



**COLLEGE OF EDUCATION AND EXTERNAL STUDIES
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DEPARTMENT OF ADULT AND COMMUNITY EDUCATION**

**USE OF SMARTPHONES FOR INFORMAL EDUCATION AND SKILLS DEVELOPMENT
AMONG BODA BODA RIDERS IN NAKULABYE-KAMPALA**

BY

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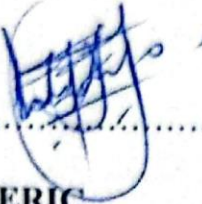
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**A RESEARCH REPORT SUBMITTED TO THE DEPARTMENT OF DEPARTMENT OF
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DECLARATION

I, LUYUYO ERIC hereby declare that this research report/project with a title of, "*Use of Smartphones for Informal Education and Skills Development among Boda-Boda Riders in Nakulabye-Kampala*", is my original work and has never been submitted to any university or institution for any academic award of a bachelor's degree in Adult and Community Education.

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APPROVAL

This research project has been submitted for examination with my approval as the academic supervisor.

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LIST OF ABBREVIATIONS

AI	Artificial Intelligence
FGD.....	Focus Group Discussion
GSMA	Global System for Mobile Communications Association
ICT	Information and Communication Technology
IDI	In-Depth Interview
IT	Information Technology
KCCA.....	Kampala Capital City Authority
NDP IV.....	Fourth National Development Plan
NGO	Non-Governmental Organization
OER.....	Open Educational Resources
PEOU	Perceived Ease of Use
PU.....	Perceived Usefulness
SDGs	Sustainable Development Goals
SPSS.....	Statistical Package for the Social Sciences
TAM.....	Technology Acceptance Model
UCC.....	Uganda Communications Commission
UNESCO.....	United Nations Educational, Scientific and Cultural Organization
USA.....	United States of America
WHO	World Health Organization

ABSTRACT

The study examined the use of smartphones in informal education and skills development among boda-boda riders in Nakulabye Zone 9, Rubaga Division, Kampala. The study was guided by three specific objectives: to establish the level of smartphone usage among boda-boda riders, to analyse the types of educational content accessed through smartphones, and to examine the challenges faced by riders in using smartphones for informal learning. The study was underpinned by the Technology Acceptance Model (TAM), which explains how perceived usefulness and perceived ease of use influence technology adoption and utilization. A mixed-methods research approach employing a case study design was adopted. Quantitative and qualitative data were collected from 30 boda-boda riders operating in Nakulabye Zone 9. Structured questionnaires were administered to all the respondents, while six purposively selected riders participated in in-depth interviews to provide detailed insights into their experiences and perceptions. Quantitative data were analysed using descriptive statistics (frequencies and percentages) with the aid of SPSS, while qualitative data were analysed thematically. The findings revealed that smartphone usage among boda-boda riders was generally moderate to high, with most respondents using smartphones daily or weekly to access information that supports their work and personal development. The study further established that YouTube tutorials, Google Search, WhatsApp and other social media platforms were the primary sources of educational content, particularly on motorcycle maintenance, road safety, customer care, entrepreneurship and financial management. However, the study identified several barriers to effective smartphone-supported learning, including high internet costs, limited digital literacy, demanding work schedules, poor internet connectivity, language barriers and inadequate access to electricity for charging smartphones. The study concludes that smartphones have significant potential to promote informal education, lifelong learning and skills development among boda-boda riders when supported by affordable internet access, improved digital literacy and relevant localized educational content. The study recommends collaborative efforts by government, telecommunication companies, educational institutions and boda-boda associations to develop affordable mobile learning programmes and practical digital learning resources that enhance the productivity, safety and livelihoods of boda-boda riders in Uganda.

CHAPTER ONE:

INTRODUCTION

1.0 Introduction

This chapter provides the background to the study on harnessing smartphone technology for informal education and skills development among boda-boda riders in Nakulabye Zone 9, Rubaga Division, Kampala. It presents the statement of the problem, study objectives, research questions, justification, significance, scope of the study, and operational definition of key terms that guided the research.

1.1 Background to the Study

Smartphone adoption has transformed informal education by providing affordable and flexible access to digital learning resources, enabling people in the informal sector to acquire vocational, entrepreneurial, financial, and life skills beyond formal education (UNESCO, 2023; GSMA, 2024; OECD, 2022). In developing countries, including Uganda, smartphones are increasingly supporting skills development despite challenges such as limited digital literacy and internet affordability (Aker et-al., 2012; World Bank, 2024; Uganda Communications Commission, 2024). For boda-boda riders in Nakulabye, Kampala, smartphone-based learning offers significant opportunities to improve road safety, financial management, customer service, and business performance, although evidence on its utilization and effectiveness remains limited (Ogunmuditi, 2025; Deen et-al., 2016; Mujuni & Pario, 2024; International Labour Organization, 2023).

1.1.1 Global and Regional Trends in Informal Education and Mobile Technology

Globally, the role of mobile technology in education has gained increasing recognition. UNESCO's 2021 Global Education Monitoring Report emphasizes how mobile devices are democratizing access to learning, particularly in low- and middle-income countries (UNESCO, 2021). The report highlights that mobile learning (m-learning) enables learners to access educational content anytime and anywhere,

breaking down geographical and socio-economic barriers. For example, platforms like Khan Academy, Coursera, and YouTube have made quality educational content accessible to millions worldwide.

In Africa, mobile technology adoption has surged, with the GSMA's (Global System for Mobile Communications Association) Mobile Economy Africa report (2022) indicating that, over 495 million people use mobile internet access-a critical enabler for informal education. Initiatives such as Eneza Education in Kenya and Nigeria have demonstrated how SMS and basic mobile phones can deliver literacy, numeracy, and vocational skills to underserved populations (Kaisara & Bwalya, 2022). These programs have shown that mobile learning is particularly effective in resource

-constrained settings by providing low-cost, scalable, and contextually relevant education.

In Uganda specifically, mobile phone penetration is high; according to the Uganda Communications Commission (UCC), over 20 million people have access to mobile networks. The government and private sector have launched various digital literacy initiatives, emphasizing the potential of mobile technology to supplement formal education and support lifelong learning. For instance, the Uganda Digital Acceleration Program aims to improve digital skills across sectors, including informal employment (Uganda Communications Commission, 2024).

1.1.2 Historical and Developmental Issues in Informal Education and Mobile Technology

Historically, Uganda's education system has experienced persistent challenges, including limited access to quality education, regional disparities, inadequate infrastructure, teacher shortages, and high school dropout rates, particularly among children from low-income households (World Bank, 2023; UNESCO, 2023). The introduction of Universal Primary Education (UPE) in 1997 significantly expanded access to basic education, with primary school enrolment increasing from approximately 2.7 million pupils in 1997 to over 8.8 million by 2022, resulting in a gross enrolment rate exceeding 90% (Ministry of Education and Sports [MoES], 2023; Uganda Bureau of Statistics [UBOS], 2024). Despite these achievements, the rapid increase in enrolment strained the education system, leading to overcrowded

classrooms, inadequate teaching and learning materials, high pupil-teacher ratios, and poor learning outcomes, especially in informal urban settlements such as Nakulabye and among disadvantaged populations (UNESCO, 2023; World Bank, 2023).

Although access to formal education has improved considerably, it has not adequately translated into the practical skills required by the labour market. Uganda continues to experience one of the youngest populations in the world, with youth accounting for more than 75% of the working-age population, while youth unemployment and underemployment remain major development challenges (UBOS, 2024; International Labour Organization [ILO], 2024). Recent statistics indicate that youth unemployment remains between 13% and 15%, forcing many young people, particularly school dropouts and those from low-income households, to seek livelihoods in the informal economy through activities such as boda-boda riding, petty trade, and casual labour (ILO, 2024; African Development Bank, 2024). Consequently, many youths rely on informal learning and self-directed skills acquisition to improve their income-generating opportunities.

