

**DETERMINANTS OF COVID-19 VACCINE UPTAKE AMONGST TRADERS
IN WAKULIMA MARKET, NAIROBI CITY COUNTY, KENYA**

COLLINS OCHIENG OPANDE

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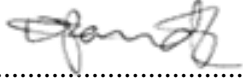
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DECLARATION

Declaration by Candidate:

This thesis is my original work and has not been presented for a degree in any other university or any other award.

Signature: 

Date: 08/04/2025

Collins Ochieng Opande

SHS/MPH/3842-1/2021

Approval by Supervisors:

This thesis has been submitted with our approval as university supervisors.

Signature: 

Date: 8/4/2025

Prof. Joachim Osur

School of Medical Sciences

Amref International University

Signature: 

Date: 13/04/2025

Dr. Nzomo Mwita

School of Public Health

Amref International University

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DEDICATION

I dedicate this work to my wife, Edina Kerubo Onduko; my children, Betty Lean Jole, Abraham Lincoln, and Liam Edison Ochieng; my mother, Mrs. Margaret Akumu Nyoware; my sisters, Jesca Atieno Opande, Jackline Akinyi Opande; my brothers Samson Odhiambo Opande and Jonathan Okoth Opande who had faith in me to the end. Moreover, I thank my niece Michele Akinyi, who ensured this dream became a reality.



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ABSTRACT

Background: This research focuses on determining factors that influence the uptake of the COVID-19 vaccine among traders in Nairobi's Wakulima Market, Kenya. The investigation centers on understanding how contextual, individual, and perceptual elements impact their decisions to receive the vaccine.

Broad Objective: To assess the contextual, individual, and perceptual components influencing the COVID-19 vaccine uptake among traders in Wakulima Market.

Methods: The research was underpinned by theoretical frameworks, including the Theory of Planned Behaviour, Social Cognitive Theory, and the Health Belief Model. Adopting a mixed-methods approach, the study encompassed a demographic of 3,000 traders in Wakulima Market, selecting 353 participants through simple random sampling. Data collection involved the use of questionnaires and interviews. Upon collection, the data underwent a thorough check for completeness, followed by coding and input into SPSS version 25.0. The study's data comprised both quantitative and qualitative aspects, analyzed using descriptive statistical methods like percentages, frequencies, and tables, in addition to correlation and regression analysis to explore relationships among the variables. The qualitative data was examined thematically in alignment with the objectives of the study.

Findings: The study found and concluded that taking all factors (perceptual factors, individual factors, and contextual factors) to be constant at zero, COVID-19 vaccine uptake amongst traders would be 2.938. Also, with the three variables, a unit rise in contextual factors would lead to a .143 rise in the COVID-19 vaccine uptake amongst traders indicating significant influence ($p=.004$) and a unit rise in individual factors led to a .135 increase in the COVID-19 vaccine uptake amongst traders indicating significant influence ($p=.005$) while a unit increase in perceptual factors led to a .149 increase in the COVID-19 vaccine uptake amongst traders indicating significant influence ($p=.002$).

Conclusions and Recommendations: The study concluded that contextual, individual, and perceptual elements significantly impacted COVID-19 vaccine uptake among traders. It recommends that the Ministry of Health conduct on-site Vaccination Drives where on-site vaccination drives within Wakulima Market should be organized, where traders receive the vaccine without having to leave their businesses. The study further recommends tailored messaging targeting traders which should emphasize how vaccination protects traders' livelihoods and the market's economic stability. Finally, the study recommends the implementation of a peer-to-peer engagement strategy by recruiting and training a group of vaccinated traders to act as peer advocates. Peer-to-peer interactions will be effective in building trust and overcoming resistance.

CHAPTER 1: INTRODUCTION

1.1 Background of the Study

The global impact of the COVID-19 pandemic, caused by the novel coronavirus SARS-CoV-2, is without precedent. Since its emergence in Wuhan, China, in December 2019, the COVID-19 virus has rapidly spread across the globe, leading to an international health crisis. This pandemic has affected various aspects of daily life, including public health, the economy, education, and social interactions (Naseer et al., 2022). It has posed notable global health challenges, necessitating the development and distribution of vaccines as a critical measure to control the spread of the virus. The availability of vaccines notwithstanding, comprehending the determinants of vaccine acceptance is crucial for quality public health interventions, especially among high-contact populations, including market traders. The most major impact has been on global public health systems, as governments and healthcare institutions struggle to contain the virus, treat affected people, and protect vulnerable populations. Overcrowded hospitals and medical supply shortages have forced the improvement of the healthcare system, research funding, and the creation of effective vaccinations and therapies.

COVID-19 has profoundly impacted the global economy, disrupting supply chains, production, and jobs due to lockdowns, travel restrictions, and business closures (He et al., 2021). Small businesses and vulnerable populations have been hit hardest, worsening socioeconomic inequalities (Yu et al., 2021). Governments have implemented relief measures like stimulus packages to mitigate economic consequences. Resilient economies and diversified supply chains have become

essential for future preparedness (Dwinantoaji & Sumarni, 2020). The pandemic has also disrupted education, shifting to remote learning, and exposing the digital divide. Remote work has accelerated, offering insights into the future workforce, and reducing commuting challenges. COVID-19 has caused increased anxiety and stress, but it has also fostered community unity, inspiring acts of kindness and innovation (Zabaniotou, 2020). The crisis highlights the significance of social connections, resilience, and effective crisis communication.

The profound impact of the COVID-19 pandemic on the global economy has been starkly evident, precipitating disruptions across myriad sectors, including supply chains, production, and employment (He et al., 2021). The imposition of stringent lockdown measures, travel restrictions, and business closures in response to the public health crisis has engendered unprecedented challenges for businesses and industries worldwide, exacerbating pre-existing vulnerabilities and socioeconomic inequalities, particularly among small businesses and vulnerable populations (Yu et al., 2021). The economic fallout stemming from the pandemic has underscored the imperative for governments to implement robust relief measures, such as stimulus packages, aimed at mitigating the adverse consequences and fostering economic recovery.

In response to the exigencies imposed by the pandemic, the imperative for resilient economies and diversified supply chains has assumed heightened significance, underpinning future preparedness efforts in anticipation of potential future crises (Dwinantoaji & Sumarni, 2020). The disruption wrought by COVID-19 has underscored the vulnerabilities inherent within global supply chains, highlighting the need for enhanced resilience and adaptability to navigate unforeseen disruptions effectively. Moreover, the pandemic has precipitated a paradigm shift in education,

catalyzing the widespread adoption of remote learning modalities and exposing the pervasive digital divide that exists within society.

