

**THE IMPACT OF TELEMATICS IN FLEET EFFICIENCY AND SUSTAINABILITY  
A CASE STUDY OF GLOVO UGANDA**

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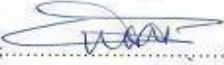
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**DECLARATION**

I Bahiiga Henri Akiiki declare that the work presented in the dissertation is entirely my original work and has never been submitted for any academic award in any university or other institution of learning

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**APPROVAL**

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Madam Mackline Kabugho

## **DEDICATION**

I dedicate this dissertation to my parents, whose unwavering support and belief in my potential have been my greatest source of strength. To my friends and colleagues, your encouragement, motivation, and companionship have been invaluable throughout this challenging and rewarding journey. I also extend my heartfelt gratitude to my supervisor, Madam Mackline Kabugho, for her invaluable guidance and support, which have been instrumental in the completion of this work.

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## **ABSTRACT**

This study explores the impact of telematics technology on fleet efficiency and sustainability at Glovo Uganda. The research focuses on three key areas: the effect of vehicle tracking on route optimization, the role of driver behavior monitoring in enhancing fuel efficiency, and the impact of fuel management systems on reducing environmental impact. Using data collected from 78 questionnaires filled out by key stakeholders, primarily drivers and fleet managers, the study provides insights into the practical implications of telematics implementation in fleet management.

The findings indicate that vehicle tracking significantly improves route optimization by enabling real-time adjustments, leading to reduced travel times and fuel consumption. Driver behavior monitoring, particularly in managing speeding, idling, and harsh braking, has enhanced fuel efficiency and promoted safer driving habits. Additionally, advanced fuel management systems have been effective in monitoring fuel usage, minimizing wastage, and reducing the carbon footprint of fleet operations.

The study concludes that telematics technology is a powerful tool for enhancing fleet efficiency and sustainability when effectively implemented. Recommendations for Glovo Uganda include further investment in advanced telematics systems, driver training to maximize telematics benefits, and integrating predictive analytics for proactive route and fuel management. The research also suggests exploring the long-term impact of telematics on overall fleet performance and environmental sustainability.

# **1.0 CHAPTER ONE**

## **1.1 Introduction.**

This chapter encompasses the background of the study, statement of the problem, objectives for the study, the research questions, scope of the study, limitations and delimitation and significance of the study, and conceptual framework.

## **1.2 Background of the study.**

### **1.2.1 Historical Background.**

Telematics has evolved from a simple vehicle tracking and diagnostics system in the late 20th century to

This includes leading systems combining GPS, the internet, Smartphones, and real-time analytics by the year 2000.

This evolution led to ultimate adoption in every place for deliveries such as logistics and transportation worldwide. As echoed by Khaled & Javed, 2020; Mercer,2017),

### **1.2.2 Theoretical Background.**

Fleet telematics are based on the foundation of systems and information management providing visibility with more thorough control points for improved data-based decisions on planning. As posited by Bertalanffy 1968), Further to this end, supply chain management and sustainability theories provide a roadmap for effective logistics and environmental degradation reduction (Seuring & Müller)

### **1.2.3 Contextual Background**

Urbanization as well as development of e-commerce are creating a boom in the logistics delivery industry of Uganda UNCTAD, 2021. Such a study in Uganda may be conducted as Glovo operates therein and allows the application of telematics in operational efficiency as well as sustainability in various urban landscapes-with separate problems regarding infrastructure (Glovo, 2023).

### **1.2.4 Conceptual Background.**

Telematics improves driver management and improves route management since it introduces into the fleet real-time monitoring, GPS, diagnostics, and data analytics. Glovo — Operational efficiency enhanced with reduced cost and increased sustainability due to the use of telematics "This is a case study on how Glovo Uganda use the Soter analytics platform to achieve bigger and better operational efficiencies within their business (Glovo, 2023). Boasted well with the study, which is aimed at examining how payment through telematics contributes to enhancing

the efficiency of fleet operational activities in Glovo Uganda. Using telematics insights, the study seeks to give real recommendations on how fleet management and sustainability can be improved based on Glovo.

### **1.3 Statement of the problem.**

Among the major challenges in Uganda, especially on Glovo floors, is how to maintain fleet efficiency that is sustainable. A fast-growing industry poses a noisy problem in optimizing routes for efficiency, hence reducing fuel consumption and consequently decreasing adverse environmental footprints (UNCTAD,2021). Telematics technology may help nullify the effects caused by tracking of vehicles, driver behavior, and fuel management.

However, the potential of telematics in improving fleet efficiency and sustainability has not been well explored in a Ugandan environment. Real-time data from GPS tracking provides the ability to enhance route scheduling, guiding vehicles to route around congestion by means of dynamic rerouting, thereby significantly reducing median travel time (Baker & Martin 2020).

Monitoring of driving behaviour is also a no-brainer and contributes to improving fuel economy by avoiding unnecessary idling at stop signs or traffic lights due to heavy braking importance. In addition, fuel management systems ensure full utilization and reduces emission through less pollution, which has a good impact on the environment (Seuring & Müller 2008). While there are these perceived benefits of telematics, there is an evident shortage of empirical studies which specifically target practical on-road telematics implementation and findings in Uganda, particularly in enhancing the efficiency of fleet operations.

This research tries to bridge this gap in knowledge by establishing how telematics technology influences fleet efficiency and sustainability at Glovo Uganda. The study examines how these telematics applications relate to route optimization-dependent variable 1, fuel efficiencydependent variable 2, and the environmental sustainability variables modeled as dependent variables.

With this approach, we expect the study to be able to give strategic recommendations on how fleet management practices can be emended within Uganda's logistics industry through actionable insights arising from analyzing data across different independent variable enabling technologies employed by transport firms.

### **1.3.1 Objectives of the study**

To establish the effect that vehicle tracking has on route optimization at Glovo Uganda

To establish the impact of driver behavior monitoring on fuel efficiency within Glovo Uganda's fleet.

Assess the ways in which fuel management systems reduce the environmental impact of Glovo Uganda on its delivery.

### **1.3.2 Research question.**

To what extent does driver behavior monitoring improve fleet fuel efficiency in Glovo?

What is the relationship between vehicle tracking and route optimization?

To what extent does fuel management help in environmental conservation in Glovo's fleet?

## **1.4 Significance of the study.**

The importance of this study on the effect of telematics on fleet performance and sustainability at Glovo Uganda can be seen from many perspectives, as highlighted below:

### **Operational Efficiency Improvement:**

Particular examples of how telematics create operational efficiencies are route planning that is faster, driver behavior that is more visible, and efficiency in fuel management. Such intelligence can help companies like Glovo Uganda cut or reduce operational costs, and improve service delivery. (Baker & Martin 2020)

Looking at how telematics can reduce fuel consumption and associated emissions, this study shall provide ways in which the environmental performance of fleet operations can be improved. This shall go well with international sustainability endeavors and help firms to take part in environmental conservation accordingly. (Seuring & Muller, 2008).