Within this context, the boda-boda industry has evolved into one of Uganda's largest sources of urban employment and an important contributor to public transport and household livelihoods. However, the sector has historically been characterized by weak regulation, inadequate professional training, poor road safety compliance, and limited business management skills (Ssemugabi et-al., 2022; ILO, 2024). Previous studies indicate that many boda-boda riders possess limited financial literacy, entrepreneurial knowledge, customer care skills, and road safety awareness, reducing their productivity and business growth potential (Mujuni & Pario, 2024; Havugimana et-al., 2020)

Furthermore, a considerable proportion of riders entered the sector after dropping out of school because of poverty, unemployment, and limited educational opportunities, making boda-boda riding an immediate source of income despite its occupational risks (UBOS, 2024; African Development Bank, 2024). These historical developments highlight the growing need for alternative learning approaches, including smartphone-based informal education, to equip riders with practical skills that enhance their safety, entrepreneurship, financial management, and long-term socio-economic wellbeing.

1.1.3 The Role of Mobile Technology in Addressing Historical Challenges

In recent years, the advent of affordable smartphones has begun to change this landscape. Mobile-based solutions have been piloted to address skills gaps among youth engaged in informal work. For instance, studies such as (Aker & Blumenstock, 2015; Deen et-al., 2016; Havugimana et-al., 2020) in East Africa have demonstrated that SMS-based training modules can effectively deliver safety instructions, business management tips, and language skills to boda-boda riders. These interventions are especially crucial in urban areas like Nakulabye, where residents often face barriers to accessing formal training and education.

Furthermore, the COVID-19 pandemic according to (World Bank, 2022), underscored the importance of digital solutions. Lockdowns and social distancing measures disrupted traditional training and economic activities, prompting a shift toward mobile and online platforms as primary sources of learning and business operations. The pandemic accelerated the adoption of mobile financial services, digital content, and remote learning, highlighting the potential for smartphones to serve as tools for continuous skills development. Therefore, this study examined the use of smartphones for informal education and skills development among boda-boda riders in Nakulabye-Kampala.

1.2 Statement of the Problem

In Uganda, the boda-boda industry serves as a critical livelihood option for many youths, yet most riders have limited formal education and lack access to structured training programs that could enhance their safety, business skills, and overall income. Despite high mobile phone penetration, there is a significant gap in leveraging smartphones as tools for informal education tailored to this informal sector. This gap results in continued unsafe riding practices, poor customer service, and limited entrepreneurial capacity among boda-boda riders, which collectively hinder their socio-economic advancement and pose safety risks to the community. Recent reports, including the 2021 American Research Journal of History and Culture,

highlight that boda-boda riders often lack basic business and safety skills, leading to accidents, financial loss, and low income. Furthermore, the COVID-19 pandemic has underscored the urgent need for innovative approaches to skills development that are accessible, affordable, and adaptable to the riders' informal work environment. However, little empirical evidence exists on how smartphones can be systematically used to deliver informal education to boda-boda riders in Nakulabye. Without addressing this gap, the industry risks continued safety hazards, low productivity, and limited opportunities for riders to improve their livelihoods. The study addressed the empirical gap on how smartphones can be systematically used to provide accessible and informal education to boda-boda riders in Nakulabye. It further addressed the knowledge gap on whether smartphone-based learning can improve riders' safety practices, customer service, business skills, and livelihoods.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective for the study is to examine how smartphone technology can be used to promote informal education and skills development among boda-boda riders in Nakulabye, Kampala, in support of lifelong learning, decent work, and sustainable livelihoods as envisaged in SDGs 4 and 8 and Uganda's National Development Plan IV.

1.3.2 Specific Objectives

1. To establish the level of smartphone usage among Boda Boda riders in Nakulabye Zone 9 Rubaga Division, Kampala.
2. To analyse the types of educational content accessed by Boda Boda riders in Nakulabye Zone 9 Rubaga Division, Kampala.
3. To examine the challenges faced by Boda Boda riders in using smartphones for informal learning purposes.

1.4 Research Questions

1. What is the level of smartphone usage among boda-boda riders in Nakulabye Zone 9, Rubaga Division, Kampala?

2. What types of educational content are accessed by boda-boda riders in Nakulabye Zone 9, Rubaga Division, Kampala?
3. What challenges do boda-boda riders face in using smartphones for informal learning purposes in Nakulabye Zone 9, Rubaga Division, Kampala?

1.5 Justification of the Study

This study is justified because smartphone ownership and internet access continue to increase in Uganda, creating new opportunities for informal education and skills development among boda-boda riders. Despite this potential, there is limited evidence on how smartphones are used to improve road safety, entrepreneurship, financial literacy, and other livelihood skills among riders in Nakulabye, Kampala. The study will help address this knowledge gap and provide information that can guide the development of digital learning initiatives aimed at improving the productivity, safety, and socio-economic wellbeing of boda-boda riders while contributing to Uganda's digital transformation and sustainable development agenda.

1.6 Significance of the study

This study is important because it will generate evidence on how smartphones can support informal education and skills development among boda-boda riders in Nakulabye, Kampala. The findings will inform government institutions, development partners, non-governmental organizations, and private sector actors on effective strategies for promoting road safety, entrepreneurship, financial literacy, and digital skills among riders. Without such evidence, opportunities to enhance the knowledge, safety, and economic wellbeing of boda-boda riders through smartphone-based learning may remain underutilized.

1.7 Scope of the study

1.7.1 Content Scope

The study examined how smartphone technology can be harnessed to promote informal education and skills development among boda-boda riders in Nakulabye Zone 9, Rubaga Division, Kampala, in support of lifelong learning, decent work, and sustainable livelihoods as envisaged in Sustainable Development Goals (SDGs) 4

and 8 and Uganda's National Development Plan IV. Specifically, the study established the levels of smartphone usage among boda-boda riders, analysed the types of educational content accessed through smartphones for informal learning, and examined the challenges that riders face when using smartphones to acquire knowledge and skills. The study focused on smartphone-based informal learning related to road safety, entrepreneurship, financial literacy, customer care, digital skills, and other livelihood-enhancing competencies.

1.7.2 Geographical Scope

The study was conducted in Nakulabye Zone 9, Rubaga Division, Kampala Capital City, Uganda. The area has a large concentration of boda-boda riders operating within a busy urban environment and provided an appropriate setting for examining the use of smartphones in informal education and skills development.

1.7.3 Time Scope

The study covered the period 2020-2026. This period was selected because it captures the increased adoption of smartphones and digital technologies following the COVID-19 pandemic, the implementation period of Uganda's National Development Plan IV (2020/21-2024/25), and recent developments in digital learning, mobile internet access, and informal skills development among workers in the informal sector.

1.8 Operational Definition of Terms and Concepts

1. Smartphone Technology: Refers to the use of internet-enabled mobile phones with applications such as YouTube, WhatsApp, Facebook, TikTok, Google, mobile learning applications, and web browsers that enable boda-boda riders to access information, communication, and educational content.

2. Informal Education: Refers to self-directed and non-formal learning that occurs outside the formal school system through everyday experiences, digital platforms,

social media, online videos, mobile applications, peer interactions, and internet resources.

3. Skills Development: Refers to the acquisition and improvement of practical knowledge, competencies, and abilities that enable boda-boda riders to enhance their road safety practices, entrepreneurship, financial management, customer care, communication, and use of digital technologies.

