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Assessment of the role of Information and Communication Technology in the operations of Federal Road Safety Corps' in Akure, Ondo state

Ayodeji J Ogunmola

ABSTRACT

Information and Communication Technology (ICT) plays a vital role in Federal Road Safety Corps (FRSC) operations in Akure. A Survey research design was used for the study. The census sampling technique was employed to select one hundred and forty-five (145) FRSC officials in Akure, and a multi-stage sampling technique was used to select three hundred and thirty-one (331) road users in the Federal University of Technology, Akure (FUTA). Two sets of questionnaires were used to get data from the respondents, the first set is for FRSC officials, and the second set is for road users. Data was analyzed using SPSS for both descriptive and inferential statistics. The descriptive analysis of this study revealed that Computer systems, Official mobile phones, and walkie-talkies (radios) are the only ICT tools that are available and in use. The ICT tools available are effectively utilized primarily in road safety education, and payment of fines. Therefore, the study recommends that the government should provide more ICT tools for the operations of FRSC to increase their performance and generate more revenue; there should be training and retraining of staff on ICT utilization, and the FRSC officials should be willing to learn how to utilize the ICT tools provided for their operations effectively, the government should recruit young and skilled individuals who can adopt ICT in FRSC operations so that FRSC performance will be at its peak and they should also provide CCTV camera on the road to apprehend road safety violators and this will enhance the road users to always abide by the rules and regulation put in place by FRSC.

Keywords: Information and Communication Technology (ICT), Road Safety and ICT Utilization

1. INTRODUCTION

Transportation is the lifeblood of socio-economic development, enabling the movement of goods, services, and people within and across nations. In countries like Nigeria, road transportation is the backbone of the economy due to its affordability and extensive reach. However, despite its undeniable benefits, road transportation also brings significant challenges, foremost among them being road traffic accidents, which result in loss of lives and impose substantial economic burdens. Countries have established agencies dedicated to road safety management to minimize the risks associated with road transportation. In Nigeria, the Federal Road Safety Corps (FRSC) plays a crucial role in ensuring the safety of road users.

Despite the efforts of the FRSC and other stakeholders, the road traffic management system in Nigeria faces multifaceted challenges, including inadequate infrastructure, inefficient regulations, and substandard vehicle conditions. Advancements in technology offer solutions to address the challenges associated with road transportation. ICT has emerged as a critical tool for enhancing operational efficiency and performance across various sectors, including transportation. Recognizing its potential, the FRSC has begun integrating ICT infrastructure into its operations to improve its effectiveness. The application of ICT in road safety operations holds particular significance in Akure. Akure is a bustling urban area with unique challenges in managing traffic flow and reducing accidents. Leveraging ICT tools and systems could offer solutions to overcome these challenges and enhance the overall performance of the FRSC operations in Akure.

ICT has been globally recognized for its potential to enhance operational efficiency and road safety Ugah et al., (2022), few studies have examined ICT utilization, effectiveness, barriers, and opportunities associated with the use of ICT within broader national or regional contexts (Somuyiwa et al., 2020; Adepoju, 2021). There is a need for localized assessment of ICT in FRSC operations in Akure. There is a significant research gap regarding the direct impact of ICT on the FRSC operations in Akure, particularly in reducing response time, improving incident management, enhancing traffic control, and enhancing road safety outcomes in the town.

Literature Review

The modern era is known for the widespread impact of Information and Communication Technology (ICT). Numerous studies have highlighted the role of ICT in enhancing productivity across various sectors, including both ICT users and producers (Oliner and Daniel, 2000). However, the impact of ICT-induced productivity varies markedly across industries and countries, necessitating a nuanced understanding of sector-specific and country-specific factors (Nordhaus, 2002). The application of ICT extends across diverse fields such as medicine, engineering, management, transport, law, and banking, revolutionizing work processes and methodologies over the past two decades. In the face of the dynamic economic landscape, organizations must undergo radical transformations to enhance their performance.

ICT emerges as a potent tool for enhancing the delivery of essential services, demanding that all sectors of the economy be well-informed and adequately equipped with ICT facilities to operate productively in an era characterized by information explosion and technological advancement. In Nigeria, several organizations have successfully redefined their work processes and introduced new methodologies through the adoption of ICT. The FRSC, according to the grapples with Nigerians' poor driving culture, characterized by a blatant disregard for traffic laws and a prevalent belief among Nigerians that accidents are acts of God and traffic violations can be resolved through negotiation or amicable settlements.

