees (UNHCR) and found that fuel consumption, vehicles repair and maintenance influence service delivery to refugees in UNHCR Kenya programme to a very great extent, which on its own is laying a foundation of further studies.

Aflabo et al, (2020) assessed the impact of fleet management practices on competitive advantage in the Ghanaian transport sector within the Kumasi metropolis and found that repair and maintenance, fuel and driver management, and training have positive effects on competitive advantage while vehicle tracking have an inverse relationship with competitive advantage. Some notable studies conducted in the public sector include a study by Njeru and Marongwe (2018) who examined the effect of asset vehicle disposal practices on performance of public entities in Kenya. Assey et al. (2017) assessed the factors influencing fixed asset losses in local government authorities in Tanzania. The results show that assets physical verification and tracking of fixed assets has more influence than asset losses. Ampiah (2018) examined the challenges of fleet management and control in the University of Education, Winneba in Ghana. Questionnaires were used to collect data. Purposive sampling technique and a sample size of 161 respondents were used. Munuhuwa et al (2020) studied the effect of green fleet management practices on performance of local authorities in Makonde District. Ally (2020) conducted a study on factors affecting motor vehicle fleet management in public institutions in Tanzania.

#### **Analysis of articles by research variables**

This sub-section presents a comprehensive analysis of the type and number of research variables used in various fleet management studies. A number of studies conducted on the research topic have analysed different vehicle fleet management practices. This may generate contradictory results. In addition, there are differences in independent variables used in most quantitative various fleet management studies. For example, studies by Munuhuwa et al (2020), Njeru and Marongwe (2018) and Musau et al, (2017) analysed the influence of vehicle fleet management practices on performance, Gitahi and Ogollah (2014) on service delivery while Aflabo et al, (2020) assessed the impact of fleet management practices on competitive advantage. These differences resulted in different conceptual models used in these studies.

#### **Discussion:-**

This study conducts a literature review of articles on vehicle fleet management practices published from 2014 to 2021, in Elsevier, ScienceDirect and JSTOR databases. This research was constrained by time period, language, number of database sources and key words. Extracted articles were classified based on the sectorial framework and research methodology, tools and techniques used for analysis. The results of these classifications have facilitated the discussion on current status and progress on vehicle fleet management practices. The study revealed that there is paucity of research on the research topic in the retail and public sector. The study also revealed that the manufacturing, transport and humanitarian sector have been the major contributor of vehicle fleet management articles. The study revealed some differences in the research variables and data analysis method used. Most studies used regression and correlation analysis to derive conclusions while none of the fifty-six (56) studies used Structural Equation Modelling (SEM). Gitahi and Ogollah (2014), Njeru and Marongwe (2018) have used regression analysis to reach their conclusion while Musau et al, (2017) and Aflabo et al, (2020) used regression and correlation analysis for their data analysis.

#### **Research Gaps**

The literature review has opened a few future research directions. A plethora of studies have identified vehicle fleet management as one of the variables of asset management, thus vehicle fleet management has not been fully exhausted in most research studies, therefore, presenting a gap in the vehicle fleet management practices study. There has been inadequate attention to and discussion on vehicle fleet management practices in either the retail or public sector. Nonetheless, a great amount of literature-based evidence on the research topic is abundant in transport, manufacturing and humanitarian aid sectors, thus creating sectorial and contextual research gaps which needs to be filled.

#### **Limitations and Future research directions**

The restriction of database access availability has limited this review; hence articles from other sources of primary importance on the vehicle fleet management practices could have been excluded from processing. The keywords used may not be all inclusive. The review was carried out on 56 articles; therefore, the exploration of more articles could broaden the conceptualization and knowledge of empirical research, and issues currently addressed regarding

vehicle management practices. Public entities remain under pressure to achieve financial savings through efficient and coordinated service delivery, thus vehicle fleet management practices such as vehicle replacement, maintenance, fuel management and driver management among other may help provide superior service level. Therefore, it is important to examine the influence of vehicle fleet management practices on service delivery in either the retail or public sector organizations.

### Conclusions:-

In this paper, we have carried out a comprehensive literature review on vehicle fleet management practices. This study attempted to enrich the knowledge of the research field by carrying out a literature review of articles available on specific databases in the eight years. We find that the research on vehicle fleet management is growing fast in terms of number of articles published and the variety of the journals in which this topic is discussed. This study contributes to the fleet management research by presenting a comprehensive list of vehicle fleet management practices and proposing a number of critical future research directions in this research area. Further research can be conducted on the influence of vehicle fleet management practices on service delivery in either the retail or public sectors cognisant the fact that majority of these studies mentioned in this article above mostly explored the impact of vehicle fleet management practices on disaster and relief responses, and overall humanitarian logistics perspective, (Begashaw; 2018).

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