4. Boda-Boda Riders: Refers to individuals who earn a living by operating commercial motorcycles for passenger and goods transport within Nakulabye Zone 9, Rubaga Division, Kampala.

5. Harnessing Smartphone Technology: Refers to the effective and purposeful use of smartphone devices and mobile applications to facilitate access to educational resources, knowledge sharing, communication, and continuous learning for personal and professional development.

6. Educational Content: Refers to digital learning materials accessed through smartphones, including instructional videos, online tutorials, podcasts, e-books, websites, mobile applications, social media posts, and other information intended to improve knowledge and practical skills.

7. Smartphone Usage: Refers to the frequency, duration, and purpose for which boda-boda riders use smartphones to access educational information, communication services, business applications, and internet-based learning resources.

8. Informal Learning: Refers to continuous learning that takes place through observation, experience, interaction with peers, online platforms, and independent exploration without following a structured curriculum or receiving formal certification.

9. Road Safety Skills: Refers to the knowledge and practices that enable boda-boda riders to comply with traffic regulations, use protective equipment, prevent road accidents, and ensure the safety of passengers and other road users.

10. Entrepreneurial Skills: Refers to the knowledge and abilities required to manage and grow a boda-boda business, including customer care, marketing, record keeping, financial planning, savings, investment, and business decision-making.

11. Digital Skills: Refers to the ability to operate smartphones effectively, access

internet services, use mobile applications, search for information, communicate digitally, and utilize online learning platforms for personal and business development.

12. Financial Literacy: Refers to the knowledge and skills that enable boda-boda riders to manage income, savings, budgeting, mobile money transactions, borrowing, investment, and other financial decisions that improve their economic wellbeing.

13. Sustainable Livelihoods: Refers to the ability of boda-boda riders to secure and maintain stable sources of income, improve their quality of life, adapt to changing economic conditions, and support their households through enhanced knowledge and productive skills.

CHAPTER TWO:

LITERATURE REVIEW

2.0 Introduction

This chapter reviews relevant scholarly literature on an examination of how smartphone technology can be harnessed to promote informal education and skills development among boda-boda riders in Nakulabye, Kampala, in support of lifelong learning, decent work, and sustainable livelihoods as envisaged in SDGs 4 and 8 and Uganda's National Development Plan IV. The review focused on three major areas that were in line with the study's specific objectives. The chapter also presents the theoretical framework underpinning the study and concludes with the identification of existing research and knowledge gaps as follows;

2.1 The level of smartphone usage among Boda Boda riders

Smartphone usage has increased rapidly across developing countries due to improved mobile network coverage, affordable smartphones, and expanding internet services (World Bank, 2021). In Sub-Saharan Africa, smartphones have become essential tools for communication, accessing information, mobile banking, navigation, social networking, and online learning. Recent studies show that smartphone ownership continues to rise among workers in the informal sector because these devices support both economic and social activities (GSMA, 2024; UNESCO, 2023).

In Uganda, Muyinda et-al. (2023) assert that the widespread availability of mobile internet and digital financial services has encouraged many informal workers, including boda-boda riders, to adopt smartphones for daily business operations. Riders commonly use smartphones to receive customer requests, communicate with clients, make mobile money transactions, access navigation services, and participate in digital transport platforms such as Safe-Boda, indicating moderate to high levels of smartphone usage among urban riders.

Studies such as of Havugimana et-al. (2020) conducted in Uganda indicate that although mobile phone ownership among boda-boda riders is very high, smartphone ownership and educational use remain lower than general communication use. Research on mobile learning environments for boda-boda riders found that approximately 93.5% of riders owned mobile phones, but only about 18% owned smartphones capable of supporting advanced mobile learning applications (Muyinda et-al., 2023).

The study further reports that 98% of riders who use their phones for voice calls, 65% for text messaging, 54% for listening to radio, 31% for WhatsApp communication, only 19% use their phones for education or learning purposes and only 7% use internet services to support their riding business. These findings suggest that smartphone usage among boda-boda riders is primarily driven by communication and business needs rather than educational purposes, although increasing smartphone penetration presents significant opportunities for informal learning and skills development (Havugimana et-al., 2020; Muni et-al., 2020).

Hence, smartphone usage among boda-boda riders is gradually evolving beyond communication toward digital entrepreneurship and professional development (Muyinda et-al., 2023). Riders who participate in digital transport platforms receive more exposure to smartphone applications for navigation, customer management, digital payments, and safety information than those operating independently.

Similarly, road safety interventions in Kampala have demonstrated that riders exposed to digital training and technology-supported programmes exhibit better safety practices and greater willingness to adopt digital tools that improve their work performance (Muni et-al., 2020). Despite this progress, challenges such as limited digital literacy, the high cost of smartphones, internet expenses, and inadequate awareness of online educational resources continue to limit the full utilization of smartphones for informal education (Muyinda et-al., 2023; Havugimana et-al., 2020).

2.2 The types of educational content accessed by Boda Boda riders

Smartphones provide boda-boda riders with access to a wide variety of educational content that supports both personal and professional development. Recent studies indicate that mobile learning allows informal workers to obtain knowledge anytime and anywhere through digital platforms such as YouTube, Google Search, WhatsApp, Facebook, TikTok, mobile applications, podcasts, and websites (Busulwa, 2018).

These platforms provide instructional videos, online tutorials, electronic books, road safety information, business advice, financial education, and vocational training materials that are easily accessible through smartphones (UNESCO, 2023; GSMA, 2024). Mobile learning has become increasingly important because it offers flexible, self-directed learning opportunities that fit the busy work schedules of informal workers, including boda-boda riders. Research further shows that mobile devices enable learners to access Open Educational Resources (OERs), interactive learning materials, and digital knowledge that improve practical skills and

lifelong learning (Kaliisa et-al., 2019; Crompton, 2018).

Studies conducted in Uganda on mobile learning among boda-boda riders reveal that the educational content most needed by riders includes road safety regulations, defensive riding techniques, motorcycle maintenance, traffic signs, customer care, first aid, financial literacy, entrepreneurship, savings, and mobile money management (Muyinda et-al., 2023; Muni et-al., 2020). The Enhancing Behavioural Change of Boda-Boda Riders Using Mobile Learning (EBoML) project at Makerere University found that riders preferred short, practical learning modules that could be accessed while on the move through smartphones. The project recommended that educational content should be packaged in simple language using videos, pictures, animations, audio messages, and quizzes to improve understanding and encourage positive behavioural change. The study also emphasized that smartphone-based learning should focus on practical skills that directly improve riders' safety, service quality, and income generation.

Beyond road safety, recent literature shows that boda-boda riders increasingly use smartphones to access educational content related to digital financial services, business management, navigation, communication, health awareness, and legal rights. Many riders learn how to use mobile money securely, manage daily earnings, attract customers through social media, and operate digital transport platforms. Others access educational videos on motorcycle repair, fuel efficiency, customer relations, and small business management through YouTube and social networking platforms (Kiconco et-al., 2019; Muni et-al., 2020)

Despite these opportunities, studies indicate that limited digital literacy, expensive internet data, language barriers, and inadequate awareness of reliable educational resources reduce the extent to which riders utilize smartphones for learning. Expanding access to relevant and localized educational content therefore has the potential to strengthen informal education, improve livelihoods, and promote sustainable skills development among boda-boda riders in Kampala (Deen et-al., 2016; Abima et-al., 2021)

2.3 Challenges faced by Boda Boda riders in using smartphones for informal learning purposes.

Although smartphone ownership is increasing among boda-boda riders, several barriers limit their ability to use these devices for informal learning. One of the major challenges is the high cost of smartphones, internet data bundles, and device maintenance, making continuous access to online educational resources difficult for many riders. In addition, some riders possess only

basic digital skills and are unfamiliar with educational applications, online learning platforms, or effective internet searching techniques (Deen et-al., 2016; Muyinda et-al., 2023).