Education emerges as the primary instrument for reshaping people's behavior and attitudes. Similarly, note the FRSC's objective of educating road users, particularly drivers on road discipline and usage. The FRSC public enlightenment unit is responsible for the task of educating road users using strategies such as workshops, seminars, lectures, driver improvement courses, motor park rallies, literacy campaigns, and radio and television jingles, among others.

Objectives

This paper's aim is to assess the role of ICT in the operations of FRSC, and the objectives include:

Examine the types of ICT available for FRSC operations in Akure.

Assess the current utilization of ICT in the operations of the FRSC in Akure.

2. METHOD

This study employs the use of a survey research design. The sample size of this study is a total of four hundred and seventy-six (476), where census sampling technique was employed to select one hundred and forty-five (145) FRSC officials in Akure and three hundred and thirty-one (331) road users in the Federal University of Technology, Akure (FUTA) was selected using a multi-stage sampling technique. Questionnaires were used in collecting data from the respondents. Two sets of questionnaires were used to get data from the respondents: The first set of questionnaires was for FRSC staff, and the second set of questionnaires was for road users. Data was analyzed using SPSS for both descriptive and inferential statistics.

The dependent variables, which are the ICT equipment, include Mobile phones (Official), Landlines, Computer systems, Radios (Walkie talkies), Geographic information systems (GIS), Close Circuit Television Cameras (CCTV), Automatic Number Plate Recognition (ANPR), Traffic management software, Road safety mobile app, Telematics system, Drone, etc. The moderating variables that influence the independent variables include Skill and training, Maintenance and technical support, Government policy, Technological infrastructure, Age of user, ICT adoption rate, and Frequency of ICT usage in day-to-day operations. In contrast, the independent variables include Response time to road incidents, Enforcement effectiveness, communication and coordination, Efficiency in traffic management, Data accuracy, Number of traffic violations recorded, overall road safety rating, and ranking.

3. FINDINGS

A total of 476 questionnaires were distributed to the road users and FRSC staff. All 331 questionnaires distributed to FUTA road users were filled correctly and retrieved. In contrast, 123 questionnaires out of 145 questionnaires distributed to FRSC staff in Akure were filled correctly and retrieved.

Demographic Characteristics of the Respondents

The respondent's biodata shows that a more significant percentage of the respondents were male. This trend aligns with the research conducted by, where there are more male FRSC staff and road users in Kaduna. A more significant percentage of the road users and FRSC staff fall within the age range of 40 years and 44 years. The result implies that the road users are adults, and they are old enough to understand the rules and regulations laid down by FRSC and that the FRSC staff are experienced and can carry out its operations efficiently and effectively. This result disagrees with the research carried out by Obe et al., (2018), where a more significant percentage of FRSC staff in South-West Nigeria is within the age range of 26 years and 35 years. The marital status of the respondents shows that a significant percentage were married. This implies a tendency toward high emotional stability among the respondents.

The findings show that a significantly higher percentage of the respondents possess post-secondary education. This result implies that the respondents are learned.

The findings show the years of driving experience and working experience of road users and FRSC staff, respectively. A significantly higher percentage of road users have been driving for more than 5 years, and a significantly higher percentage of FRSC staff have been working for more than 5 years. This implies that the respondents are experienced.

Types of ICT tools available for FRSC operations in Akure

Figure 1 indicates the types of tools available for FRSC operations in Akure. The categories of respondents for this analysis were the FRSC staff in Akure. 123 FRSC staff filled out the questionnaire, and the majority of the respondents agreed that Computer systems, official mobile phones, and radio walkie-talkies are ICT tools that are available and in use while other ICT tools, such as Traffic Management Software, landlines, Road safety mobile app, Automatic Number Plate Recognition, CCTV, Drones, Telematics system and Geographic Information System (GIS) were not available and some are still in prospect.