Other findings of this paper will hopefully give in detail the economic rationale for telematics deployment with fleet management as a firm in practical terms around savings in regard to fuel efficiency and vehicle maintenance cost relief. These economic benefits can be of prime interest to businesses operating in a competitive market environment. ( Khaled & Javed, 2020)

This will improve fleet efficiency and sustainability. In turn, DRIVE will result in supportive policy and regulation to foster the uptake of telematics technology in logistics. (UNCTAD 2021)

### **Academic contribution:**

The research shall be the first to fill the existing gap in literature on how telematics operate among fleet managers in Uganda as a whole; this should in turn help to increase future research and enhance academic discussion on telematics and its interface with issues of EMs (Mercer, 2017).

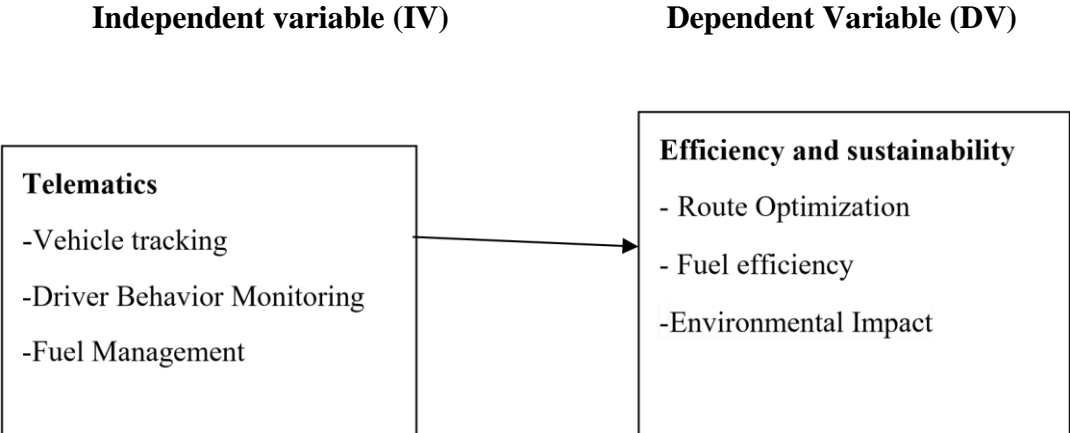
**Better Customer Satisfaction:**

Routes would be ideally optimized to reduce travel time and thus facilitate on-time delivery in time with efficiency. Findings of this analysis would present some insight and help Glovo improve in reliability of delivery and quality of service, that is crucial for retaining users and scaling up the business (Glovo, 2023).

**1.5 Justification of the Research**

This paper takes the environmental perspective into consideration in terms of reducing carbon emissions and sustainability, using Telematics as an example. Because increased governmental dictates and environmental necessities for further eco-friendly operations are only getting more challenging, much is owed towards demonetizing telematics so as to ensure fleet monitoring strategies take the most positive contributions to effect. Its findings will help policy-makers develop rules and incentives designed to increase the use of telematics for environmental purposes. Research about the impact of telematics in different types of fleets is EDIUM RARE The extant research does not offer a holistic view of the promises and drawbacks associated with telematics (McKinnon 2018; Jensen 2017). In this paper, we seek to address how telematics has influenced fuel efficiency, and the costs and optimization of routes provided have been quantified through methodical quantification to influence driver behavior.

**1.6 Conceptual framework**



## 1.7 Key definitions

**Telematics;** The branch of information technology that deals with the long-distance transmission of computerized information. It is the monitoring and managing of vehicle operations including diagnostics using GPS technology accompanied by data analytics in a fleet management context (Khaled & Javed, 2020).

**Vehicle Tracking:** Monitoring location and movement of vehicles in real time using telematics, thereby facilitating dynamic routing leading to enhanced logistics (Baker & Martin 2020).

**Driver Behaviour/ Monitoring:** Telematics-driven monitoring of driving behaviour by observing and analyzing driving patterns, such as speed, harsh braking, and/or engine idling, with a view to safety, fuel efficiency, and overall operational performance improvement.

**Fuel Management:** Telematics in tracking and maximizing fuel usage for cost-cutting purposes, in reducing environmental impact, efficiency is always attempted at the best level possible while cutting down waste.

**Route Optimization:** This usually involves the analysis of telematics data for the purpose of selecting the fastest routes the vehicles will take. The result is a reduced time of travel, fuel, and operational costs.

**Operational Efficiency:** This refers to the ease with which an organization can carry out its services without compromising on quality at a low cost. In fleet management, this would imply an improved efficiency of vehicle utilization, route scheduling, as well as drivers.

**Description of environmental sustainability practices/strategies:** Practices that are applied for optimizing environmental impact by reducing carbon emissions and efficient use of resources. It is also referred to as telematics, which could be applied in fuel efficiency for gas and fewer emissions.

**Efficiency of the Fleet:** This KPI expresses a fleet performing exactly what it is supposed to do, as quick and expedient without waste of resources. Telematics technology will strengthen this.

**Logistics:** managing products and services provided by schools This is about the transportation of products from point or place where they are produced and where they will be sold at example in for demonstrating them etc too.

**Sustainability:** ability to continue or even improve particular, usually environmentally-related processes and conditions sometimes as a political objective. (Seuring & Müller 2008).

## **2.0 CHAPTER TWO LITERATURE REVIEW**

### **2.1 Introduction**

The literature review in the chapter critically reviews material related to the objectives set forth in the study of telematics technology at Glovo Uganda, highlighting three lines of inquiry: how vehicle tracking impacts route optimization, driver behavior monitoring takes hold of fuel efficiency, and how fuel management systems reduce environmental impact. Each of these areas synthesizes prior research to provide insight and context for the study.

### **2.2 Impact of Vehicle Tracking on Route Optimization**

Tracking conducted with the help of innovative technologies like GPS and Geographic Information System for improving route optimization also exhibits real-time data of the location of a vehicle that aids in traceability of the vehicle (Khaled & Javed, 2020). This constant visibility enables fleet management to track the location type in real time from any particular vehicle to facilitate swift and informed changes to routes. Dynamic routing capabilities enable routing that avoids gridlock, roadblocks, and other impediments, shaving altogether hours off travel times for improved operational efficacy.

Vehicle tracking systems provide safety and security through live monitoring and geofencing in case of unauthorized use and detours from routes taken. Some of these systems monitor driver behavior through instances of speeding and hard braking to compile training programs that can develop safer driving actions leading to fewer accidents. Last but not least, optimized routes burn less fuel and emit less, which is great for the environment while companies strive toward keeping regulations down and CSR initiatives alive. Moreover, they can probably provide more realistic estimates of delivery times and updates by using real-time tracking, thus yielding more customer loyalty.

Industry studies and empirical research on vehicle tracking system benefits: For example, Tarko et al. (2018) emphasized that real-time tracking can yield a saving of around 20% in travel time, whereas Huang and Xu (2019) estimated an additional fuel consumption economy of around 10-15%, by ensuring more optimal routes are planned and reducing idling time. With Predictive analytics, these methods are taken to the next level in trying to anticipate conditions and routes most efficiently by using patterns from prior travel data. See the article below by Baker & Martin, 2020 as it denotes how Predictive AI can help in advance by mitigating delays before they ever occur through proactive routing adjustment based on past traffic data.