The rapid proliferation of remote work arrangements in the wake of the pandemic has offered invaluable insights into the future trajectory of the workforce, ushering in a new era characterized by greater flexibility, decentralization, and reliance on digital technologies (He et al., 2021). Moreover, the widespread adoption of remote work has served to alleviate traditional challenges associated with commuting and workplace congestion, heralding potential long-term shifts in societal norms and organizational structures. However, amidst the myriad challenges posed by the pandemic, there have also emerged silver linings, including a resurgence of community unity, acts of kindness, and innovations aimed at addressing societal needs (Zabaniotou, 2020).

The COVID-19 crisis has prompted a collective reckoning with the importance of social connections, resilience, and effective crisis communication in navigating unprecedented challenges (Yu et al., 2021). The pandemic has underscored the interconnectedness of global communities and the imperative for collective action in confronting shared challenges. Moreover, the crisis has underscored the critical role played by effective crisis communication in disseminating accurate information, fostering public trust, and mobilizing coordinated responses to emergent threats. As societies navigate the complexities of the post-pandemic landscape, the lessons gleaned from the COVID-19 experience are poised to inform future preparedness efforts and resilience-building initiatives, underscoring the imperative for proactive mitigation strategies and collaborative approaches to addressing global challenges.

1.1.1 COVID-19 Vaccination

The COVID-19 vaccination case started in December 2020 with the use approval of mRNA-based vaccines developed by Pfizer-BioNTech and Moderna. These vaccines underwent rigorous clinical trials, showing their effectiveness and safety in guarding against COVID-19 (Hajra et al., 2022). Following the initial authorization, countries worldwide launched mass vaccination campaigns, prioritizing high-risk populations. Governments, healthcare organizations, and pharmaceutical companies collaborated to manufacture, distribute, and administer vaccines. Additional vaccines, including those developed by AstraZeneca, Johnson & Johnson, and Novavax, were authorized for emergency use, utilizing different technologies to stimulate an immune response against the virus.

The advent of COVID-19 vaccines in December 2020 marked a pivotal milestone in the global fight against the pandemic, heralding the dawn of a new era in public health intervention (Hajra et al., 2022). The mRNA-based vaccines developed by Pfizer-BioNTech and Moderna emerged as trailblazers in the vaccination campaign, undergoing rigorous clinical trials that demonstrated their efficacy and safety in conferring protection against COVID-19. The unprecedented speed with which these vaccines were developed and authorized for emergency use underscored the collective resolve of governments, healthcare organizations, and pharmaceutical companies to expedite the deployment of life-saving interventions amidst the throes of a global public health crisis.

In the wake of the initial authorization of COVID-19 vaccines, countries worldwide embarked on ambitious mass vaccination campaigns, prioritizing high-risk populations and essential workers in a concerted effort to curb transmission and

mitigate the impact of the pandemic (Hajra et al., 2022). The collaborative efforts of governments, healthcare organizations, and pharmaceutical manufacturers were instrumental in overcoming logistical hurdles and scaling up vaccine production, distribution, and administration capacities to meet the unprecedented demand. Moreover, the authorization of additional vaccines, such as those developed by AstraZeneca, Johnson & Johnson, and Novavax, further bolstered global vaccination efforts, leveraging diverse technological platforms to stimulate robust immune responses against the virus.

The successful rollout of COVID-19 vaccination campaigns has been instrumental in curbing transmission rates, reducing the severity of illness, and saving countless lives worldwide (Hajra et al., 2022). The widespread adoption of vaccination as a cornerstone of public health strategy underscores the pivotal role played by immunization in conferring population-wide immunity and fostering societal resilience in the face of infectious disease threats. Moreover, the collaborative efforts of governments, healthcare organizations, and pharmaceutical manufacturers in navigating regulatory pathways, surmounting logistical challenges, and ensuring equitable access to vaccines have served as a testament to the power of collective action in confronting shared global challenges.

However, amidst the remarkable progress achieved in vaccine development and deployment, challenges persist in ensuring equitable access to vaccines, particularly in low- and middle-income countries with limited resources and infrastructure (Hajra et al., 2022). Disparities in vaccine distribution, vaccine hesitancy, and logistical challenges pose formidable obstacles to achieving widespread vaccination coverage and attaining herd immunity on a global scale. Addressing these challenges will

require sustained international cooperation, investment in health infrastructure, and equitable distribution mechanisms to ensure that vaccines reach those most in need.

Looking ahead, the successful containment of the COVID-19 pandemic hinges upon continued vigilance, concerted efforts to address existing disparities, and ongoing research and development to combat emerging variants of the virus (Hajra et al., 2022). The lessons from the COVID-19 vaccination campaign underscore the importance of robust public health infrastructure, agile regulatory frameworks, and global solidarity in confronting future infectious disease threats. As societies navigate the complexities of the post-pandemic landscape, the legacy of COVID-19 vaccination efforts will endure as a testament to the power of science, innovation, and collective action in safeguarding public health and fostering global resilience in the face of adversity.

Globally, the vaccination campaign has faced challenges such as vaccine hesitancy, logistical complexities, and global vaccine inequity (Al-Mohaithef, 2020; Lazarus, 2020). Governments and public health authorities implemented strategies to address concerns and promote acceptance, while efforts were made to improve distribution, especially in low-income countries (Omer et al., 2021). Despite obstacles, vaccination against COVID-19 has demonstrated efficacy in lowering illness severances, hospitalizations, and deaths, allowing societies to ease restrictions gradually. Ongoing research and monitoring assess long-term vaccine effectiveness and safety while addressing variants and the need for booster doses.

1.1.2 Uptake of COVID-19 Vaccination

Globally, vaccination programs for COVID-19 have shifted towards promoting equitable access and distribution. Initially, high-income countries were prioritized, but

as global demand increased, efforts were made to ensure fair vaccine access. The COVAX facility, led by WHO, Gavi, and CEPI, aimed to distribute vaccines to low- and middle-income countries, particularly for vulnerable populations and healthcare workers (Herzog et al., 2021). Despite supply shortages and logistical complexities, there have been calls for increased manufacturing capacity, technology transfer, and intellectual property waivers to address vaccine inequities. To overcome gaps and foster worldwide solidarity, vaccination dosage donations and global collaboration through projects such as ACT-A have been encouraged.

The global landscape of COVID-19 vaccination programs has transformed towards promoting equitable access and distribution, reflecting a concerted effort to address systemic disparities and ensure fair vaccine allocation across diverse socioeconomic contexts (Herzog et al., 2021). Initially, high-income countries were at the forefront of vaccine distribution efforts, leveraging their financial resources and procurement capacities to secure early vaccine access. However, as global demand surged and disparities in vaccine access became increasingly apparent, concerted efforts were mobilized to redress these imbalances and extend vaccine coverage to underserved populations.