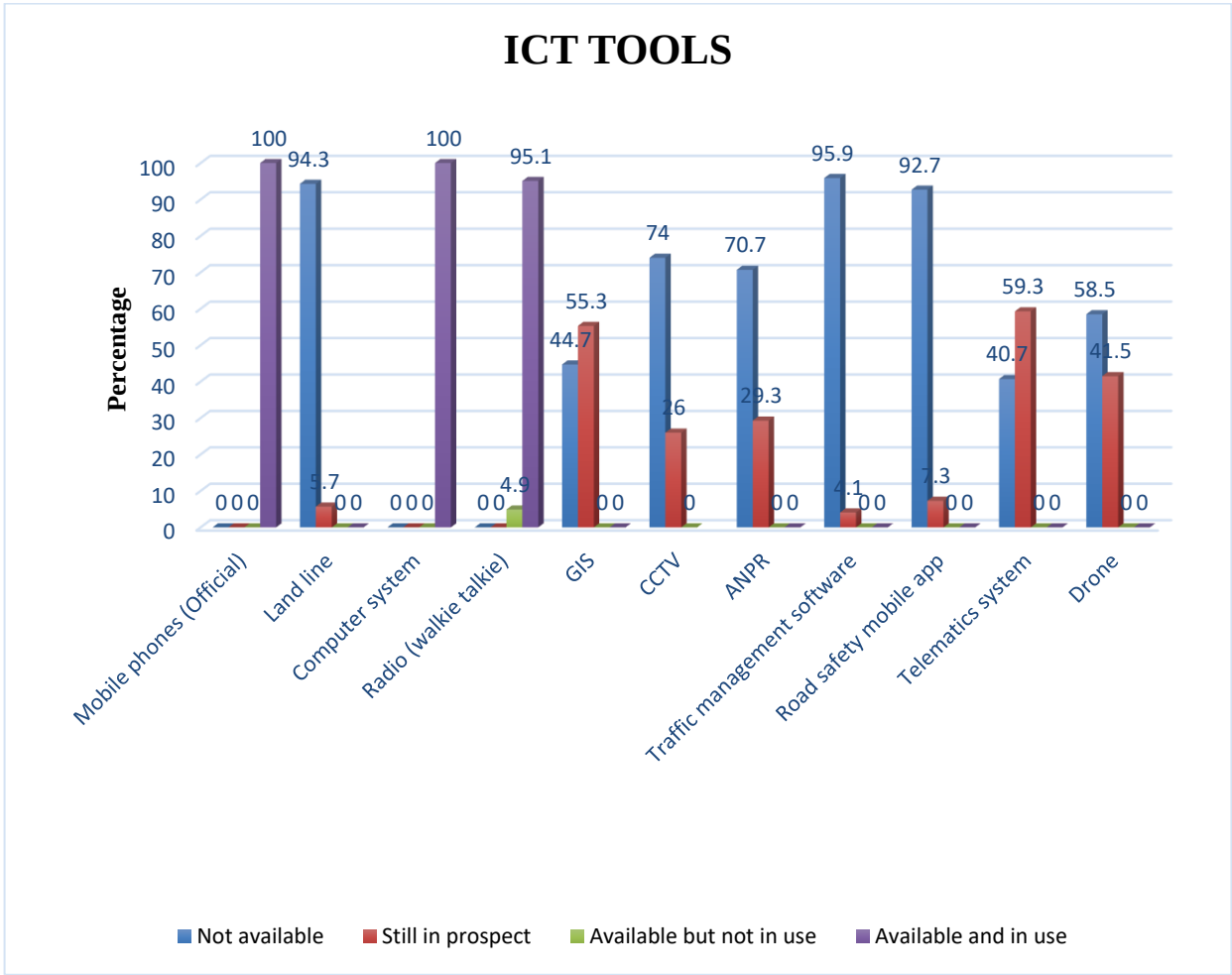


Figure 1 Types of ICT tools available for FRSC operations in Akure

Current utilization of ICT in FRSC operations

Figure 2 indicates that a higher percentage of road users agreed that FRSC uses ICT in data collection and management, fine payment, and road safety education. In contrast, the road users agreed that ICT is not utilized in traffic management, training of road users, reporting and management of accidents, apprehension of traffic offenders, search and rescue service, and patrol and monitoring service.