Studies on digital inclusion in Africa indicate that low digital literacy, expensive internet services, and unequal access to smartphones continue to hinder the effective use of mobile technology for learning, particularly among workers in the informal sector (Deen-Swarray et-al., 2016; GSMA, 2024; UNESCO, 2023). These barriers reduce opportunities for boda-boda riders to use smartphones beyond communication and entertainment, limiting their ability to benefit from digital learning resources.

Another challenge is the nature of boda-boda work itself. Riders spend long hours transporting passengers and constantly moving from one location to another, leaving them with little time to engage in structured learning. The demanding work schedule also makes it difficult to attend training programmes or complete online learning modules. Research conducted in Uganda on mobile learning for boda-boda riders found that many riders are always on the move, making conventional training programmes ineffective and highlighting the need for flexible mobile learning solutions that provide short, practical lessons accessible at any time. The study further recommends learning content on road safety, defensive riding, basic motorcycle mechanics, and entrepreneurship that can easily fit into riders' daily work routines (Muyinda et-al., 2023; Muni et-al., 2020).

Furthermore, language barriers, unreliable internet connectivity, misinformation on social media, and limited awareness of credible educational content continue to affect the quality of smartphone-based learning among boda-boda riders. Many online learning materials are presented in English, yet some riders are more comfortable using Luganda or other local languages, reducing their understanding of the content. In addition, poor network coverage in some locations, distractions from entertainment applications, and limited institutional support discourage consistent use of smartphones for education (Deen-Swarray et-al., 2016; Kaliisa et-al., 2019)

Recent studies also show that boda-boda riders continue to face broader occupational challenges, including inadequate training, poor safety awareness, and limited access to professional development opportunities, all of which affect their

willingness and ability to use digital technologies for lifelong learning and skills development (Kayongo & Okech, 2025; Ainembabazi et al., 2026).

2.4 Research/Knowledge Gap

Existing studies have examined smartphone ownership, mobile learning, and the challenges of digital technology use among informal workers and boda-boda riders. However, there is limited empirical evidence on how smartphone technology is specifically used to support informal education and skills development among boda-boda riders in Nakulabye Zone 9, Rubaga Division, Kampala. This study therefore sought to fill this gap by examining the levels of smartphone usage, the educational content accessed, and the challenges affecting smartphone-supported informal learning among boda-boda riders of Nakulabye.

2.5 Theoretical Framework

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) was developed by Davis (1989) to explain the factors that influence individuals' acceptance and use of technology. The theory proposes that technology adoption is primarily determined by two key constructs: Perceived Usefulness (PU), which refers to the degree to which an individual believes that using a technology will improve job performance, and Perceived Ease of Use (PEOU), which refers to the degree to which a person believes that using the technology will require minimal effort (Davis, 1989; Venkatesh & Davis, 2000). According to TAM, when users perceive a technology as useful and easy to use, they are more likely to develop positive attitudes toward it, leading to behavioural intention and actual use.

In this study, TAM provided a suitable framework for explaining the extent to which boda-boda riders adopt smartphones as tools for informal education and skills development. If riders perceive smartphones as useful for accessing educational content related to road safety, financial literacy, entrepreneurship, customer care, and business management, and if they find smartphone applications easy to use, they are more likely to utilize them for continuous learning. The model also helps explain variations in smartphone usage among riders and the challenges that may hinder effective use of digital learning resources. Therefore, TAM directly supports the study objective of examining smartphone usage and its contribution to informal education among boda-boda riders in Nakulabye.

CHAPTER THREE:

METHODOLOGY

3.0 Introduction

This chapter presents the methodology that was used to investigate how smartphone technology can be harnessed for informal education and skills development among boda-boda riders in Nakulabye Zone 9, Rubaga Division, Kampala. It describes the research design, study area, study population, sample size and sampling techniques, data collection methods, validity and reliability of research instruments, data analysis procedures, dissemination of findings, and ethical considerations. The methodology is intended to produce reliable and valid findings that address the study objectives (Creswell & Creswell, 2023) as follows;

3.1 Research Design

The study specifically used a case study design focusing on boda-boda riders operating in Nakulabye Zone 9, Rubaga Division, Kampala. The case study design allows an in-depth investigation of a specific group within its real-life setting, enabling the researcher to understand the unique characteristics of smartphone-supported informal learning among the selected respondents.

The case study design is justified because the study sought to obtain detailed contextual information about smartphone usage for informal education among boda-boda riders in Nakulabye. Focusing on one case enabled the researcher to generate practical findings that can inform interventions aimed at improving digital learning, skills development, and sustainable livelihoods within similar urban informal communities (Yin, 2018).

3.2 Research Approach

This study adopted a mixed-methods research approach, which combines both quantitative and qualitative methods of data collection and analysis. The quantitative approach generated numerical data on the levels of smartphone usage, the educational content accessed, and the challenges faced by boda-boda riders in using smartphones for informal learning. The qualitative approach collected detailed information on riders' experiences, perceptions, opinions, and recommendations regarding the use of smartphones for informal education and skills development. This approach provided deeper explanations that cannot easily be obtained

through quantitative methods alone.

The mixed-methods approach is appropriate because it enabled the researcher to integrate numerical findings with participants' lived experiences, thereby providing a more comprehensive understanding of the research problem. It also improves the credibility and validity of the findings through triangulation of different sources of evidence (Creswell & Plano Clark, 2018).

3.2 Study Area and Study Population

The study was conducted in Nakulabye Zone 9, Rubaga Division, Kampala Capital City. The area has a large concentration of boda-boda riders operating within a busy commercial and residential environment, making it suitable for examining smartphone-supported informal education and skills development.

The study population consisted of active boda-boda riders operating in Nakulabye Zone 9 during the period 2020–2026, covering the increased adoption of smartphones and digital technologies following COVID-19. Only riders who had operated for at least six months during the study period and regularly used or owned smartphones were included.

These riders were considered suitable because they had relevant experience with smartphone use for learning, communication, and work-related activities during the 2020-2026 period.

3.3 Sampling and Sample Size

The study involved 30 boda-boda riders. This sample size is considered appropriate for an exploratory mixed-methods study because it provided adequate quantitative data for descriptive statistical analysis while allowing detailed qualitative inquiry. According to Tabachnick and Fidell (2019), a sample of at least 30 participants satisfies the minimum requirement for many statistical analyses based on the Central Limit Theorem. Similarly, Creswell and Creswell (2023) note that smaller samples are appropriate for exploratory studies where the aim is to gain an in-depth understanding of a specific phenomenon.

A multistage sampling technique was employed. First, purposive sampling was used to identify the major boda-boda stages in Nakulabye Zone 9 where riders are concentrated. Secondly, simple random sampling was used to select individual riders from the identified stages, giving every eligible rider an equal opportunity to participate while minimizing selection bias.

3.4 Data Collection Methods and tools

Both quantitative and qualitative data collection methods were used in line with the mixed-methods approach.

Structured questionnaires were administered to the selected boda-boda riders to collect quantitative data on smartphone ownership, frequency of smartphone use, educational content accessed, digital learning experiences, and challenges encountered. The questionnaire mainly consisted of closed-ended and Likert-scale questions to facilitate statistical analysis.

The questionnaires were administered through interviewer-assisted structured interviews, where the researcher read the questions to riders and recorded/ticked their responses.