Central to the endeavor to promote equitable vaccine access is the COVAX facility, a collaborative initiative spearheaded by the World Health Organization (WHO), Gavi, the Vaccine Alliance, and the Coalition for Epidemic Preparedness Innovations (CEPI) (Herzog et al., 2021). Designed to facilitate the equitable distribution of COVID-19 vaccines to low- and middle-income countries, particularly among vulnerable populations and healthcare workers, COVAX represents a pivotal mechanism for bridging existing gaps in vaccine access and fostering global solidarity in the face of the pandemic. COVAX endeavors to ensure that no country is left

behind in the global vaccination campaign by pooling resources, coordinating procurement efforts, and leveraging economies of scale.

Despite the laudable aims of initiatives such as COVAX, challenges persist in achieving equitable vaccine distribution, including supply shortages, logistical complexities, and regulatory hurdles (Herzog et al., 2021). There have been growing calls for concerted action to address these impediments and bolster global vaccine manufacturing capacities. Efforts to ramp up production, facilitate technology transfer, and explore avenues for intellectual property waivers represent critical steps toward enhancing vaccine accessibility and affordability, particularly in resource-constrained settings.

Moreover, to bridge existing gaps in vaccine access and foster worldwide solidarity, innovative strategies such as vaccine dosage donations and collaborative initiatives like the Access to COVID-19 Tools (ACT-A) Accelerator have been championed (Herzog et al., 2021). By leveraging collective expertise, resources, and infrastructure, ACT-A seeks to accelerate the development, production, and equitable distribution of COVID-19 vaccines, diagnostics, and therapeutics. Through collaborative partnerships and shared commitments to global health equity, ACT-A exemplifies the power of multilateral cooperation in confronting shared global challenges.

The quest for equitable vaccine distribution remains an ongoing imperative, necessitating sustained international collaboration, innovation, and resource mobilization (Herzog et al., 2021). As the global vaccination campaign enters a critical phase, concerted efforts are needed to address systemic barriers to vaccine access, foster technology transfer, and bolster health systems resilience in resource-constrained settings. By embracing a collective ethos of solidarity and shared

responsibility, the global community can strive towards realizing the vision of universal vaccine coverage and collective immunity, thereby advancing the goal of ending the COVID-19 pandemic and building a more resilient, equitable world.

In the USA, the endorsement of the COVID-19 has been a focus point in obtaining broad immunization. Individual judgments are influenced by income, age, education level, political affiliation, and race/ethnicity (Salmon et al., 2021). Addressing concerns, giving accurate information regarding vaccination safety and efficacy, and launching communication campaigns by organizations such as the CDC are all part of efforts to boost vaccine adoption. Collaborations with community leaders, healthcare practitioners, and reputable organizations are critical in reaching various groups and tackling vaccination hesitancy.

In India, approval of the COVID-19 vaccine has been critical to the country's attempts to battle the pandemic. The public's opinion of the vaccination and desire to get it are important factors in obtaining extensive immunization coverage (Wang & Ping, 2022). Vaccine uptake in India has been promoted through intensive awareness campaigns, public education programs, and communication tactics. The government has worked with healthcare professionals and groups to address concerns, dispel misconceptions, and offer accurate vaccine safety and efficacy information. Furthermore, the Indian government has implemented several measures to guarantee fair vaccination access across diverse areas and demographic groups.

In Africa, COVID-19 immunization adoption has witnessed both achievements and setbacks, with constraints limiting the speed and coverage of vaccination efforts. The African Vaccine Acquisition Task Team (AVATT), coordinated by the African Union, has procured vaccine doses for African countries, enhancing access (Tagoe et

al., 2021). Furthermore, some nations, such as Rwanda, have established effective immunization programs that use digital platforms and community health workers to reach rural regions, enhancing coverage and accessibility. Notwithstanding these achievements, considerable challenges must be solved to maintain fair access and widespread vaccination across the continent.

The speed of vaccination efforts in Africa is hampered by limited vaccine supplies, which is worsened by global vaccine disparities that favour high-income nations (Oduwole et al., 2021). Concerns have also been raised concerning vaccination reluctance and disinformation, with certain African communities questioning the COVID-19 vaccine safety. To address these issues and develop trust, effective communication tactics, and community participation are required. Inadequate healthcare infrastructure and resources contribute to the obstacles, notably keeping vaccines cold and ensuring proper distribution and administration. For successful vaccination programs and the monitoring of adverse occurrences, healthcare systems must be strengthened.

COVID-19 immunization uptake in Kenya has had both achievements and setbacks. According to the Ministry of Health, 44% of the eligible population has gotten at least one vaccine dosage as of April 8th, 2023, demonstrating slow progress and far from the target of 100% vaccination (MOH, 2023). The construction of a comprehensive immunization delivery network, enabled by agreements with the WHO and UNICEF, is one example of success. This network, including hospitals, health institutions, and mobile clinics, ensures vaccinations are widely available (Orangi et al., 2022). This has helped successfully deliver vaccines throughout Kenya's varied regions and communities.

COVID-19 immunization uptake in Kenya confronts hurdles and constraints. Limited vaccine supply is a serious issue, compounded by global vaccination inequities, with high-income nations obtaining the bulk of doses. In Kenya, this has hindered vaccination programs (Yamey et al., 2022). Vaccine hesitancy and misinformation also impede adoption, with certain populations affected by fears and misunderstandings. To address reluctance, focused awareness initiatives, and proper information transmission are required (Shah et al., 2022). Additional constraints include insufficient healthcare infrastructure and logistical issues, such as difficulty maintaining the cold chain for vaccinations and low resources and staffing in healthcare institutions (Li et al., 2022). To overcome these obstacles, investments in healthcare infrastructure and effective vaccination delivery are required.

1.1.3 Uptake of COVID-19 Vaccines among Traders

Wakulima Market in Nairobi, Kenya, is a thriving centre for traders that contribute significantly to the local economy. These fruit, vegetable, and agricultural product dealers are an important link between farmers and customers, maintaining a consistent supply of goods. They form direct contacts with farmers, buying produce directly or through middlemen, and so contribute to the expansion of the agricultural industry. Traders help farmers to earn a living and contribute to the region's broader economic growth by establishing market demand.

Limited availability of reliable information, a lack of time and flexibility, accessibility and pricing concerns, language and cultural hurdles, and faith in the healthcare system are all potential challenges to COVID-19 immunization uptake among traders in Wakulima Market. Addressing these barriers will necessitate targeted educational campaigns to combat vaccine misinformation, flexible vaccination schedules, and

mobile clinics to accommodate busy traders, improved access to vaccination centers, information in local languages and culturally appropriate messaging, and engagement of local leaders to build trust. We may increase immunization uptake among Wakulima market traders by removing these barriers and providing fair access to COVID-19 vaccinations. This study seeks to explore the determinants affecting the adoption of COVID-19 vaccinations among traders at Wakulima Market in Nairobi City County, Kenya.