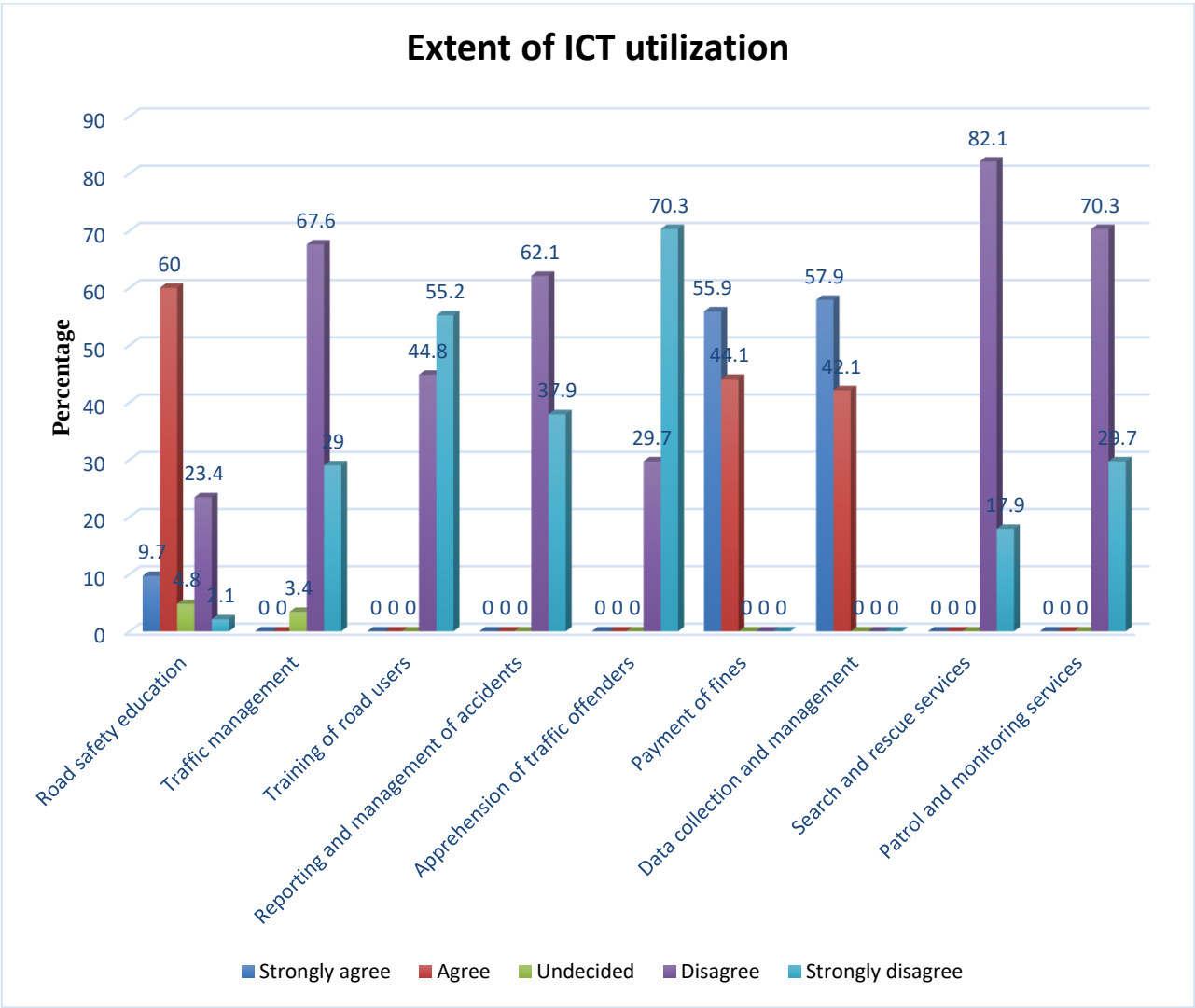


Figure 2 Current utilization of ICT in FRSC operations

Number of apprehended respondents

Figure 3 indicates that a greater percentage of road users have not been apprehended by the FRSC. The result can be attributed to the road user's level of education, age, and years of driving experience.

Mode of apprehension

Figure 4 indicates that none of the road users were apprehended using ICT. This result implies that ICT has not been used to apprehend traffic offenders.

Reasons for Apprehension

Figure 5 indicates that a more significant percentage of traffic offenders were apprehended on driver's license violations, non-use of seat belt, and vehicle license violations. This result indicates that effective utilization of ICT in FRSC operations will reduce traffic offenders.