The questionnaire was prepared in English and translated into Luganda to ensure that respondents could understand and respond accurately. It covered smartphone ownership, usage, educational content, digital learning experiences, and challenges encountered.

In-depth interviews were also conducted with 6 selected participants to obtain detailed information about their experiences, attitudes, perceptions, and recommendations regarding the use of smartphones for informal education and skills development. The interviews enabled the researcher to obtain information that cannot easily be captured through questionnaires.

3.5 Reliability and Validity of Research Instruments

The validity of the research instruments was established through expert review. The questionnaire and interview guide was presented to the research supervisor and other experts in research methodology to assess their relevance, clarity, and adequacy in measuring the study variables. Their comments and recommendations were incorporated before the instruments were administered. Reliability of the questionnaire was established through pilot testing involving a small group of boda-boda riders from a nearby area outside the study location. Validity was established by two experts, the research supervisor and one research-methodology expert, who reviewed the instruments for clarity, relevance, and adequacy.

A pre-test, not a pilot study, was conducted with a small group of boda-boda riders outside

Nakulabye, after which the instruments were revised before final data collection.

3.6 Data Analysis

Quantitative data was entered, coded, cleaned, and analyzed using the Statistical Package for Social Sciences (SPSS). Descriptive statistics, including frequencies, percentages, means, and tables, were used to summarize the findings according to the study objectives.

Qualitative data obtained through interviews was transcribed verbatim and analyzed using thematic analysis following the procedures proposed by Braun and Clarke (2022). The transcripts were coded, categorized into themes, and interpreted according to the objectives of the study.

3.7 Dissemination of Findings

The findings of the study are presented in a research report submitted to the university in partial fulfilment of the academic requirements for the award of the researcher's degree.

3.8 Ethical Considerations

The researcher obtained an introductory letter from the university before commencing data collection. Permission to conduct the study was also sought from the relevant local authorities and boda-boda stage leaders in Nakulabye Zone 9.

Participation in the study was voluntary, and informed consent was obtained from every respondent before data collection. Participants were informed about the purpose of the study, their right to withdraw at any stage without penalty, and the confidentiality of the information they provide. No names or personal identifiers appear in the research report. All data collected is securely stored and used strictly for academic purposes. The researcher also respected the participants' privacy, dignity, and cultural values throughout the study.

CHAPTER FOUR:

PRESENTATION AND DISCUSSION OF FINDINGS

4.0 Introduction

This chapter presents, analyses and discusses the findings of the study on harnessing smartphones for informal education and skills development among boda-boda riders in Nakulabye Zone 9, Rubaga Division, Kampala. The findings are presented according to the three specific objectives of the study, namely: establishing the level of smartphone usage among boda-boda riders; analysing the types of educational content accessed through smartphones; and examining the challenges faced by riders in using smartphones for informal learning.

The study adopted a mixed-methods research approach. Quantitative data obtained from 30 structured questionnaires were analysed using descriptive statistics comprising frequencies and percentages, while qualitative data obtained from six in-depth interviews were analysed thematically. The integration of quantitative and qualitative findings enabled triangulation and provided a deeper understanding of smartphone-supported informal learning among boda-boda riders as follows;

4.1 Response Rate and Respondents' Characteristics

4.1.1 Response Rate

A total of thirty (30) questionnaires were distributed to boda-boda riders operating in Nakulabye Zone 9. All the questionnaires were completed and returned, representing a response rate of 100%. Additionally, six (6) purposively selected respondents participated in the in-depth interviews, yielding a 100% interview response rate. The high response rate was attributed to the cooperation of boda-boda stage leaders and the willingness of respondents to participate after the objectives of the study had been explained.

Table 4. 1: Response Rate

Category	Target	Actual	Response Rate (%)
Questionnaires	30	30	100
In-depth Interviews	6	6	100

The response rate is considered adequate for generating reliable findings and making meaningful interpretations regarding smartphone usage for informal education among boda-boda riders.

4.1.2 Respondents' Characteristics

The majority of respondents (56.7%) were aged between 26 and 35 years, indicating that most boda-boda riders are within the economically active age group. About 26.7% were aged between 18 and 25 years, while 16.6% were above 35 years.

Regarding education, most respondents (53.3%) had attained secondary education, 23.3% had completed primary education, 16.7% possessed certificate qualifications, while only 6.7% had diploma-level education. These findings suggest that the majority possessed basic literacy necessary for operating smartphones and accessing digital information.

Most respondents (60.0%) had worked as boda-boda riders for more than four years, implying that they had accumulated sufficient experience regarding the use of smartphones in their daily work.

4.2 Level of smartphone usage among Boda-Boda Riders in Nakulabye

Zone 9

This section presents findings relating to the first objective of the study, which sought to establish the level of smartphone usage among boda-boda riders in Nakulabye Zone 9.

Table 4. 2: Frequency of Smartphone Use for Informal Learning (n = 30)

Frequency of Use	Frequency	Percentage (%)
Daily	12	40.0
Weekly	10	33.3
Monthly	4	13.3
Rarely	3	10.0
Never	1	3.4
Total	30	100.0

The findings indicate that smartphone usage for informal learning was relatively high among the respondents. Nearly three-quarters (73.3%) reported using their smartphones either daily or weekly to acquire new knowledge and practical skills. Only one respondent indicated never using a smartphone for learning purposes.

These findings suggest that smartphones are increasingly becoming learning tools rather than being used solely for communication and entertainment. Frequent smartphone usage creates opportunities for continuous access to educational information relevant to riders' occupations.

Respondents were further asked whether smartphones had contributed to improving their work-related knowledge and skills. Most respondents agreed that smartphones had enabled them to learn new ideas related to motorcycle maintenance, customer service, navigation, financial management and road safety.

Table 4. 3: Perceived Contribution of Smartphones to Skills Development (n = 30)

Statement	Agree/Strongly Agree	Neutral	Disagree/Strongly Disagree
Smartphones help me acquire useful knowledge for my	24 (80.0%)	3 (10.0%)	3 (10.0%)

work.			
Smartphone learning has improved my work-related skills.	22 (73.3%)	4 (13.3%)	4 (13.4%)
Smartphones motivate me to continue learning.	25 (83.3%)	2 (6.7%)	3 (10.0%)

The results demonstrate positive perceptions regarding the usefulness of smartphones for informal education. Four out of every five respondents acknowledged that smartphones had enhanced their knowledge and encouraged continuous learning.

The interview findings complemented the questionnaire results by providing deeper insights on how boda-boda riders utilize smartphones.

One respondent stated:

“Whenever business is low, I watch YouTube videos on motorcycle repair and customer care. They help me solve simple mechanical problems without paying a mechanic.” (Musa, 34-year-old boda-boda rider).

Another participant explained:

“Google has helped me learn many things. If I do not understand something about my motorcycle or business, I search for it immediately.” (Peter, 30-year-old boda-boda rider).

Another interviewee remarked:

“The smartphone has become like my classroom because I learn every day through videos and social media.” (James, 28-year-old boda-boda rider).

These narratives indicate that smartphone learning is largely self-directed, flexible and integrated into riders' daily work routines. The findings further suggest that smartphones provide learning opportunities during idle periods between customer trips.

The findings indicate moderate to high levels of smartphone usage among boda-boda riders for informal education. The majority of respondents reported using smartphones regularly to access information that improves their occupational skills and daily livelihoods. This finding supports the Technology Acceptance Model (TAM) developed by Davis (1989), which argues that individuals are more likely to adopt technology when they perceive it as useful and easy to use. The positive perceptions expressed by respondents regarding the usefulness of

smartphones for acquiring practical knowledge demonstrate high perceived usefulness, while the frequent use of applications such as Google, YouTube and WhatsApp reflects perceived ease of use.