1.2 Statement of the Problem

The coronavirus outbreak has greatly impacted the global health, economies, and societies. Vaccination has become crucial in controlling the virus's transmission and lessening its negative consequences. Vaccination plays key roles in disease prevention, the protection of individuals, herd immunity prevention of outbreaks and epidemics, cost-effectiveness, global health security, and long-term eradication goals. However, vaccine uptake among specific populations, such as market traders, remains a challenge. The challenges are diversified, including lack of awareness and information, vaccine hesitancy and misconceptions, socioeconomic challenges, limited access to vaccination facilities, and the influence of social networks and peer effects.

Prior research has explored the acceptance and adoption of COVID-19 vaccines across different demographic groups. Wang et al. (2023) investigated vaccine determinants among elderly individuals in China, while Pea et al. (2023) focused on racial and ethnic groups. De Figueiredo et al. (2023) explored socio-demographic factors, and Kawuki et al. (2023) examined vaccination disparities in Ugandan communities. Gudayu and Mengistie (2023) studied vaccine acceptance in Sub-

Saharan African countries, Ndejjo et al. (2023) investigated factors among adults in Uganda, and Muchangi et al. (2023) analyzed prevention and control in East African countries. Erega et al. (2023) studied vaccination reluctance in Ethiopia, Anino et al. (2023) examined uptake among the elderly in Kenya's Kericho County, and Eriksson (2023) concentrated on women scholars at Pwani University in Kilifi, Kenya. However, none of these studies specifically explored traders in markets. This research investigates the factors or determinants of the acceptance and uptake of the COVID-19 vaccine among traders in Wakulima Market, Nairobi. The findings will inform targeted interventions and strategies to improve vaccination coverage in this population and contribute to controlling the pandemic in Nairobi City County, Kenya.

1.3 Purpose of the Study

The study's primary goal was to identify the factors that determine COVID-19 vaccine uptake, focusing on traders operating at Wakulima market, Nairobi City County, Kenya.

1.4 Research Objectives

The following objectives guided the study;

- i. To establish contextual determinants of the COVID-19 vaccine uptake amongst traders in Wakulima Market, Nairobi City County
- ii. To determine individual factors that affect the COVID-19 vaccine uptake amongst traders in Wakulima Market, Nairobi City County
- iii. To establish perceptual factors that influence the COVID-19 vaccine uptake amongst traders in Wakulima Market, Nairobi City County.

1.5 Research Questions

- i. What is the influence of contextual factors on COVID-19 vaccine uptake amongst traders in Wakulima Market, Nairobi City County?
- ii. How do individual factors influence COVID-19 vaccine uptake amongst traders in Wakulima Market, Nairobi City County?
- iii. To what extent do perceptual factors influence COVID-19 vaccine uptake amongst traders in Wakulima Market, Nairobi City County?

1.6 Significance of the Study

Policymakers and Healthcare Authorities

This study adds to our understanding of the determinants of Covid-19 vaccination uptake among traders. Policymakers can design focused initiatives and strategies to enhance vaccination rates within this specific demographic by studying the drivers of vaccine uptake. This can help to influence the development of specialized information campaigns, flexible vaccination schedules, and mobile clinics to help traders overcome hurdles. Finally, this can help to increase vaccination coverage and reduce the danger of COVID-19 transmission within the market and the larger community.

To Healthcare Providers and Practitioners

This study emphasizes the necessity of addressing factors hindering COVID-19 vaccine uptake among Wakulima Market Traders. It underlines the need to use culturally sensitive and linguistically suitable communication tactics to successfully transmit vaccination information. The findings can also be used by healthcare experts to better understand traders' worries and perspectives, allowing them to give better guidance and assistance during the vaccination process. This can help build

confidence in the healthcare system and increase vaccination acceptability among this demographic.

To Community Leaders and Organizations

The research highlights the importance of community participation and grassroots mobilization in promoting COVID-19 immunization among traders. The data might be used to advocate for the construction of mobile vaccination clinics or outreach initiatives within market premises to provide easy access to vaccinations. Community leaders and organizations can also be vital in spreading correct information, addressing vaccine hesitancy, and building trust within the trading community. This can foster a supportive environment that encourages vaccine uptake and protects the health and well-being of traders and the larger community

1.7 Justification of the Study

COVID-19 has continuously posed significant health risks, especially in densely populated areas, including Wakulima Market in Nairobi. The traders are at high risk due to high human traffic and frequent interactions. Comprehending the specific attributes that impact vaccine uptake among this demographic is essential for creating targeted interventions to oversee vaccination coverage. Despite the availability of vaccines, uptake has remained suboptimal in various communities, calling for a focused investigation into the factors that affect full uptake. This study is justified since it addresses a crucial gap in the literature about the determinants of COVID-19 vaccine uptake among market traders in Kenya. Identifying and analyzing the contextual, individual, and perceptual attributes impacting vaccine decisions enabled the research to provide valuable insights that could inform tailored public health metrics. The selection of Wakulima Market as the focal point of this study was

deliberate, based on its status as a prominent marketplace within Nairobi City County. Renowned for its expansive scale and bustling commerce, Wakulima Market is a pivotal hub attracting a heterogeneous array of traders from diverse socio-economic backgrounds. This strategic choice was made to ensure the inclusivity and adequacy of the sample, poised to authentically reflect the multifaceted composition characteristic of the trader populace under investigation.

1.8 Limitations of the Study

The investigation was conducted with a small number of participants, reducing the findings' statistical power and precision. When the study sample size is small, there is a limitation in the generalizability of the findings to the larger trader population. Data collection heavily relied on self-reporting, such as surveys and interviews, which were subject to recall or social desirability biases. Traders provide answers they perceive as socially acceptable, leading to inaccurate or incomplete information. There was a non-response bias where a number of selected traders chose not to participate in the research. The research results are solely relevant to traders in Wakulima Market and cannot be generalized to traders in other markets or populations outside Nairobi City County, Kenya. The research utilized a descriptive methodology, providing only a snapshot of vaccine uptake at a specific time. Longitudinal studies would be more informative for assessing changes in vaccine uptake and understanding the dynamic factors influencing it. Unmeasured confounding variables, such as cold weather, influenced vaccine uptake among traders. These variables, if not accounted for, can introduce bias and affect the accuracy of the study results. Collecting accurate and reliable data in a busy Wakulima market setting presented logistical difficulties.

Noise, distractions, language barriers, and time constraints impacted the quality of data collected and the ability to reach traders for follow-up.

1.8 Scope of the Study

The study examines determinants of COVID-19 vaccine uptake amongst traders in Wakulima Market, Nairobi City County. It investigates how contextual, individual/group, and vaccine/vaccination-specific issues influence COVID-19 vaccine uptake amongst traders in Wakulima Market, Nairobi City County.



CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The chapter reviews the literature that guided the study objectives, organized as vaccine uptake, contextual factors, individual factors, perceptual factors, and uptake of COVID-19 vaccines. The chapter also entails the conceptual framework.

2.2 Theoretical Framework

Theories such as the Theory of Planned Behavior, the Social Cognitive Theory, and the Health Belief Model formed the foundational frameworks for the study.

2.2.1 Theory of Planned Behaviour

Introduced by Ajzen in 1991, the Theory of Planned Behavior emphasizes scenarios in which people may not possess complete autonomy over their behaviors. According to this theory, actual behavior is influenced by perceived behavioral control and the intention to perform the behavior. Velarde (2012) expands on this by stating that three principal factors drive behavioral choices: subjective norms, attitudes, and perceived behavioral control. Its own specific beliefs and characteristics underpin each of these factors.

The study focused on specific contextual, individual/group, and vaccine-related factors linked to adopting COVID-19 vaccines. The attitude here refers to the general sentiment among traders at the Wakulima Market regarding adopting the COVID-19 vaccine. This model is advantageous as it examines how individuals' behavior and eventual response to a specific phenomenon, such as the COVID-19 vaccine, are connected.

The theory was pertinent to this research because it shed light on situations where traders, following planned behavior, hesitated to get vaccinated against COVID-19. Despite the advantages of the vaccine for everyone, there was a low adoption rate, emphasizing how planned behavior influences various contextual, individual/group, and vaccine-related concerns. This theory is relevant to the study as it enables the comprehension of how traders' attitudes toward the COVID-19 vaccine, the impact of social norms within the trading community, and their perceived control over getting vaccinated affect their decision to receive the vaccine. Overall, employing TPB enabled the study to identify specific beliefs and social pressures that either support or hinder vaccine uptake among the traders.

2.2.2 The Social Cognitive Theory

Albert Bandura introduced the concept of social cognitive theory in the 1960s. The theory proposes that individuals' behaviors are shaped by their thoughts, emotions, and beliefs. Rather than being driven by automatic or innate forces, actions are influenced by environmental factors. This theory emphasizes the importance of personal choice in guiding behaviors, motivations, and personal growth, highlighting the reciprocal interaction between individuals and their surroundings. Bandura (1989) further suggests that each person possesses this trait based on their capabilities.

The theory underscores that changes in the social environment impact behavior, making it applicable to enhancing safety measures. The relationships between organizations, employees, communities, and customers significantly influence an organization's success. In the context of this study, the theory is relevant as it acknowledges that the acceptance of COVID-19 vaccines is influenced by various

factors, including the context, individual or group dynamics, and specific aspects related to the vaccine or vaccination process.

These factors result from individuals' thoughts, feelings, and beliefs- in these cases, traders in Wakulima Market, Nairobi City County. This study examined contextual, individual/group, and vaccine/vaccination-specific issues linked to accepting the COVID-19 vaccine amongst traders in Wakulima Market, Nairobi City County. SCT is pertinent to the study as it illuminates how traders learn about the COVID-19 vaccine: interactions with peers, community leaders, and health professionals. Additionally, this theory considers the essence of self-efficacy, or the traders' confidence in their ability to get vaccinated despite the challenges. Generally, comprehending these dynamics paved the way for the study to explore how social support and observational learning within the market environment could promote vaccine acceptance.

2.2.3 Health Belief Model

In the 1950s, Hochbaum, Rosenstock, and Kegels formulated the Health Belief Model to improve health-related behaviors. As per this model, individuals' actions are influenced by their personal beliefs and perceptions concerning a particular illness and the possible strategies to address it. This model centers on the notions of susceptibility, severity, benefits, and barriers, positing that these factors play a significant role in shaping people's behavior regarding health-related matters. This notion was developed by Rosenstock and others in 1988 to assist the model in better meeting the problems of modifying habitual harmful behaviors. This model is pertinent to the study because it explains how personal ideas and perceptions, or demographic, social, and cultural variables, influence COVID-19 vaccination uptake.

As per the Health Belief Model (HBM), an individual's decision to engage in an action related to health, like getting vaccinated, is shaped by how they perceive their vulnerability to the disease and the intensity of its consequences, the benefits they believe come from taking preventative measures, and the obstacles they perceive in doing so. Perceived severity is connected to how much people believe that COVID-19 may impact their health and means of livelihood. Those who view COVID-19 as a severe menace to their health tend to prioritize vaccination. When people talk about the benefits associated with vaccination, they refer to things like a lower risk of infection and chronic disease and stronger economic stability. This is known as perceived benefit. Traders who comprehend the benefits of vaccination may be more inclined to procure the COVID-19 vaccine. Traders associate vaccine uptake with obstacles or concerns known as perceived barriers. Consider side effects, misinformation, or access issues. Addressing concerns, improving vaccine accessibility, and having clear and accurate communication are all ways to facilitate overcoming these barriers.

External influences that spur individuals into action are known as cues to action. Examples comprise trusted sources or public health campaigns. To prompt vital actions, traders can be targeted via effective communication and outreach programs. Having belief in one's abilities to successfully benefit from getting the vaccine defines self-efficacy. To enhance traders' self-efficacy, one can provide accessible vaccination services, address concerns, and share success stories from vaccinated individuals. One can use the Health Belief Model (HBM) framework to grasp the elements that impact acceptance of the COVID-19 vaccine amongst traders in Wakulima Market. This model is relevant to the study as it helped assess how traders perceived the threat of COVID-19, their perceived susceptibility to the virus, and their beliefs regarding the

effectiveness and benefits of the vaccine. More importantly, the model helped identify perceived barriers to vaccination, including concerns regarding side effects or access issues. Employing HBM enabled the study to develop targeted interventions to address the perceptions and oversee vaccine uptake.

2.3 COVID-19 Vaccine Uptake

Cues to action are external stimuli that lead individuals to act. Trusted sources or public health campaigns make up some examples. Targeting traders through effective communication and outreach programs can encourage vital actions. One's belief in their ability to benefit from receiving the vaccine defines self-efficacy. To improve traders' self-efficacy, accessible vaccination services could be provided, addressing concerns, and sharing success stories from vaccinated individuals. The Health Belief Model (HBM) framework can be utilized to comprehend the factors affecting COVID-19 vaccine acceptance among small traders in Wakulima Market. This model can assist in comprehending how COVID-19 vaccination decision-making is affected by factors among small traders. This investigation aims to recognize the components that impact COVID-19 inoculation rates amongst traders at Wakulima Market.