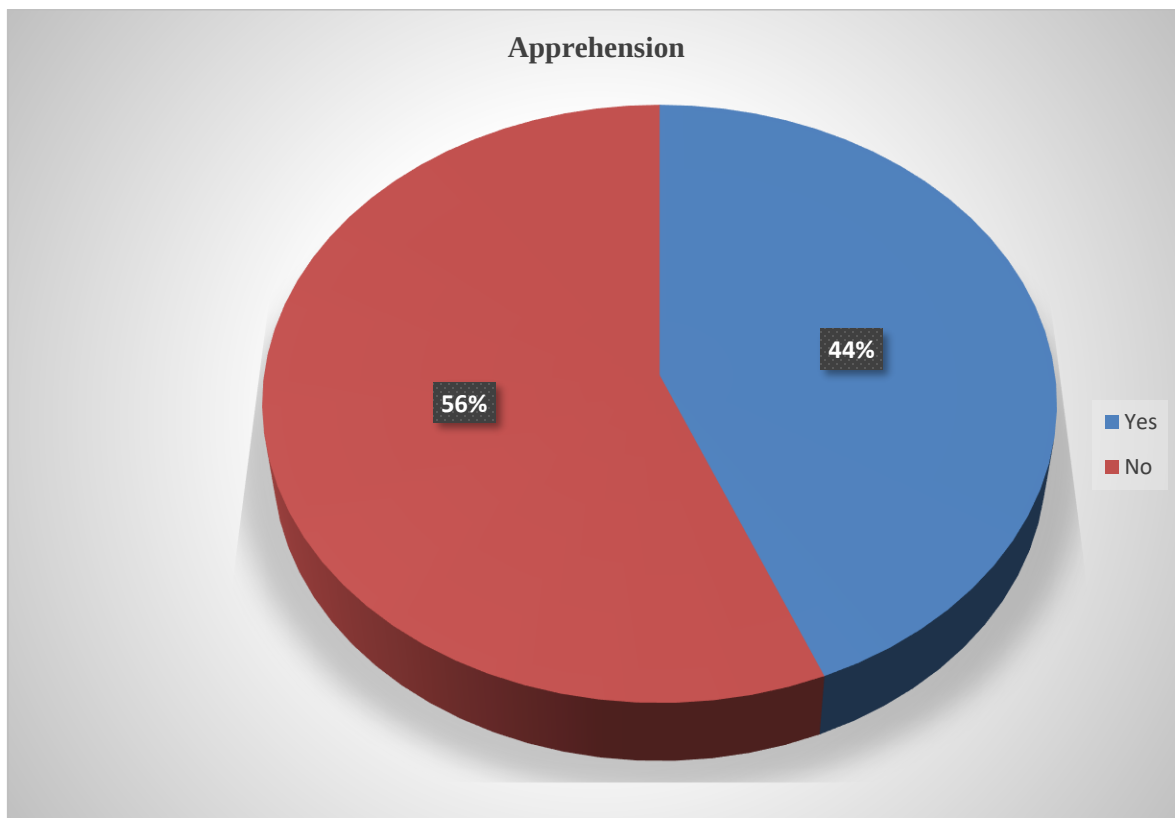


Figure 3 Apprehension percentage of respondents

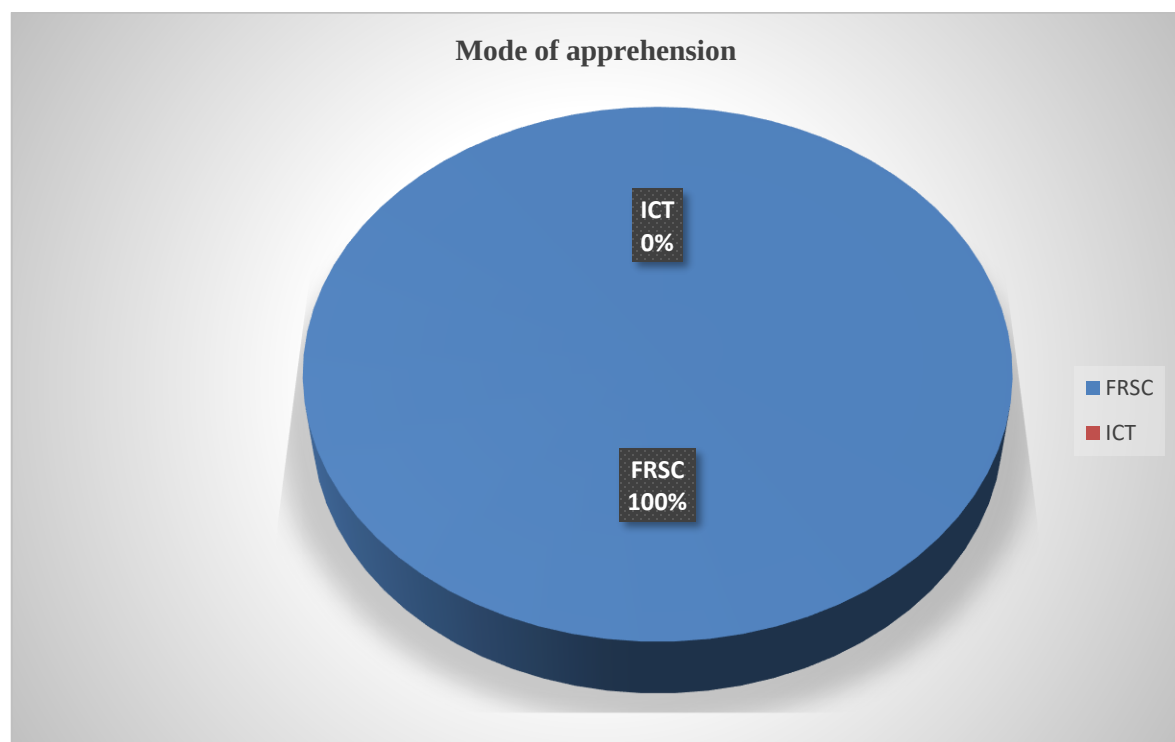


Figure 4 Mode of apprehension

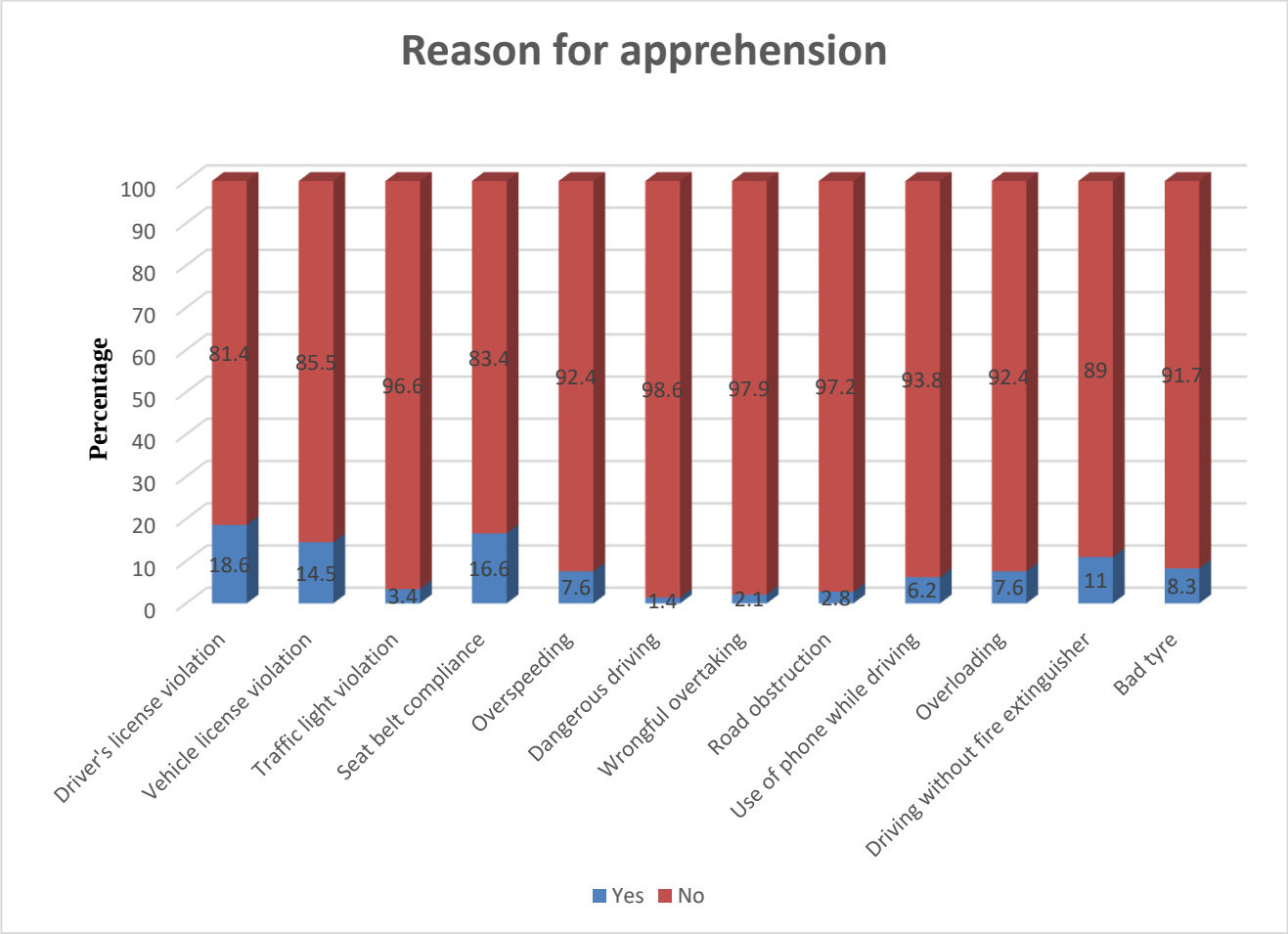


Figure 5 Reasons for apprehension

Impact of ICT utilization on the performance of FRSC in Akure

Figure 6 indicates that a more significant percentage of the FRSC staff agrees that ICT available for FRSC in Akure has increased the performance of FRSC in terms of road safety, response time, enforcement effectiveness, communication and coordination, efficiency in traffic management, and data accuracy.