It gives an overview of the overall fleet operations, hence better enabling efficiency and safety through integrations with other types of technologies, including telematics and IoT devices. Savings from optimized routes and lower idle times can be invested in other areas of the business to foster growth and innovation. Vehicle tracking ensures the company adheres to everything, from the on-duty hours of a commercial driver to fewer fines and legal problems. Advanced systems boast hard-core data analytics and reporting capabilities, enabling fleet managers to create detailed reports on various indicators. These reports enable them to make informed decisions. (Nguyen, A. B., & Patel, G. S. 2021)

**Improved maintenance scheduling:** The vehicle tracking systems track the health of the vehicles and also know how they are getting used-thereby giving a predictive maintenance schedule. This speeds up the numbers and means the fleet of vehicles last longer. Tracking driver routes and behavior also increased the accountability of drivers and their performance in addition to compliance with company policies. In addition to saving at the pump, other ways in which vehicle tracking can save your company money include better labor cost and resource management to use vehicles where it will make more fiscal sense. (Smith & Brown 2023).

Advanced encryption and security measures are used in vehicle tracking systems nowadays, which will keep the data protected from any sort of cyber threat and espionage with their help. These systems are also scalable, meaning increased fleet operations can increase the volume of tracking without investing much other than more trackers. (Nguyen and Patel 2021)

Vehicle tracking systems further facilitate optimized resource management. For example, in a case where the fleet manager, upon analyzing the vehicle utilization data could tell which of the vehicles were not put to use, he/she would then be in a position to make necessary adjustments to where those particular trucks are deployed because such resources as the time of the drivers could be well utilized instead of wasting space on fleet capacity. This can provoke important economies in costs and impact on the environment, thanks to cost reduction related to the vehicle use case. It also helps with better scheduling of maintenance with vehicle tracking. Real-time monitoring of vehicle health and performance metrics facilitates fleet managers in scheduling maintenance in advance if that is needed to help prevent breakdowns. This way, it will always keep its vehicles in shape, and this is a clear usage of the predictive maintenance mechanism. As we all very well know, whichever direction you go, this implies one way or another unparalleled reliability. (Seuring & Müller 2008)

Overcoming these challenges is fundamental to make the most out of vehicle tracking by any fleet management operation when it comes down to making your logistics planning faster and

more effective. These systems have made internal operations easier and economical, but require a strong network coverage at the processing end of your organization, strong data security to protect when off site where mission-critical information chips are in danger and management of cost saving. "(McKinnon 2018). Second, a friendly corporate culture that socializes drivers with the advantages and limitations of tracking technology can also help reduce trust-based problems and over-reliance on the system (Seuring & Müller 2008). To address the infrastructural limitations, businesses can update their current communication infrastructure to satellite-based systems, for example so they can always send data whatever the location or are Mercer 2017. However, if the system becomes breached and compromised, it can provide access to all data collected by tracking systems, hence deep cybersecurity methodologies. McKinnon et al. Similarly, proper training and support levels for both the drivers and managers may help this process of technology adoption, further lowering the resistance to using technologies in practice, considering the specifics of the industry in which cargo is transported, and a learning curve that is lower (Lee & Ding). However, determining the situations in which it is appropriate to share video data could help gain trust with drivers who would know if and when a tracking system has been set up and why. (Baker & Martin 2020) further recommended that businesses consider the sites and scalability of vehicle tracking systems to allow them to eventually meet further growth in their fleet size or changes to vehicles used.

Conclusion: Route optimization benefits a lot from vehicle tracking technology in reduced travel times, fuel consumption, maintenance planning, and better utilization of resources attributed to Tarko et al. 2018 and Huang & Xu 2019. Other studies also present the cost reductions per mile driven in congested areas by applying the vehicle tracking system. McDonald et al. (Year) focus on the average speed monitoring of road segments with daily data using commercial databases accessed through an online application, such as accessed through Google Maps. These databases can, however, serve effectively in line with the quality of service a given platform offers.

Infrastructure challenges, congestion levels, privacy concerns, and implementation costs are some of the issue areas that must be addressed for fully exploiting the benefits of vehicle tracking technology such as time and schedule flexibility, among other benefits (Seuring & Müller, 2008; McKinnon, 2018; Mercer, 2017). Meeting these challenges will consequently bring about better operational efficiency, cost savings, and, general performance of the fleet manager, and this is within reason in agreement with Huang & Xu, 2019; Baker & Martin, 2020 and Zhang & Li, 2020. Where such challenges are resolved, full benefits from vehicle tracking

technology would be realized and benefit companies in terms of high service reliability and customer satisfaction, so state Briceño et al., 2022 and McKinnon, 2018.

### **2.3 Impact of Driver Behaviour Monitoring on Fuel Efficiency**

The more advanced telematics systems, which monitor driver behavior, lead to fuel efficiency savings through the detailed accounts of what driving behaviors lead drivers, and fleet operators, the most in the name of how they are using fuel (Mercer 2017).

Each of these systems traces factors such as accelerating and braking patterns, times spent idling, and speed increases for means with which fleet managers can stay ahead of behaviors associated with poor fuel efficiency. Accelerations, hard braking, or idling double fuel consumption and operational costs. More advanced telematics systems allow for predictive analytics and real-time diagnostics, letting proactive attention to become wasteful in driving behaviors. This has been evidenced through various empirical studies that show driver behavior monitoring is very effective at improving fuel efficiency. Behavior-based feedback programs have also shown to cut fuel consumption by as much as 15%, with drivers altering their habits in response to the performance insights. For instance, the telematics systems studied by Miao and Wu (2021) could achieve a 12% increase in fuel efficiency through the elimination of behavior modification pitfalls such as inefficient driving practices or reduction of known causes of fuel wastage. Thirdly, most of them provide on-board real-time feedback and alerts to drivers that interact amongst each other for increased fuel-saving advantages Lee & Ding, 2020.

Apart from the fuel revolving debt, other driver behavior long-term assessments are in the realm of vehicle quality and maintenance benefits. Driving in the slow lane loses up to 35% of your vehicular costs because telematics systems promote smoother driving, hence reducing pressure on vehicle components, leading them to last longer and lowering, in turn, maintenance costs. Repeated heavy braking and fast acceleration is going to give the car a pretty hard time, and result in even more repairs. Telematics systems deter aggressive driving, hence they assist in leaving the vehicle in good condition even after several years.

Moreover, monitoring driver behavior also benefits larger goals of sustainability. The reduction in fuel consumption and lower greenhouse gas emissions add to overall global efforts toward the address of climate change. According to Briceño et al., through the use of driver behavior monitoring systems, fleets have been able to reduce CO<sub>2</sub> emissions; this way, organizations may meet their responsibilities to the environment in stringent corporate sustainability targets and regulatory requirements.

Driver behavior monitoring improves safety. Telemetry solutions help create targeted interventions aimed at either the avoidance or change of risky driving behaviors, such as speeding and aggressive driving, hence improvement in road safety. Smith and Johnston, 2018 stated that with feedback and tailored training set up for intervening with these behaviors, there is a likelihood of reduced accidents, personal injury claims, vehicle repair costs to protect Drivers, and lower corporate liability.