Regional differences in vaccination uptake can be seen. The WHO European Region, for example, reported lower MMR vaccination uptake, with coverage rates ranging from 77% to 95% in various nations. The Americas and Western Pacific areas, on the other hand, obtained greater MMR vaccination coverage rates of more than 90%. Vaccine uptake can be affected by a range of different elements. Vaccine hesitation, a lack of access to healthcare resources, ignorance, complacency, fear of adverse effects, and cultural or religious views have all been highlighted as factors in studies (Barello et al., 2020).

To address these problems, specific methods are required, such as successful communication campaigns, increased vaccination access and cost, education for healthcare practitioners and communities, and developing faith in vaccines and immunization programs. It is crucial to remember that vaccination uptake is not constant and might fluctuate over time. Emerging infectious illnesses, public health emergencies, changes in vaccination recommendations, and adjustments in public perception and attitudes about vaccines can all have an impact (Callaghan et al., 2021).

The US has made tremendous efforts to provide COVID-19 vaccinations to its citizens. The vaccination deployment began in December 2020, with healthcare personnel and vulnerable people being prioritized at first. As the immunization program advanced, eligibility grew to cover a greater range of age groups and vocations. Vaccine adoption in the United States varied among states and populations throughout the early stages. During that time, studies were done to provide insight into vaccine acceptability and uptake rates. For example, studies found that vaccination reluctance was a key factor influencing uptake; concerns regarding the safety, efficacy, and potential side effects of vaccines have been voiced by some individuals (Dodd et al., 2021).

Alleaume et al. (2021) investigated the general population's intention to vaccinate against COVID-19 in France, concentrating on relevant variables and gender differences. The study used a survey to gather information on people's intentions to acquire the COVID-19 vaccination and to examine the many elements impacting their decision-making process. The survey discovered that overall, vaccination intention was rather high in France, with almost 80% of respondents expressing a willingness to be vaccinated. Vaccine intention was positively related to factors such as older age,

greater educational attainment, and having chronic health issues. Notably, the study found gender differences, with women showing greater levels of vaccination intention than males. The findings showed that gender-specific characteristics should be included in vaccination marketing initiatives (Erega et al., 2023).

Lindholt et al. (2021) used observational data to study the societal acceptance of COVID-19 vaccines and individual-level factors across different countries. The research looked at data from national polls in France, Denmark, Italy, Germany, the UK, Sweden, and the US. The study discovered that vaccination acceptance rates differed between nations, with the United States and the United Kingdom reporting greater acceptance rates than Denmark, France, Germany, Italy, and Sweden. Age, education level, trust in healthcare authorities, and reported severity of COVID-19 were all individual determinants of vaccination uptake. Younger individuals and those with higher education levels were more likely to embrace the COVID-19 vaccine. Trust in healthcare authorities and perception of COVID-19 as a serious threat were also related to vaccination adoption.

In Sub-Saharan Africa, various factors contribute to hesitancy towards the COVID-19 vaccine. Concerns include distrust towards the pharmaceutical industry, apprehensions regarding vaccine safety and origin, skepticism about government reliability, and the expenses associated with vaccination. It is important to note that vaccine reluctance varies depending on the context and can vary across different locations and over time. A systematic review carried out by Shakeel et al. (2021) on global COVID-19 vaccine acceptance rates revealed that countries like Ecuador, Malaysia, and Indonesia had the highest acceptance rates (>93.3%). In a survey encompassing 15 African countries, approximately 80% of people showed readiness to receive the COVID-19 vaccine upon being deemed safe and effective. However,

significant regional differences exist across Africa. A meta-analysis found that 14.3% of individuals reported a refusal to take a COVID-19 vaccine, while 22.1% expressed uncertainty. While these results are generally encouraging, they highlight the need to address specific regional variations and concerns to ensure widespread vaccine acceptance and uptake.

In Kenya, there is strong confidence in vaccines for childhood diseases, with a high percentage considering them safe, effective, and important for children's health. However, there is a lack of clear evidence and understanding concerning public trust and acceptance of the COVID-19 vaccine, especially among the adult population in Kenya, as highlighted by Muchangi et al. (2023).

2.3.1 Contextual Factors and COVID-19 Vaccine Uptake

Nguyen et al. (2021) investigated racial and ethnic disparities in COVID-19 vaccination reluctance and uptake in a large-scale study in Vietnam. The study found substantial differences in vaccination reluctance across different racial and ethnic groups using data from a smartphone-based poll. It was shown that Black and Hispanic people had higher degrees of hesitation than White people. Minority communities were recognized as having concerns about side effects, diminished trust in the healthcare infrastructure, and a history of prejudice. The need to address health inequalities and adopt targeted interventions to promote vaccination acceptability and uptake across racial and ethnic minority groups was stressed in the study. These findings offer insight into the factors influencing vaccination reluctance and emphasize the need for fair vaccine delivery techniques.

Hou et al. (2021) assessed the effect of uncertainty and disinformation regarding hesitancy towards receiving the COVID-19 vaccine. The study examined survey data

to determine what variables contribute to vaccination reluctance in the general population. The findings established that vaccination hesitation was a factor of uncertainty about vaccine safety and effectiveness and the existence of disinformation. Higher levels of vaccination hesitation were connected with factors such as decreased faith in public health authorities, exposure to vaccine-related disinformation via social media, and worry about potential adverse effects. The findings highlight the significance of addressing and refuting disinformation through effective communication techniques, giving correct information regarding vaccination safety and efficacy, and building confidence in public health officials

Nguyen et al. (2021) conducted a seminal investigation into the complex interplay of racial and ethnic disparities in COVID-19 vaccination reluctance and uptake within the socio-cultural milieu of Vietnam. Employing a robust methodology grounded in smartphone-based polling, the study scrutinized the differential patterns of vaccine hesitancy prevalent among various racial and ethnic cohorts. The improved findings underscored a stark reality wherein Black and Hispanic communities exhibited heightened levels of vaccine hesitancy vis-à-vis their White counterparts. This discernible discrepancy was attributed to multifaceted factors, including but not limited to apprehensions surrounding potential side effects, a palpable erosion of trust in the healthcare apparatus, and the pervasive specter of historical prejudice. The profound implications emanating from these revelations resonate far beyond the purview of Vietnam, epitomizing a global imperative to confront and ameliorate existing health disparities, particularly among marginalized racial and ethnic minorities.