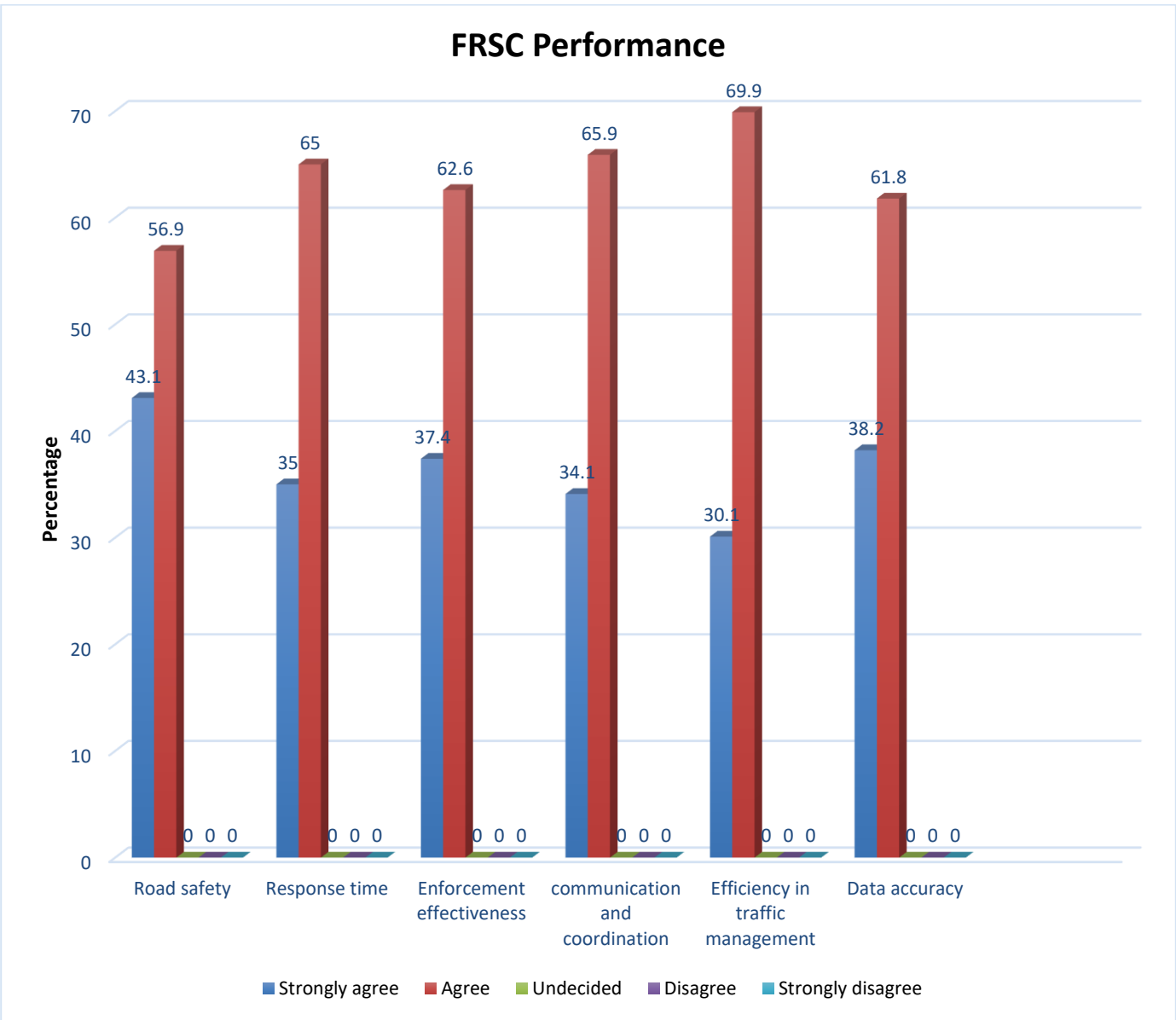


Figure 6 Impact of ICT utilization on the performance of FRSC in Akure

4. DISCUSSION

The findings showed that Computer systems, official mobile phones, and walkie-talkie (radio) are available and in use. The result of this study agrees with Obe et al., (2018), who stated that there is awareness of ICT among the FRSC. ICT tools, such as Traffic Management Software (TMS), landlines, road safety mobile apps, Automatic Number Plate Recognition (ANPR), CCTV, and Drones were unavailable at the same time, and telematics systems and Geographic Information Systems (GIS) were still in prospect.

The findings indicate that the few ICT tools available for FRSC in Akure were effectively utilized. A more significant percentage of road users agreed that ICT is utilized in road safety education, payment of fines, and data collection and management. In contrast, ICT was not utilized in search and rescue service, patrol, and monitoring, and in the apprehension of traffic offenders. The findings indicate that the ICT tools available in FRSC Akure have increased FRSC performance in road safety, response time, enforcement effectiveness, communication and coordination, traffic management efficiency, and data accuracy. This study's result corroborates with Pilat, (2005), who agreed that ICT utilization has a positive impact on operational growth.

5. CONCLUSION

The study revealed that few ICTs have been adopted in FRSC operations in Akure. The ICT used has significantly impacted FRSC performance. ICT tools available for FRSC in Akure, such as official mobile phones, computer systems, and walkie-talkies (radios) are effectively utilized and have improved their operations to some extent and have increased the performance of FRSC in terms of road safety, response time, enforcement effectiveness, communication and coordination, efficiency in traffic management and data accuracy.