The findings are consistent with Muyinda et-al., (2023), who observed that smartphone adoption among boda-boda riders in Uganda is increasingly extending beyond communication to include business improvement, digital services and informal learning. Similarly, Muni et-al., (2020) reported that exposure to digital platforms enhances riders' willingness to adopt smartphone technologies that improve safety and work performance.

However, although smartphone usage levels were generally high, interviews revealed that educational use still occurs alongside communication, entertainment and business activities rather than replacing them. This observation agrees with Havugimana et-al., (2020), who found that while mobile phone ownership among boda-boda riders is widespread, educational utilization remains lower than communication-related use. The findings therefore suggest that smartphone-supported informal education has significant potential for improving lifelong learning among boda-boda riders if supported through relevant educational content and digital literacy initiatives.

4.3 Types of Educational Content Accessed by Boda-Boda Riders in Nakulabye Zone 9

The second objective of the study sought to analyse the types of educational content accessed by boda-boda riders through their smartphones for informal education and skills development. Respondents were asked to identify the main educational resources they frequently accessed using their smartphones.

Table 4. 4: Types of Educational Content Accessed by Respondents (n = 30)

Educational Content Accessed	Frequenc	Percentage
	y	(%)
YouTube tutorials	10	33.3
Google Search	8	26.7
Social media educational content (WhatsApp, Facebook, TikTok)	6	20.0
News and current affairs	4	13.3
Business and financial information	2	6.7

Total	30	100.0
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The findings indicate that YouTube tutorials (33.3%) were the most frequently accessed source of educational content among boda-boda riders. This was followed by Google Search (26.7%), while 20.0% relied mainly on educational information shared through social media platforms such as WhatsApp, Facebook and TikTok. A smaller proportion of respondents primarily accessed news updates (13.3%) and business or financial information (6.7%).

The results suggest that respondents preferred visual and practical learning materials that could easily be accessed through smartphones during their daily work.

Respondents were further asked to indicate the main skills they had acquired through smartphone-based learning.

Table 4. 5: Skills Acquired through Smartphone Learning (n = 30)

Skills Acquired	Frequenc y	Percentage (%)
Motorcycle repair and maintenance	9	30.0
Road safety and traffic regulations	8	26.7
Customer care and communication	6	20.0
Business and financial management	5	16.6
Other practical skills	2	6.7
Total	30	100.0

The findings reveal that the majority of respondents used smartphones to acquire practical knowledge directly related to their occupation. Motorcycle repair and maintenance emerged as the most commonly learned skill (30.0%), followed by road safety (26.7%), customer care (20.0%) and business or financial management (16.6%).

The respondents were also asked to indicate their level of agreement with statements regarding smartphone-supported learning.

Table 4. 6: Perceptions of Educational Content Accessed through Smartphones (n = 30)

Statement	Agree/Strongly Agree	Neutral	Disagree/Strongly Disagree
Educational content accessed through smartphones is relevant to my work.	25 (83.3%)	3 (10.0%)	2 (6.7%)
Smartphone learning has improved my knowledge and confidence at work.	23 (76.7%)	4 (13.3%)	3 (10.0%)
The educational materials	22 (73.3%)	5	3 (10.0%)

accessed are easy to understand.		(16.7%)	
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The findings indicate that the majority of respondents considered the educational content obtained through smartphones to be useful, practical and relevant to their daily activities as boda-boda riders.

The interview findings provided deeper insights by responding to the question of:

“What types of educational content do you access on your smartphone, and how do you apply the knowledge gained from this content in your daily boda-boda work?”

One participant explained:

“Most of the road safety information I receive comes through WhatsApp groups where fellow riders share traffic updates, accident prevention tips and new traffic regulations.” (David, 32-year-old boda-boda rider).

Another participant remarked:

“Google helps me learn about customer care and business ideas. I have also learnt how to save money and manage my daily income through videos and articles.” (Joseph, 29-year-old boda-boda rider).

One interviewee emphasized the importance of visual learning by noting:

“Videos are easier to understand than reading long documents. Even when I have little education, I can easily follow demonstrations shown on YouTube.” (Musa, 34-year-old boda-boda rider).

These responses demonstrate that riders prefer practical, visual and easily accessible educational materials that directly address their occupational needs. The interview findings also reveal that learning occurs informally during free time between customer trips.

The findings indicate that boda-boda riders primarily access practical educational content that directly contributes to improving their work performance and livelihoods. The popularity of YouTube tutorials, Google Search and educational information shared through social media demonstrates the growing role of smartphones as platforms for self-directed learning among workers in the informal sector.

These findings are consistent with UNESCO (2023), which argues that smartphones

have transformed access to lifelong learning by enabling individuals to obtain knowledge anytime and anywhere through digital technologies. Similarly, Busulwa (2018) observed that mobile learning provides flexible opportunities for informal workers to acquire practical knowledge without attending formal training institutions.

The finding that respondents frequently accessed educational materials on motorcycle repair, road safety, customer care and financial management corroborates the studies by Muyinda et al. (2023) and Muni et al. (2020), which identified these areas as the most relevant learning needs among boda-boda riders in Uganda. The Enhancing Behavioural Change of Boda-Boda Riders Using Mobile Learning (EBoML) project similarly found that riders preferred short, practical learning modules delivered through videos, pictures and mobile applications because they fitted their busy work schedules.

The interview findings further demonstrate that visual learning resources are preferred over text-based materials because they simplify complex concepts and accommodate respondents with varying educational backgrounds. This observation supports Kaliisa et al. (2019), who argued that multimedia learning resources improve learner engagement and understanding within mobile learning environments.

The findings also support the Technology Acceptance Model (Davis, 1989). Respondents perceived smartphone educational content as useful because it enabled them to solve work-related problems, improve customer relations, enhance road safety and strengthen financial management skills. The preference for simple platforms such as YouTube, Google and WhatsApp also reflects high perceived ease of use, which according to TAM positively influences technology adoption and continuous usage.

Overall, the findings demonstrate that smartphones are increasingly serving as valuable informal learning tools among boda-boda riders by providing practical, flexible and readily accessible educational content that contributes to skills development and improved livelihoods.

4.4 Challenges Faced by Boda-Boda Riders while Using Smartphones for Informal Learning

The third objective of the study sought to examine the challenges faced by boda-boda riders in using smartphones for informal education and skills development. Respondents were asked to indicate their level of agreement with selected statements relating to barriers affecting smartphone-supported learning.

Table 4.7: Challenges Faced by Boda-Boda Riders in Using Smartphones for Informal Learning (n = 30)

Challenge	Agree/Strongly Agree	Neutral	Disagree/Strongly Disagree
High internet costs limit my use of smartphones for learning.	26 (86.7%)	2 (6.7%)	2 (6.6%)
Lack of digital skills makes learning difficult.	20 (66.7%)	4 (13.3%)	6 (20.0%)
Limited access to reliable internet affects my learning.	22 (73.3%)	3 (10.0%)	5 (16.7%)
Lack of time limits my use of smartphones for learning.	24 (80.0%)	2 (6.7%)	4 (13.3%)
Battery charging and power interruptions affect smartphone learning.	19 (63.3%)	4 (13.3%)	7 (23.4%)

The findings reveal that the major challenge experienced by respondents was the high cost of internet data, reported by 86.7% of the respondents. This was followed by lack of time due to demanding work schedules (80.0%), unreliable internet connectivity (73.3%), limited digital skills (66.7%) and battery charging challenges (63.3%).