Furthermore, the seminal work of Hou et al. (2021) represents a pivotal endeavor to unravel the intricate dynamics underpinning vaccine hesitancy through a lens

cognizant of uncertainty and disinformation. Through meticulous interrogation of survey data, the study unraveled a nexus of variables intricately intertwined with vaccination reluctance within the broader populace. Central to their elucidation was the pivotal role played by uncertainty surrounding vaccine safety and efficacy, compounded by the pernicious influence of disinformation proliferating across diverse social media platforms. A salient observation from their inquiry was the pronounced negative correlation between diminished faith in public health authorities and heightened levels of vaccine hesitancy. Equally noteworthy was the alarming prevalence of vaccine-related disinformation, which emerged as a potent catalyst fueling apprehensions regarding potential adverse effects. In light of these revelations, the imperative for robust countermeasures aimed at dispelling misinformation, fostering informed decision-making, and restoring faith in public health institutions assumes paramount significance in the quest for widespread vaccine acceptance.

Moreover, the seminal contributions of Nguyen et al. (2021) and Hou et al. (2021) collectively underscore the exigency of a multifaceted approach geared towards fostering equitable vaccine distribution and uptake amidst a backdrop of entrenched disparities and misinformation. By elucidating the intricate nuances of vaccine hesitancy within diverse racial and ethnic cohorts, these studies serve as a clarion call for the adoption of targeted interventions tailored to address the unique needs and concerns of marginalized communities. Integral to this endeavor is cultivating culturally sensitive communication strategies to engender trust, debunk myths, and instill confidence in the safety and efficacy of COVID-19 vaccines. Furthermore, concerted efforts must be directed towards fortifying public health infrastructure and dismantling systemic barriers perpetuating health inequities, fostering an environment conducive to universal vaccine acceptance and uptake.

In conclusion, the seminal investigations by Nguyen et al. (2021) and Hou et al. (2021) constitute invaluable contributions to the burgeoning discourse surrounding COVID-19 vaccination reluctance and uptake. Through rigorous empirical inquiry and meticulous analysis, these studies offer profound insights into the multifaceted determinants underpinning vaccine hesitancy, while simultaneously delineating a roadmap for formulating and implementing evidence-based interventions to foster widespread vaccine acceptance. As the global community grapples with the imperative of achieving herd immunity amidst a backdrop of entrenched disparities and misinformation, the findings articulated by these seminal works assume heightened significance, underscoring the imperative for collective action and unwavering commitment toward the realization of equitable vaccine delivery techniques.

Baumgaertner et al. (2020) examined political ideology and its effect on trust in vaccine willingness. The research examined data from a nationally representative poll in the United States. Political ideology and trust were revealed to be important determinants of vaccination willingness in the study. Individuals with conservative political ideas were less inclined to get vaccinated than those with liberal political beliefs. Vaccine willingness was positively connected to trust in healthcare personnel and organizations. The study emphasized the significance of tailored communication techniques to address vaccination hesitancy across the political spectrum and the impact of political ideology and trust in developing vaccine views. These findings help us comprehend the complicated link between political opinions, trust, and vaccination acceptance.

Yoda et al. (2021) investigated the variables influencing COVID-19 vaccination skepticism and acceptance. The researchers thoroughly reviewed the current literature

to identify significant characteristics linked with vaccination reluctance. Several reasons, including safety concerns, effectiveness perceptions, a lack of faith in the vaccine production process, misinformation, socioeconomic circumstances, cultural attitudes, and religious considerations, contributed to vaccination hesitation in the research (The Executive Office of the President, Sept 2023). The review emphasized the complexity and diversity of vaccination hesitancy, underlining the importance of targeted treatments that address unique concerns and target different demographic segments. This scoping review provides significant insights for policymakers, healthcare practitioners, and researchers seeking to address vaccine hesitancy and improve vaccination uptake by giving a thorough overview of the variables impacting vaccine acceptability.

2.3.2 Individual Factors and COVID-19 Vaccine Uptake

Speer et al. (2021) utilized data from the National Health Interview Survey to assess COVID-19 immunization rates among people with chronic illnesses in the United States. Individuals with diseases such as heart disease, obesity, and cancer had greater rates of immunization than those without these conditions, according to the research. The findings imply that the higher risk of severe disease from COVID-19 drives those with chronic illnesses to be vaccinated. The study underscored the significance of prioritizing immunization efforts and adapting communication tactics to accommodate this vulnerable population's unique concerns and needs. These findings add to our understanding of vaccine uptake among individuals with chronic diseases and can help guide strategies to increase immunization rates in this population.

Speer et al. (2021) conducted a rigorous investigation into the COVID-19 immunization rates among individuals afflicted with chronic illnesses within the

United States, leveraging data gleaned from the esteemed National Health Interview Survey. Their seminal inquiry unveiled a notable trend wherein individuals grappling with a spectrum of chronic maladies, including but not limited to heart disease, obesity, and cancer, exhibited markedly higher rates of immunization in comparison to their healthier counterparts. This discernible uptick in vaccination adherence among the chronically ill populace underscores a compelling nexus between heightened susceptibility to severe COVID-19 outcomes and proactive engagement with vaccination initiatives. Indeed, the findings gleaned from this seminal research serve to improve the pivotal role played by the perceived threat of severe disease in galvanizing vaccine uptake within this vulnerable demographic cohort.

Integral to the improved findings is the implicit recognition of the profound impact wrought by chronic illness in reshaping individual perceptions and behaviors vis-à-vis COVID-19 vaccination. Inextricably intertwined with the imperative of safeguarding personal health and well-being, the heightened vulnerability of individuals burdened with chronic ailments assumes paramount significance in shaping vaccination decision-making processes. Against this backdrop of heightened health risk and concomitant risk aversion, the imperative for tailored immunization strategies tailored to this demographic cohort's unique needs and concerns assumes heightened significance. Public health stakeholders stand poised to cultivate an environment conducive to fostering widespread vaccine acceptance among individuals grappling with chronic illnesses by affording due primacy to the imperatives of prioritization and adaptability.

Furthermore, the seminal contributions of Speer et al. (2021) hold profound implications for formulating and implementing evidence-based interventions aimed at bolstering vaccine uptake among individuals afflicted with chronic diseases. Through

meticulous analysis and interpretation of empirical data, the study improved the prevailing trends and furnished invaluable insights into the underlying determinants shaping vaccination behavior within this demographic stratum. In light of these revelations, the imperative for recalibrating existing communication paradigms to better resonate with the unique concerns and informational needs of individuals with chronic illnesses assumes heightened salience. By harnessing a nuanced understanding of the interplay between chronic illness, vaccine hesitancy, and risk perception, public health authorities stand empowered to craft targeted communication campaigns to engendering trust, dispel misinformation, and foster informed decision-making among this vulnerable demographic cohort.

In summation, the seminal inquiry spearheaded by Speer et al. (2021) represents a pivotal milestone in the ongoing quest to understand and address COVID-19 vaccination behavior among individuals afflicted with chronic illnesses. The study furnishes invaluable insights into the multifaceted interplay of health risk perception, chronic illness, and vaccine uptake through meticulous empirical inquiry and nuanced analysis. By affording due primacy to the imperatives of prioritization, adaptation, and targeted intervention, public health stakeholders stand poised to foster an environment conducive to enhancing vaccine acceptance and uptake among this vulnerable demographic cohort, thereby advancing the goal of collective immunity and public health resilience in the face of the ongoing COVID-19 pandemic.