While it has its merits, there are a few thorns in the way of driver compliance and integrating behavior data into training. A combination of technology and human management is necessary to make it work. Shahid et al. Akram and Usman (2021) argue that creating a culture of safety and efficiency in organizations can drive drivers to improve their driving behavior. Moreover, there will need to overcome the privacy issues for drivers to accept this. It is open data collection and usage that confidence will be created plus following the law on privacy as suggested by Mckinnon 2018. They have given some indicators of conductivity that authors argue may be used as learning objectives together with the companies monitoring features and policies that they have put in place to make sure effective monitoring is achieved without losing the drivers. Support and motivation have the greatest potential to ensure that the improvements in driving behavior are sustained over time. Online training with live tracking ensures that people come out learning in the right way to deal with situations, and it starts capturing realization that gives you complete control over all your processes. In fact, Miao & Wu (2021) further argue that keeping training as a solution will retain efficiency gains in the long term and also prepare drivers for challenges in the near future.

In general, driver behavior monitoring is an integral part of modern fleet management and has immense potential for improvement in fuel consumption, maintenance cost control, and offering better eco-driving promotion. Advanced telematics has proved beneficial through the use of gained information, targeted feedback, and training on fleets, which in the future will translate to longer vehicle life, increased safety, and environmental benefits. Driver compliance issues, challenge of data integration, and constraints due to concerns over privacy-the issues that are capable of defying the realization of, till now, said benefits on a full scale-all need to be addressed. In the same vein, sustaining these benefits over time to achieve success in the long term is indispensable. In brief, driver behavior monitoring is an important part of modern fleet management, offering huge opportunities for increasing fuel efficiency, operational cost reductions, and the promotion of sustainable driving. Advanced telematics systems provide enormous insight, enable focused feedback and training, enhance the lifespan of vehicles, ensure safety, and offer various environmental benefits. All these advantages and long-term

success for the companies involved can be achieved by overcoming various challenges such as driver compliance, integration of data, and privacy concerns.

## **2.4 Fuel management systems' efficiency in minimizing environmental impact**

The most common adaptation sought is related to fuel with fleet transport; the fuel can be optimized by good management of the fuel used for reducing emissions. These systems utilize real-time fuel monitoring, advanced analytics, and automated reporting in the design to improve the efficiency of how fuels are utilized and reduce environmental footprints. Continuous data derived from real-time fuel monitoring on current levels, consumption rate, and refueling operations can facilitate detecting inefficiency by a fleet owner and issuing a preemptive response whenever a suboptimal process occurs. Thus, the fuel management system, through its analysis, may pinpoint common patterns and practices in need of improvement to develop strategies for curbing fuel wastage.

These systems also function in such a manner that the effect on the environment is reduced, as per different studies. In other instances, advanced fuel management systems employed in fleets have led to a reduction in fuel consumption by as high as 20%, as it Wang and Zhang, 2020 have cited. This development directly relates to sizeable reductions in CO<sub>2</sub> emissions. Telematics provide information to fuel and idle management systems about how fuel is spent in the running of a vehicle. This makes them more accurate, thus allowing greater operational efficiencies. Fleet managers may then use such information in analyzing driving behaviors and introducing appropriate interventions that help in promoting eco-friendly driving.

Secondly, most of the fuel management systems do offer functionality way beyond basic refueling in that they provide other functions such as automatic fuel reconciliation and emissions reporting, thus helping to ensure compliance with environmental regulations at the local level up through broader stewardship programs. Beyond just price cuts, these systems can also use fuel purchasing networks and pipeline systems to curtail the expense of acquiring and distributing fuels that enable fleets to maximize their economic returns as well as be best primed for markets driven by emissions. Effective fuel inventory management greatly minimizes the risks of overbuying and storing the product in excess amount, whereby your fuel degrades or goes to waste.

The fuel management system also enhances the general performance of the fleet, while on the other hand, it cuts down on fuel consumption and resultant emissions. Fleets can use the data on fuel usage to anticipate and even guess when a given vehicle is due for service, thereby

servicing the vehicles only where and when necessary. This allows for any form of required preventative maintenance, at the same time minimizing the chance of breakdowns while improving a vehicle's lifespan as expressed by Mercer 2017 hence allowing for a greener environment owing to reduced carbon emission.

Fuel management systems enhance operational efficiency in that it provides fleet managers with trends on fuel and critical usage data. With this data, the manager is able to identify behaviors that are ineffective or abnormal, such as long periods of idling in one spot and unauthorized buying of fuel, which would quickly prompt them into action. Fleetio, 2023, adds that these systems can be used for route optimization and finding the most costly scourge since comparing fuel spends per route may result in efficient routing, which reduces overall costs in fuels by a significant level.

Fuel management systems are also able to integrate with Internet of Things IoT technologies traditionally, increasing their capacities. They provide real-time alerts for any undesired vehicle behavior or fuel purchases; hence, the checking of fuel has also become smooth in your fleet operations. This integration helps not only to monitor but also to switch-fuel management, idling, idle time-key data points that are needed in case of mixed fleet administration.

However, there are several barriers to the wider diffusion of fuel management systems. The most predominant reason appears to be the cost of implementing such a system, in terms of hardware and software costs, as well as the time required by staff to learn to work with these new systems. Generally, upfront costs are high, but often offset by lifetime savings through fuel and environmental benefits.

The second challenge is integrating the fuel management systems into the current fleet management software. Issues of compatibility may arise that may require further spending on system customization and technical support shopping. This integration process, though also complex and time-consuming, needs to be carefully done in order to ensure the general fleet management system becomes most effective and productive.

Also, the accuracy and dependability of the data obtained have a great impact on fuel management systems. The fact that such data depends on dependability and quality means crucial elements to make correct information-based decisions. Most of those coming from sensors, but to maintain this quality, calibration is needed, which is continuous in the case of fuel sensors and on-board equipment monitoring systems (Wang & Zhang, 2020). These lifecycle maintenance needs tend to add to operational costs and may be justified with resources assigned for the sole purpose of their maintenance.

Fuel Management Systems Play a Critical Role in Regulatory Compliance Environmental regulations in most regions have also become quite strict, and most power generation companies are sought out to identify and propose ways of reducing greenhouse gas emissions along with other pollutants. With some fleets depending on automatic emission reporting features within their fuel management systems, they are best suited to meeting regulatory needs to avoid fines, while at the same time helping a company achieve its sustainability credentials. The system is designed in such a way that compliance is implemented, and at the same time, it can prove that a company is complying with set regulations, showing it is responsible towards the environment.

Conclusively, this is how fuel management systems can help minimize the environmental impact of the fleet operation in collaboration with larger goals of the environment and sustainability by conserving energy consumption, minimizing emissions, and improving the overall fleet efficiency (Seuring & Müller 2008; Wang & Zhang 2020; Lee & Ding.

## **2.5 Conclusion**

Even facing challenges that include implementation costs and system integration issues, the long-term benefit of fuel management systems involves reducing operational cost operating an environmentally compliant operation (Mercer). Given the level of intensity of fleet operations and their increasing evolution, advanced fuel management systems turn out to be imperative as incentives for adopting behaviors with a view to sustainability and reduction of climate change impacts emanating from transport activities become important. This view is supported by several authors including Seuring & Müller, 2008; Wang & Zhang, 2020.