Recommendations

Over the years, the use of ICT has helped to improve every organization's performance, especially in the transport sector. It is recommended in this study that the government should provide more ICT tools increase FRSC performance and generate more revenue; there should be training and retraining of staff on ICT utilization, and FRSC officials should be willing to learn how to effectively utilize the ICT tools provided for their operations, young and skilled individuals who can adopt ICT in FRSC operations should be employed for FRSC performance to be at its peak, the government should provide CCTV camera on the road to apprehend road safety violators, and this will enhance the road users to always abide by the rules and regulation put in place by FRSC.

Area for further study

This study contributes to the body of knowledge by revealing the types of ICT currently utilized by FRSC in Akure and the impact of ICT utilization on the performance of FRSC in Akure. This research has enlightened researchers and policymakers to evaluate the economic implications of ICT adoption for the FRSC, including initial budgets, investment costs, ongoing maintenance expenses, and potential long-term savings, and to evaluate a comparative analysis study of FRSC operational performance before and after the implementation of ICT tools to assess the impact on efficiency, accuracy, and overall effectiveness in Akure.

Informed consent

Oral informed consent was obtained from individual participants included in the study.

Conflicts of interests

The authors declare that there are no conflicts of interests.

Ethical approval

The ethical guidelines for Human Subjects are followed in the study.

Funding

The study has not received any external funding.

Data and materials availability

All data associated with this study are present in the paper.

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