These findings indicate that although smartphones are increasingly being used for informal learning, several technical, economic and occupational barriers continue to hinder their effective utilization.

Respondents were also asked whether they believed smartphones could contribute more effectively to skills development if the identified challenges were addressed.

Table 4. 8: Respondents’ Views on Improving Smartphone-Supported Learning (n = 30)

Response	Frequency	Percentage (%)
Yes	27	90.0
No	1	3.3
Not sure	2	6.7
Total	30	100.0

The majority of respondents (90.0%) believed that smartphone-supported learning would become more effective if internet services became more affordable, digital literacy improved, and more practical educational content was developed specifically for boda-boda riders.

In the interview, participants were asked to share the challenges affecting them in smartphone-supported informal learning and their responses were as follows;

The interview findings provided additional insights into the challenges affecting smartphone-supported informal learning.

One participant explained:

“Internet bundles are expensive. Sometimes I want to watch educational videos, but I cannot afford enough data after meeting my family expenses.” (Robert, 31-year-old boda-boda rider).

Another participant observed:

“Most of the day I am looking for customers. By the time I return home, I am tired and cannot spend much time learning on my phone.” (Samuel, 35-year-old boda-boda rider).

Another interviewee highlighted digital literacy challenges by stating:

“Some applications are difficult to use. If someone has never been trained, they may not know where to find useful educational information.” (Daniel, 30-year-old boda-boda rider).

One participant emphasized language barriers:

“Many educational videos are in English. Some riders understand Luganda better, so they fail to benefit from the information.” (Patrick, 33-year-old boda-boda rider).

Another participant added:

“Sometimes the network is poor, especially when you move to different places looking for passengers. Videos stop loading, which discourages learning.” (Brian, 27-year-old boda-boda rider).

boda rider).

The interviews further revealed that respondents desired educational applications that operate offline, consume less internet data, and provide content in local languages. Several participants also recommended partnerships between government agencies, telecommunications companies and boda-boda associations to provide affordable digital learning opportunities.

The findings indicate that despite the growing use of smartphones for informal education, boda-boda riders continue to experience several barriers that limit effective utilization of digital learning resources. High internet costs emerged as the most significant challenge, followed by limited time, poor internet connectivity, inadequate digital skills and unreliable electricity for charging smartphones.

These findings are consistent with Deen-Swararray et al. (2016), who reported that internet affordability remains one of the greatest barriers to digital inclusion across Africa. Similarly, UNESCO (2023) and GSMA (2024) observed that although smartphone ownership continues to increase, expensive internet services continue to limit meaningful participation in digital learning among informal workers.

The finding regarding limited digital skills corroborates Muyinda et al. (2023), who found that many boda-boda riders possess smartphones but require additional training to effectively utilize educational applications and online learning platforms. Likewise, Kaliisa et al. (2019) argued that digital literacy remains a prerequisite for successful mobile learning because learners require basic competencies in searching, evaluating and applying online information.

The challenge of limited learning time is also consistent with Muni et al. (2020), who noted that boda-boda riders spend long hours transporting passengers, making it difficult to participate in conventional training programmes. This reinforces the need for flexible mobile learning systems that deliver short, practical lessons compatible with riders' work schedules.

The interview findings regarding language barriers support the observations of Deen-Swararray et al. (2016), who emphasized that educational resources should be localized to improve accessibility and comprehension among users with different literacy levels.

From the perspective of the Technology Acceptance Model (Davis, 1989), these barriers reduce both Perceived Ease of Use and Perceived Usefulness of smartphones for learning. While respondents generally acknowledged that smartphones provide valuable educational opportunities, financial constraints, technological limitations and insufficient digital competencies discourage continuous use of smartphone-based learning resources. Addressing these barriers would therefore increase technology acceptance and promote lifelong learning among boda-boda riders.

CHAPTER FIVE:

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the major findings, conclusions, recommendations and suggestions for further research arising from the study on the use of Smartphones for Informal Education and Skills Development among Boda-Boda Riders in Nakulabye Zone 9, Rubaga Division, Kampala. The summary is presented according to the specific objectives of the study. The conclusions are drawn directly from the findings, while the recommendations provide practical measures for enhancing smartphone-supported informal education and skills development among boda-boda riders.

5.2 Summary of the Findings

The study sought to examine how smartphone technology can be used for informal education and skills development among boda-boda riders in Nakulabye Zone 9, Rubaga Division, Kampala. Specifically, the study sought to establish the levels of smartphone usage among boda-boda riders, analyse the types of educational content accessed through smartphones, and examine the challenges faced in using smartphones for informal learning. A mixed-methods research approach was adopted, involving quantitative data collected through questionnaires administered to 30 boda-boda riders and qualitative data obtained through in-depth interviews with six selected respondents.

5.2.1 Level of Smartphone Usage among Boda-Boda Riders

The study established that smartphone usage among boda-boda riders was generally moderate to high. Most respondents reported using smartphones daily or weekly not only for communication and business transactions but also for accessing educational information that supports their work. The findings showed that smartphones have increasingly become useful tools for self-directed learning, enabling riders to acquire knowledge on motorcycle maintenance, road safety, customer care, navigation and financial management. The interview findings further revealed that riders frequently utilize idle time between customer trips to search for information and learn new skills using their smartphones.

5.2.2 Types of Educational Content Accessed by Boda-Boda Riders

The study found that YouTube tutorials, Google Search and educational information shared through WhatsApp, Facebook and other social media platforms were the most commonly accessed learning resources. The educational content mainly focused on motorcycle repair and maintenance, road safety, customer care, entrepreneurship, financial literacy and mobile money management. Respondents preferred short, practical and visual learning materials because they were easy to understand and directly applicable to their daily work. The findings further indicated that smartphone-supported learning contributes to improved occupational knowledge, customer relations and income-generating activities.

5.2.3 Challenges Faced by Boda-Boda Riders in Using Smartphones for Informal Learning

The study established that although smartphones present significant opportunities for informal learning, several challenges continue to limit their effective utilization. The major challenges identified included the high cost of internet data bundles, demanding work schedules that leave little time for learning, poor internet connectivity, limited digital literacy, language barriers and inadequate access to electricity for charging smartphones. Despite these constraints, the majority of respondents expressed positive attitudes towards smartphone-supported learning and indicated their willingness to continue using smartphones for education if these challenges were addressed.

5.3 Conclusions

Based on the findings of the study, the following conclusions are made;

First, the study concludes that smartphones have become valuable tools for informal education and skills development among boda-boda riders in Nakulabye Zone 9. Beyond their traditional use for communication and business, smartphones are increasingly supporting lifelong learning by enabling riders to access practical information that improves their knowledge, work performance and livelihoods.

Secondly, the study concludes that boda-boda riders primarily access educational content that directly addresses their occupational needs. Learning resources on motorcycle maintenance, road safety, entrepreneurship, financial management and customer care are considered the most useful because they contribute to improved service delivery, increased productivity and enhanced income generation. This demonstrates that smartphones can effectively support

practical, learner-centred and self-directed education within the informal sector.

Thirdly, the study concludes that although respondents perceive smartphones as useful and easy to use, several barriers continue to hinder effective smartphone-supported learning. High internet costs, inadequate digital skills, limited learning time, poor network connectivity and language challenges reduce the ability of riders to fully benefit from available educational opportunities. Addressing these barriers would significantly enhance the adoption and utilization of smartphones for informal education and contribute to achieving Sustainable Development Goal 4 on quality education and Sustainable Development Goal 8 on decent work and economic growth.