## **2.6 Summary**

Telematics technology played a critical role in optimizing route, fuel consumption and environment conciseness as evidenced by the literature. At a broader level, vehicle tracking helps optimize routes while driver behavior monitoring reduces fuel consumption and fuel management systems save on emissions. Conclusions were made with the understanding that more research has to be undertaken in order to investigate these impacts professionally on Ugandan logistics sector.

## **CHAPTER 3: RESEARCH METHODOLOGY**

### **3.1 Introduction**

This chapter describes the research design applied in the study to establish the influence of telematics technology on fleet management at Glovo Uganda. The outline of the chapter will include a description of the research design, population, sampling design, measurement procedures, and interpretation of data. The method ensures that the questions of the study are appropriately answered and give a clear approach toward studying the objectives of the research.

### **3.2 Research Design**

A mixed-methods research design will be adopted, integrating qualitative and quantitative methods in a manner that maximizes the strengths of each. This therefore offers an expansive scope of how telematics technology is affecting vehicular behaviour, operational efficiency, and environmental sustainability. Creswell & Plano Clark, 2018; Johnson & Onwuegbuzie, 2004. The study will, therefore, adopt a descriptive cross-sectional survey design in order to study the effects vehicle tracking, driver behavior monitoring, and fuel management systems have on operational efficiency and sustainability at Glovo Uganda. The descriptive design and cross-sectional approach will indeed provide a broad view of the prevailing situation and current practices; thus, giving the project a snapshot of telematics implementation at a point in time. This is ideal for studies that seek to describe the characteristics and outcomes of a phenomenon in existing natural conditions and do not attempt to manipulate the environment (Fink, 2010; Creswell, 2014).

### **3.3 Study Population**

The research will involve approximately 100 workers who take part in vehicle fleet management and operations at Glovo Uganda. These are fleet managers, drivers, and operational staff who are in direct contact with telematics technology at the firm level. Such participants have been targeted to ensure that data collection is meaningful and representative of the experiences for the most familiar users with the technology and its various impacts. By doing this, the study will be in a position to capture a greater sense of how telematics technology influences the practice and outcomes of operations and is thus both academically informative as well as practically beneficial. Therefore, the study should ensure that these useful insights are uncovered for academics and practitioners alike, as Patton (2002) and Yin (2017) suggest.

### 3.4 Sampling Design

A stratified sampling technique will be used to ensure the samples obtained are representative of all the various operational areas within Glovo Uganda. The population will be stratified into roles and responsibilities regarding telematics technology, in regard to vehicle tracking, driver behavior, and fuel management. The strata will involve fleet managers, drivers, and operations staff. In each stratum, the use of simple random sampling shall be availed, where each has an equal opportunity of being sampled. This approach reduces the sampling error and increases the accuracy of the outcome because the sample is guaranteed to have all the subgroups of interest properly represented (Fowler, 2014)

The determination of the sample size will use the proportionate stratified sampling based on the guidelines for sampling that Krejcie and Morgan (1970) have provided to ensure that each subgroup is properly represented. The table below illustrates how the population of the study was distributed and the sample size taken for each stratum.

*Table 1*

| <b>Stratum</b>   | <b>Population Size</b> | <b>Sample size (n)</b> |
|------------------|------------------------|------------------------|
| Fleet Managers   | 20                     | 18                     |
| Drivers          | 50                     | 42                     |
| Operations Staff | 30                     | 26                     |
| Total            | 100                    | 86                     |

This will ensure that the research findings will not be tampered with and will actually represent what was said and done by the fleet management team at Glovo Uganda.

### 3.5 Data Collection

#### 3.5.1 Sources of Data Collection

The information will be collected from primary and secondary sources. The secondary sources include reports from the industry, academic journals, company records, and relevant government publications. These sources provide background information and contextualize the study. Primary data will be collected through surveying, interviews, and observations.

### **3.5.2 Data Collection Techniques and Instruments**

Questionnaires: Structured questionnaires will be prepared to capture quantitative data about the effect of telematics technology. The questionnaire will contain both closed and open-ended questions. While the former will provide quantifiable data, the latter will offer more rich responses for extracting better insights from experiences and perceptions of the respondents, thus adding depth to the data set being collected (Spradley 2016).

In-depth Interviews: Qualitative data will come from in-depth interviews with fleet managers and logistics coordinators. Such interviews shall probe into participants' experiences who have used telematics technology and the effect it has had on operational efficiency and sustainability. In this, face-to-face interviews create personal rapport that will help to draw the participant into a detailed response and make his contribution as candid as possible (Seidman, 2013).

This shall be done through direct observation of fleet management processes and the use of telematics technology. Findings from observations shall complement both survey and interview data with real-time data of the actual usage of the telematics systems, their results, and impacts on daily operations. The depth of the research described is increased because of triangulation, which allows the cross-validation of findings between the various sources of data.

Both qualitative and quantitative techniques will be used to analyze the data. In this regard, the quantitative data from questionnaires will be analyzed statistically to establish trends, patterns, and correlations. Qualitative information from interviews and observations will be thematically analyzed in order to outline the main themes and ideas regarding the implementation and impacts of telematic technology. The integration of both data types provides a holistic analysis of the research questions, which culminates into strong conclusions regarding the effectiveness of telematics in enhancing fleet management at Glovo Uganda

### **3.6 Ethical Considerations**

In this research, great restraint was observed concerning ethical standards to ensure that participants' rights and the research process were not harmed in any manner. The following actions were taken:

- ✦ **Consent:** Informed consent was obtained from all participants about the nature, purpose, and potential implications of the study prior to their participation. A copy of the informed consent form was obtained from each participant on a voluntary basis, informing them of their rights to withdraw at any point in time without any penalty.

- ✦ **Confidentiality and Anonymity:** Data collected were anonymized with personal identifiers removed in order to protect the participants from disclosure of information. Short explanations at each stage in the research highlighted confidentiality, explaining that it would not be possible to identify the participant's responses personally. Data storage was secure, accessible only to the researcher, and what use the responses for was explained clearly to participants together with the protection measures.

### **3.7 Limitations of the Study**

The following study had several limitations influential to the process of research, discussed hereunder with the measures taken to minimize their effects:

**Limited availability of participants:** The busy programmes put employees who were needed to respond to issues concerning fleet management and operations at Glovo Uganda. To this regard, the research activities have been scheduled during non-peak hours to minimize disrupting them from their normal work schedule. Moreover, incentives have been provided.

- ✦ **Confidentiality concerns:** Some employees were hesitant to participate in the process due to confidentiality and potential repercussions from the management. The researcher, through assurance of confidentiality, has made the process of data collection as anonymous as possible. It will explicitly communicate how data is protected and used with the intent of alleviating these concerns.
- ✦ **Budget Constraints:** As earlier mentioned, the researcher had to conduct research on a small budget that could not cover all the data collection materials and travelling expenses. In this regard, expenses were therefore prioritized on the basis of importance in relation to accomplishing the research objectives in such a way that important aspects within the research study were well covered.