5.4 Recommendations

Based on the findings and conclusions of the study, the following recommendations are made; The Government of Uganda, through the Ministry of ICT and National Guidance, the Ministry of Education and Sports, and Kampala Capital City Authority (KCCA), should collaborate with boda-boda associations to develop and promote mobile learning programmes specifically designed for boda-boda riders. These programmes should provide practical training in road safety, motorcycle maintenance, entrepreneurship, financial literacy and customer care using smartphones.

Government agencies, universities, non-governmental organizations and development partners should collaborate to develop localized mobile learning applications that provide offline access to educational materials on road safety, business management, first aid and motorcycle maintenance. Such applications would reduce dependence on continuous internet connectivity while promoting lifelong learning among informal workers.

Telecommunication companies should introduce affordable educational internet bundles and subsidized data packages specifically intended for online learning. Reducing the cost of internet services would encourage more boda-boda riders to regularly access educational resources through their smartphones.

Boda-boda associations and community-based organizations should organize regular digital literacy training programmes to improve riders' ability to use smartphones effectively for learning, information searching and accessing credible educational content.

Developers of digital learning platforms should design educational materials in simple language and local languages such as Luganda, while incorporating videos, illustrations, animations and audio content that can easily be understood by riders with different educational

backgrounds.

5.5 Suggestions for Further Research

This study focused on harnessing smartphones for informal education and skills development among boda-boda riders in Nakulabye Zone 9, Rubaga Division, Kampala. Future researchers may consider undertaking similar studies in other divisions of Kampala or in other districts of Uganda to facilitate comparison of findings across different geographical locations.

Further studies should examine the impact of smartphone-supported learning on road safety performance, accident reduction and income generation among boda-boda riders over an extended period.

Future researchers may also investigate the effectiveness of mobile learning applications specifically designed for informal sector workers and assess their contribution to digital inclusion, entrepreneurship development and lifelong learning in Uganda.

Finally, future studies could explore the role of emerging technologies such as artificial intelligence, mobile micro-learning platforms and digital certification programmes in enhancing skills development and professional growth among boda-boda riders and other informal sector workers.

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Appendices

Appendix A: Structured Questionnaire for Boda-Boda Riders in Nakulabye Zone 9, Rubaga Division, Kampala

Title: HARNESSING SMARTPHONES FOR INFORMAL EDUCATION AND SKILLS DEVELOPMENT AMONG BODA-BODA RIDERS IN NAKULABYE, RUBAGA DIVISION, KAMPALA

Introduction

Dear Respondent,

My name is Eric Luyuyo, a Bachelor's student of Adult and Community Education from Makerere University. I am conducting an academic study on how smartphones can be harnessed for informal education and skills development among boda-boda riders in Nakulabye, Kampala. The information you provide will be used strictly for academic purposes. Your participation is voluntary, and all responses will remain confidential. Please tick (✓) the most appropriate response as follows;

SECTION A: DEMOGRAPHIC INFORMATION

Please tick (✓) the appropriate answer.

1. Age

- ☐ 18-25 years
- ☐ 26-35 years
- ☐ 36-45 years
- ☐ Above 45 years

2. Highest level of education

- ☐ No formal education
- ☐ Primary
- ☐ Secondary
- ☐ Certificate
- ☐ Diploma
- ☐ University

3. How long have you worked as a boda-boda rider?

- ☐ Less than 1 year
- ☐ 1–3 years
- ☐ 4–6 years
- ☐ More than 6 years

4. Do you own a smartphone?

- ☐ Yes
- ☐ No

5. How long have you been using a smartphone?

- ☐ Less than 1 year
- ☐ 1–3 years
- ☐ 4–6 years
- ☐ More than 6 years

SECTION B: SMARTPHONE USE FOR INFORMAL EDUCATION

6. How often do you use your smartphone to learn something new?

- ☐ Daily
- ☐ Weekly
- ☐ Monthly
- ☐ Rarely
- ☐ Never

7. Which educational content do you mostly access on your smartphone? (Tick one)

- ☐ YouTube tutorials
- ☐ Google search
- ☐ Social media educational content
- ☐ News and current affairs
- ☐ Business/financial information

8. What skills have you learned through your smartphone? (Tick one)

- ☐ Motorcycle repair

- ☐ Road safety
- ☐ Business and financial management
- ☐ Customer care
- ☐ Other practical skills

9. Approximately how much time do you spend each day using your smartphone for learning?

- ☐ Less than 30 minutes
- ☐ 30 minutes-1 hour
- ☐ 1-2 hours
- ☐ More than 2 hours

SECTION C: EXPERIENCES WITH SMARTPHONE-SUPPORTED LEARNING

Please indicate your level of agreement with the following statements.

Scale: SA = Strongly Agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly Disagree

Statement	SA	A	N	D	SD
10. My smartphone helps me acquire useful knowledge for my work.	☐	☐	☐	☐	☐
11. I have improved my work-related skills through smartphone learning.	☐	☐	☐	☐	☐
12. Educational information on smartphones is easy to understand.	☐	☐	☐	☐	☐
13. Smartphone learning has improved my income-generating activities.	☐	☐	☐	☐	☐
14. I am motivated to continue learning through my smartphone.	☐	☐	☐	☐	☐

SECTION D: CHALLENGES OF USING SMARTPHONES FOR LEARNING

Please indicate your level of agreement with the following statements.

Scale: SA = Strongly Agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly Disagree

Statement	SA	A	N	D	SD
15. High internet costs limit my use of smartphones for learning.	☐	☐	☐	☐	☐
16. Lack of digital skills makes learning through	☐	☐	☐	☐	☐

smartphones difficult.					
17. Limited access to reliable internet affects my learning.	☐	☐	☐	☐	☐
18. Lack of time prevents me from using my smartphone for learning.	☐	☐	☐	☐	☐
19. Smartphone battery or charging problems affect my learning.	☐	☐	☐	☐	☐

20. Overall, do you think smartphones can improve skills development among boda-boda riders?

☐ Yes

☐ No

☐ Not sure

Thank you for your valuable participation.

Appendix B: In-Depth Interview Guide for Boda-Boda Riders in Nakulabye Zone 9, Rubaga Division, Kampala

Study Title: Harnessing Smartphones for Informal Education and Skills Development among Boda-Boda Riders in Nakulabye, Rubaga Division, Kampala

1. Introduction

Good morning/afternoon. My name is Eric Luyuyo, a Bachelor's student of Adult and Community Education from Makerere University. I am conducting an academic study on how smartphones are used for informal education and skills development among boda-boda riders in Nakulabye. The information you provide will be treated with strict confidentiality and used solely for academic purposes. Your participation is voluntary, and you may decline to answer any question or withdraw from the interview at any time.

Interview Questions

1. Please tell me about your experience using a smartphone in your daily work as a boda-boda rider.
2. In what ways do you use your smartphone to learn new knowledge or develop skills that are useful in your work or personal life?
3. What types of educational information or learning materials do you usually access using your smartphone (for example, YouTube videos, Google, social media, online courses, or mobile applications)? Why do you prefer these sources?
4. Can you describe any knowledge or skills you have gained through your smartphone that have helped improve your work, income, or daily life? Please give examples.
5. What motivates you to use your smartphone for learning and skills development?
6. What challenges or difficulties do you face when using your smartphone for informal learning (such as internet costs, limited digital skills, lack of time, poor network connectivity, or other factors)?
7. In your opinion, how can smartphones be better utilized to support informal education and skills development among boda-boda riders?
8. What recommendations would you give to government, boda-boda associations, technology providers, or other stakeholders to improve smartphone-supported learning for boda-boda riders?

Thank you very much for your time and valuable contribution. Your views are important and will greatly contribute to this study.