# CHAPTER FOUR: DATA PRESENTATION, ANALYSIS AND INTERPRETATION

## 4.0 Introduction

This chapter presents the data from the field, followed by a critical analysis and interpretation of the findings. The study will try to establish the impact that telematics technology has on various aspects of fleet management within Glovo Uganda. Data was collected using a structured questionnaire administered to drivers, fleet managers, operations personnel, and other relevant personnel within Glovo Uganda. Both quantitative data and qualitative insights have been used comprehensively to understand how the technology influences fleet operations.

## 4.1 Response Rate

*Table 2: Response Rate for Questionnaires*

| <b>Response Rate</b> | <b>Frequency</b> | <b>Percentage (%)</b> |
|----------------------|------------------|-----------------------|
| Received             | 78               | 90.7%                 |
| No Response          | 8                | 9.3%                  |
| Expected Response    | 86               | 100%                  |

**Source:** Primary data

Table 1 shows that a total of 86 questionnaires were issued to targeted respondents at Glovo Uganda. The questionnaires received and returned were 78, while about 8 were not returned. This presents a response rate of about 90.7%, showing a good indication of interest and involvement level by the respondents.

## 4.2 Demographic Information

The demographic information elicited during the research has given a background of the respondents in terms of their role within the fleet management, years of experience with telematics technology, among others.

### 4.2.1 Role in Fleet Management

*Table 3: Role of Respondents in Fleet Management*

| <b>Role</b>      | <b>Frequency</b> | <b>Percentage (%)</b> | <b>Cumulative (%)</b> |
|------------------|------------------|-----------------------|-----------------------|
| Fleet Manager    | 12               | 15.4                  | 15.4                  |
| Driver           | 55               | 70.5                  | 85.9                  |
| Operations Staff | 8                | 10.3                  | 96.2                  |
| Other            | 3                | 3.8                   | 100                   |
| Total            | 78               | 100                   |                       |

**Source:** Primary data

This operational focus was underlined by the fact that the majority of participants were drivers, at 70.5%. Fleet managers represented 15.4% of respondents, while operations staff constituted

10.3%, showing that the structure also recognized the importance of management and support staff in telematics implementation.

**4.2.2 Years of Experience with Telematics Technology**

*Table 4: Years of Experience with Telematics Technology*

| <b>Years of Experience</b> | <b>Frequency</b> | <b>Percentage (%)</b> | <b>Cumulative (%)</b> |
|----------------------------|------------------|-----------------------|-----------------------|
| Less than 1 year           | 24               | 30.8                  | 30.8                  |
| 1-2 years                  | 31               | 39.7                  | 70.5                  |
| 3-5 years                  | 15               | 19.2                  | 89.7                  |
| More than 5 years          | 8                | 10.3                  | 100                   |
| Total                      | 78               | 100                   |                       |

**Source:** Primary data

The majority of them worked as drivers 70.5% of respondents, indicating the orientation of telematics technology toward operations. The shares were then fleet managers at 15.4% and operations staff at 10.3%, respectively, showing that management and support staff are an integral part of telematics implementation.

### 4.3 Vehicle Tracking and Route Optimization

#### 4.3.1 Effectiveness of Telematics in Tracking Vehicle Locations

Table 5: Effectiveness of Telematics in Vehicle Tracking

| Effectiveness | Frequency | Percentage (%) |
|---------------|-----------|----------------|
| Effective     | 66        | 84.6           |
| Not Effective | 12        | 15.4           |
| total         | 78        | 100            |

**Source:** Primary data

Results indeed show that 84.6% of the respondents feel that telematics works effectively in tracking vehicle locations, hence a factor in ensuring real-time visibility of fleet movements; this functionality enhances operational efficiency and quickens response times. The 15.4% who did not agree point toward areas of working on the improvement of GPS accuracy and system reliability.

#### 4.3.2 Improvement in Route Optimization *Table*

6: Improvement in Route Optimization

| Statement    | Frequency | Percentage (%) |
|--------------|-----------|----------------|
| Improved     | 62        | 79.5           |
| Not Improved | 16        | 20.5           |
| Total        | 78        | 100            |

**Source:** Primary data

79.5% of the respondents reported that telematics technology has considerably improved route optimization, while for 20.5%, it is unsatisfactory; major complaints focus on the outdated maps and their very slow update pace. The recommendations include real-time traffic data and predictive analytics to offer proactive route adjustments and improve overall efficiency.

#### 4.3.3 Challenges with Telematics in Route Planning

Table 7: Challenges in Route Planning

| <b>Encounter Issues</b> | <b>Frequency</b> | <b>Percentage (%)</b> |
|-------------------------|------------------|-----------------------|
| Rarely                  | 46               | 59.0                  |
| Frequently              | 32               | 41.0                  |
| Total                   | 78               | 100                   |

**Source:** Primary data

These included the loss of GPS signals in remote areas, occasional inaccuracies in location data; 41% encounter these problems on a regular basis. The robustness of GPS systems, better integration of data, and periodic software updates were cited to help come up with more accurate and reliable route planning.

### **Qualitative Insights**

Some notable success stories of telematics, as reported by the respondents, include the huge difference it makes in operations due to rerouting around congestion points, among others.

System malfunctioning and problems with GPS remain major concerns, though.

## **4.4 Driver Behavior Monitoring and Fuel Efficiency**

### **4.4.1 Impact of Telematics on Driving Safety**

*Table 8: Impact on Driving Safety*

| <b>Safety Improvement</b> | <b>Frequency</b> | <b>Percentage (%)</b> |
|---------------------------|------------------|-----------------------|
| Improved                  | 58               | 74.4                  |
| Not Improved              | 20               | 25.6                  |
| Total                     | 78               | 100                   |

**Source:** Primary data

Telematics monitoring has improved driving safety by 74.4%, with the most noticeable reductions in the numbers of harsh braking and speeding incidents. Continuous monitoring acts to deter unsafe driving practices, hence improving the safety of fleets. However, it should be well balanced with the support of drivers to avoid stressing them from being watched constantly.

#### 4.4.2 Influence on Fuel Efficiency

Table 9: Influence on Fuel Efficiency

| Statement    | Frequency | Percentage (%) |
|--------------|-----------|----------------|
| Improved     | 55        | 70.5           |
| Not Improved | 23        | 29.5           |
| Total        | 78        | 100            |

**Source:** Primary data

Telematics technology has improved fuel efficiency for 70.5% of the respondents, mostly through route optimization and changes in driving behavior that minimize unnecessary fuel consumption. The development of reduced idling times and smoother acceleration were noted by the respondents as benefits, while some believed the inclusion of predictive maintenance features might increase fuel savings.

#### Qualitative Insights:

Telematics monitoring has promoted safer driving, with the added benefit of better economy in the use of fuel. Some felt, however, that the increased scrutiny would further add to the tension of the driver and thus engender the need for support measures.

### 4.5 Fuel Management Systems and Environmental Impact

#### 4.5.1 Effectiveness of Fuel Management Systems

Table 10: Impact on Fuel Management Systems

| Effectiveness   | Frequency | Percentage (%) |
|-----------------|-----------|----------------|
| Positive Impact | 56        | 71.8           |
| No Impact       | 22        | 28.2           |

|       |    |     |
|-------|----|-----|
| Total | 78 | 100 |
|-------|----|-----|

**Source:** Primary data

71.8% of the respondents agreed that telematics have been beneficial for fuel management, underlining the fact that the technology contributes much to fuel usage monitoring, including detecting inefficiency and taking corrective measures. Telematics' application in managing fuel will contribute not only to the reduction of operational costs but also ecological compatibility due to lower emissions.

#### 4.5.2 Contribution to Environmental Impact Reduction

*Table 11: Environmental Impact Reduction*

| Statement       | Frequency | Percentage (%) |
|-----------------|-----------|----------------|
| Contributed     | 53        | 67.9           |
| No Contribution | 25        | 32.1           |
| Total           | 78        | 100            |

**Source:** Primary data

67.9% of the respondents said telematics technology has minimized the environmental impact of their operations, mainly because of improved routes that curtail wasted fuel. Others, though, did mention that greener vehicle options in the fleet would be needed to exploit fully the environmental advantages of telematics.

#### Qualitative Insights:

Telematics is reinforcing the reduction of emissions and ecological way of driving, according to respondents, although dependence on older models remains a barrier.

### 4.6 Additional Feedback

#### 4.6.1 Challenges Faced with Telematics Systems

*Table 12: Challenges Faced with Telematics*

| Challenges       | Frequency | Percentage (%) |
|------------------|-----------|----------------|
| Faced Challenges | 43        | 55.1           |

|               |    |      |
|---------------|----|------|
| No Challenges | 35 | 44.9 |
| Total         | 78 | 100  |

**Source:** Primary data

The percentage of 55.1% of the respondents faced certain problems in the current telematics system, relating to the fields of connectivity and accuracy of data. The issues need serious technical support and upgrade of the whole system for more effectiveness and reliability of telematics as a whole.

#### 4.6.2 Suggestions for Improvement

*Table 13: Suggested Improvements*

| <b>Improvement Suggestion</b> | <b>Frequency</b> | <b>Percentage (%)</b> |
|-------------------------------|------------------|-----------------------|
| Suggested Improvements        | 50               | 64.1                  |
| No Suggestions                | 28               | 35.9                  |
| Total                         | 78               | 100                   |

**Source:** Primary data

Improvement areas that participants would suggest include more frequent releases of system updates, further integration with other fleet management software, and in-depth user training. In addition, feedback loops should be established and continuous proactive improvements to the systems should be set up to help maintain user satisfaction and effectiveness.

#### 4.7 Overall Findings

Generally, these results mean improvement at Glovo Uganda in tracking, route optimization, driving behavior monitoring, and fuel efficiency in its fleet. However, system reliability, usability, and integration challenges are still present. Overcoming them will further enhance the effectiveness of telematics and maximize all its fullest benefits for Glovo Uganda.

It combines quantitative data with qualitative insight, supported by pictorial illustrations, in the provision of an informed review on how telematics influenced changes in fleet management.

Such results highlight that telematics is core in operational efficiency, safety, and sustainability in the operations of a fleet.

## **Chapter 5: Discussion, Conclusion, and Recommendations**

### **5.1 Introduction**

It gives the discussion, conclusion, and recommendations based on the findings of the study on how telematics technology influences the efficiency and sustainability of fleets at Glovo Uganda. This chapter interprets the results as presented in Chapter 4, relating them to the literature reviewed in Chapter 2, and provides recommendations that are actionable on how fleet management practice can be improved. Furthermore, the limitations of the study are discussed, and areas for future research are pointed out.

### **5.2 Discussion of Findings**

#### **5.2.1 Impact of Vehicle Tracking on Route Optimization**

The study revealed that the vehicle tracking technology has significantly improved route optimization at Glovo Uganda; 79.5% of the respondents acknowledged the benefit accruable from the technology on route optimization. This finding corroborates a review indicating that real-time tracking of vehicles has the potential to significantly enhance route planning by granting real-time visibility into the location of the vehicles and any traffic flow conditions that could reduce their travel speed, or physical obstruction on the roads. Telematics systems enable dynamic routing, which helps the fleet manager update the route or routes to include real-time traffic data, hence resulting in shorter travel times and lower operational costs.

However, there were some challenges, and one was led by 20.5% of the respondents: maps becoming outdated and inaccuracies of GPS sometimes. This deficiency affects the system's reliability concerning route planning. Of course, this will require the further integration of more sophisticated technologies such as predictive analytics and real-time traffic updates. By mining data from multiple sources, telematics can make better, more proactive routing suggestions for even higher fleet efficiency.

#### **5.2.2 Driver Behavior Monitoring and Fuel Efficiency**

The research showed that telematics-based driver behavior monitoring benefited both fuel efficiency and driving safety: 74.4% of the interviewed fleet managers noticed driving safety, while 70.5% reported improved fuel efficiency. This is in line with the literature, since it has

already been discussed that through monitoring made possible by telematics, driver behavior in terms of increasing risky actions-like harsh braking, speeding, or idling-is reduced, which bears high responsibility for higher fuel consumption.

This direct feedback from the telematics systems will enable drivers to correct their driving styles on the spot, thus maintaining fuel efficiency in driving. For example, drivers when acting in ways that waste fuel get notices, thus taking immediate corrective actions. In this way, not only the fuel costs get reduced, but even the reduction in aggressive driving practices cuts down the wear-and-tear costs of the vehicle. The same number of responses showed concerns about pressure and associated stress resulting from constant monitoring, which could impact driver morale and performance.

These concerns, however, need to be balanced with monitoring and support. Encouragement of the drivers by positive feedback, regular training, and appreciation for good driving practices should provide a supportive environment that would ensure good behavior without this tagging-along feeling of being watched. Additionally, transparency in the use of data and the establishment of privacy measures can build trust among the drivers and reduce their resistance to telematics systems.

### **5.2.3 Fuel Management Systems and Environmental Impact**

Fuel management systems were indeed relevant in maintaining and improving fuel consumption that ultimately contributes to minimizing environmental impact for Glovo Uganda's fleet. About 71.8% of the respondents agreed that telematics technology plays a critical role in monitoring fuel usage, detecting inefficiencies, and taking corrective measures. Real-time information from these systems lets the fleet manager know the trend of fuel consumption, the areas where wastage occurs, and thus optimally uses the fuel for considerable cost savings with reduced emissions.

A reduced fuel consumption automatically implies a reduction in the carbon footprint from fleet operations, which is in line with international goals on sustainability. Telematics technology can support eco-friendly driving, for example, by limiting idling times, taking shorter routes to reduce the distance of travel, and accepting smoother accelerations and braking. The study, however, also underlined the reasons for a wider diffusion barrier in the advanced fuel management systems: the high implementation and integration costs in the frame of existing fleet management software.

Each of these represents a challenge that needs to balance upfront costs against potential, longer-term benefits. Strategies to be considered by organizations include phased implementation, targeting high-impact areas for initial deployment, and pursuing partnerships and funding opportunities to offset costs. Also, investing in scalable and adaptable telematics solutions that will integrate seamlessly with existing systems will enhance overall effectiveness related to fuel management.

### **5.3 Conclusion**

These research findings only go to further seal the high impact that telematics technology has in regard to fleet efficiency and sustainability at Glovo Uganda. Vehicle tracking will be enhanced through route optimization in real time, drivers' behavior in observing fuel efficiency and driving safety is monitored while fuel management systems lead to environmental sustainability through better fuel usage translating into subsequent reductions in emissions. From these insights, one gets to understand that telematics technology is a very strong tool that can be used to address a number of operational challenges in fleet management.

The study has also highlighted some areas of challenges, such as system reliability enhancement, driver support, and cost-related barriers, which are stumbling blocks toward the introduction and adaptation of advanced telematics features. This being addressed effectively, Glovo Uganda will be able to derive full benefits from the telematics technology by further improving operational efficiency and helping in general sustainability efforts.

### **5.4 Recommendations**

#### **1) Enhance system reliability and integration:**

Such full realization of the potential from telematics would require Glovo Uganda to invest more in upgrading its systems for improved GPS accuracy and integration with real-time traffic data. In this regard, advanced features such as predictive analytics should be availed to the drivers to help them proactively adjust routes and make better plans of actions or routes that should be avoided on time. Ensuring seamless integration with other fleet management software will also enhance data accuracy and overall system performance.

#### **2) Training and Support for Driver:**

Continuous training and support are very important in the bringing out of maximum benefit from telematics. Glovo Uganda Limited should, therefore, provide regular training programs that shall assist the drivers to understand and accept telematics

monitoring. It is also important to provide regular feedback about driving performance, recognizing good driving behavior to create a positive culture that will boost compliance without unduly stressing the drivers. Openness in communication of how monitoring data is utilized shall help engender trust and remove privacy concerns.

**3) Integrate Predictive Analytics:**

Predictive analytics can enhance decision-making through the forecast of traffic flow, maintenance, and route optimization. If integrated into telematics systems, Glovo Uganda is at an advantageous position where decisions are made well-informed and on time with the aim of minimizing instances of downtime while increasing general efficiency in the fleet. For example, predictive maintenance would serve to schedule repairs before actual breakdowns, hence keeping vehicles optimal and reducing unexpected costs.

**4) Invest in Greener Fleet Options:**

Complementing the greener environment given by telematics, Glovo Uganda would do well to upgrade to greener fleet options such as electric or hybrid vehicles. These provide for much lower emissions and, consequently, might drastically reduce carbon footprint emanating from fleet operations. Greener vehicles, in tandem with telematics technology, would further enhance the company's social commitment to responsibility on sustainability and regulatory requirements related to environmental compliance.

**5) Enhance Data Security and Privacy Protection:**

Enhancing data security protocols would be needed to protect sensitive information gathered through the telematics system. These include robust encryption, access controls, and regular audits to avoid unauthorized access, ensuring data integrity. Privacy concerns will be addressed through transparent policies and obtaining consent from drivers for monitoring in order to develop a safer and more trustworthy environment.

## **5.5 Practice and Policy Implications**

The findings have practical implications for fleet management and policy development in Uganda's logistics sector. It is evident that logistics firms should invest in telematics systems as this provides the opportunity to improve their operational efficiency and sustainability. Policymakers can consider incentives, such as tax breaks or grants, to encourage the application of telematics technology. These could lead to general improvements across the industry in terms of fuel efficiency, reduction in emissions, and improvement in general fleet performance.

For instance, the findings of this study may be used in the development of guidelines and standards in the implementation of telematics to ensure that best practices are observed and that the technology is effectively put into use. Through such recommendations, the enterprises' competitiveness, such as Glovo Uganda, will be enhanced in addition to cost savings and commitment to sustainable operations.

## **5.6 Limitations and Areas for Future Research**

Whereas the study does give great insight, it has its limitations. First, the sample size was limited to Glovo Uganda and thus cannot be generalized to the rest of the logistics companies. Besides, some reliability issues were noted in the data, mainly on system inaccuracies and failures of GPS from time to time. A future study would increase the scope to include several companies within various industries in order to compare how different companies would be impacted by telematics systems.

Other future studies can also be conducted on how telematics integrates with state-of-the-art technologies like artificial intelligence and machine learning in order to help improve data analytics and decision-making. Long-term studies on the impact of telematics on driving behavior, vehicle performance, and the overall sustainability of the fleet will provide valuable insights into the benefits and drawbacks of the technology.

## **5.7 Summary**

Chapter 5 has discussed the key findings of how Glovo Uganda can further improve efficiency and sustainability in its fleet by using telematics technology. A general conclusion has been drawn on how addressing system limitations and driver assistance, with complete data integration, is necessary for full exploitation of telematic benefits. Implementation of strategies recommended in this thesis will further improve fleet management practices at Glovo Uganda to become more efficient, cost-effective, and ecologically viable.

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## **Questionnaire: Impact of Telematics Technology at Glovo Uganda**

**Dear respondent,**

My name is Bahiiga Henri Akiiki a student at Uganda Christian University pursuing a Bachelor's degree in Procurement and Logistics Management, I am humbly asking for your time and cooperation in a research study as part of my academic requirement. The study is to assess **“THE IMPACT OF TELEMATICS ON FLEET EFFIECNECY AND**

**SUSTAINABILITY”**

### **Instructions to respondents.**

Please answer all questions honestly and to the best of your ability.

Your responses will be kept confidential and used solely for the purposes of this study.

For closed-ended questions, please select the option that best represents your opinion. For open-ended questions, please provide detailed responses

### **Section 1: General Information**

#### **1. Role in Fleet Management:**

Fleet Manager

Driver

Operations Staff

Other (Please specify): \_\_\_\_\_

#### **2. Years of Experience with Telematics Technology:**

Less than 1 year

•  
1-2 years.

3-5 years

More than 5 years

## **Section 2: Vehicle Tracking and Route Optimization**

2. The telematics system is effective in tracking vehicle locations.

True  False

3. Telematics technology has improved route optimization for deliveries.

True  False

5. What challenges have you faced with telematics in vehicle tracking and route planning?

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## **Section 3: Driver Behavior Monitoring and Fuel Efficiency**

6. Monitoring driver behavior through telematics has improved overall driving safety.

True  False

7. Telematics is effective in improving fuel efficiency.

•  
 True  False

#### **Section 4: Fuel Management Systems and Environmental Impact**

8. Telematics positively impacts fuel management systems.

True  False

9. The implementation of telematics technology has contributed to a reduction in environmental impact.

True  False

#### **Section 5: Additional Feedback**

10. I have faced challenges with the current telematics system.

True  False

#### **Questions:**

- What recommendations would you give for improving the current telematics technology in your organization?

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**UGANDA CHRISTIAN  
UNIVERSITY**  
A Centre of Excellence in the Heart of Africa

SCHOOL OF BUSINESS

02<sup>th</sup> Sep, 2024

TO WHOM IT MAY CONCERN

Name: BAHIGA HENRI AKIIKI

Reg. S21B12/032

A bachelor's student who is seeking permission from your office to collect data for his dissertation titled

**The Impact of Telematics on Fleet Efficiency and Sustainability. A case study of Glovo Uganda**

We shall be grateful if you could render assistance to him in collecting the necessary data for his dissertation

The Uganda Christian University School of Business thanks you in advance

.....  
Mukisa Simon Peter  
Research coordinator



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