Barello et al. (2020) researched vaccination reluctance among college students in Italy. The study found that a large minority of students were hesitant, with roughly 40% expressing doubt or refusal to get the vaccination. Concerns about safety and efficacy, diminished trust in the healthcare infrastructure, and dependence on alternative medicine were all factors connected with this reticence (Ministry of

Labour and Social Protection, June 2023). To address vaccination reluctance among university students, the study stressed the significance of tailored interventions such as educational campaigns, honest communication, and addressing particular concerns about vaccine safety and effectiveness. Understanding these aspects is critical for creating effective vaccination acceptance techniques in this demographic.

Krpan et al. (2021) thoroughly investigated the social and behavioral predictors of COVID-19 immunization intentions and results. The study identified significant factors impacting persons' intentions to be vaccinated and their subsequent vaccination practices by assessing the current literature. The findings emphasized the importance of vaccine confidence, perceived advantages and hazards, trust in healthcare practitioners and authorities, prior vaccine experiences, societal norms, and availability of vaccination services. Age, gender, education, income, and race/ethnicity were all characteristics that influenced vaccination intentions and practices (IMF, July 01, 2021). The study addressed the complexities of vaccination decision-making and the significance of addressing individual-level issues to increase vaccine adoption.

Alleaume et al. (2021) conducted a comprehensive inquiry into the determinants of COVID-19 vaccination intention among the general population in France, with a particular emphasis on elucidating relevant variables and gender disparities. Employing a meticulously crafted survey instrument, the study endeavored to capture the multifaceted landscape of individuals' intentions toward COVID-19 vaccination while concurrently exploring the myriad factors shaping their decision-making processes. The empirical findings yielded by this seminal investigation painted a nuanced portrait of vaccine intention within the French populace, with a resounding majority—nearly 80% of respondents—expressing a willingness to avail themselves

of COVID-19 vaccination. Noteworthy correlations emerged between vaccination intention and a constellation of socio-demographic variables, including but not limited to advancing age, higher levels of educational attainment, and the presence of chronic health conditions, thus underscoring the intricate interplay of personal health considerations, risk perception, and proactive health-seeking behaviors.

Of particular salience were the gender disparities unearthed by the study, wherein women exhibited markedly higher levels of vaccination intention in comparison to their male counterparts. This discernible discrepancy underscores the imperative for nuanced, gender-sensitive approaches within vaccination marketing initiatives to foster equitable vaccine uptake across diverse demographic cohorts. The observed gender differences in vaccine intention underscore the need for targeted interventions tailored to address both male and female populations' unique informational needs, concerns, and communication preferences. By embracing a gender-inclusive approach, public health stakeholders stand poised to harness the full spectrum of social determinants shaping vaccination behavior, fostering a more equitable and inclusive vaccine acceptance and uptake landscape.

Furthermore, the findings of Alleaume et al. (2021) hold profound implications for formulating and implementing evidence-based interventions aimed at bolstering vaccine acceptance and uptake within the French populace. By elucidating the multifaceted determinants underpinning vaccination intention, the study furnishes invaluable insights into the underlying drivers and barriers shaping public attitudes towards COVID-19 vaccination. In light of these revelations, the imperative for tailored communication strategies aimed at dispelling misinformation, fostering trust, and engendering informed decision-making assumes heightened salience. Moreover, the observed correlations between vaccination intention and socio-demographic

variables underscore the need for targeted interventions to address systemic barriers to access and foster a culture of health equity and inclusivity within vaccine distribution frameworks.

Important is the recognition of the pivotal role played by proactive public health interventions in shaping vaccination behavior and fostering societal resilience amidst the ongoing COVID-19 pandemic. By prioritizing data-driven decision-making, transparency, and community engagement, public health authorities stand poised to cultivate an environment conducive to fostering widespread vaccine acceptance and uptake. Moreover, the observed gender disparities in vaccination intention underscore the need for gender-sensitive approaches within public health communication campaigns to address diverse demographic cohorts' unique informational needs and concerns. Through concerted efforts aimed at fostering trust, dispelling misinformation, and engendering a culture of proactive health-seeking behaviors, public health stakeholders stand empowered to surmount the formidable challenges posed by vaccine hesitancy and forge a path toward collective immunity and societal resilience in the face of the ongoing COVID-19 pandemic.

Fisher et al. (2020) studied US adults' perceptions regarding a possible SARS-CoV-2 vaccination. The study used an online survey to measure individuals' vaccination acceptability, concerns, and perceived obstacles. The data revealed that almost two-thirds of those polled were willing to take a COVID-19 vaccination. Older age, better education levels, and perceived vaccination efficacy were all connected with vaccine adoption. Concerns about the adverse effects of rushed development and vaccine politics were mentioned as hurdles to immunization. The study also found racial/ethnic differences in vaccination acceptability, with Black respondents having lower rates (World Economic Forum, 2022).

Fisher et al. (2020) conducted a comprehensive investigation into the perceptions and attitudes of US adults concerning the prospective administration of a SARS-CoV-2 vaccination. Leveraging the methodological framework of an online survey, the study endeavored to gauge the nuanced landscape of vaccination acceptability, attendant concerns, and perceived impediments across a diverse spectrum of individuals. The empirical data from this inquiry unveiled a nuanced tapestry of attitudes, wherein nearly two-thirds of respondents expressed a willingness to avail themselves of a COVID-19 vaccination. Noteworthy associations emerged between certain demographic variables and vaccine adoption, with older age cohorts and individuals with higher educational attainment levels exhibiting a propensity towards embracing vaccination initiatives. Crucially, the perceived efficacy of the vaccine emerged as a potent driver underpinning acceptance, underscoring the pivotal role played by information dissemination and education in shaping public attitudes towards vaccination.

However, amidst the prevailing tide of acceptance, the study unearthed a constellation of concerns and barriers perceived to impede widespread vaccine uptake. Among these apprehensions were fears surrounding potential adverse effects, anxieties stemming from the perceived hastiness of vaccine development, and apprehensions tethered to the politicization of vaccination initiatives. These apprehensions, while varied, collectively underscored the imperative for transparent communication, rigorous safety monitoring, and the cultivation of public trust in the scientific rigor underpinning vaccine development and deployment. Furthermore, the study unearthed notable racial and ethnic disparities in vaccination acceptability, with Black respondents evincing comparatively lower rates of willingness to embrace vaccination initiatives. This discrepancy underscores the exigency of tailored interventions to

address marginalized communities' unique concerns and informational needs, thereby fostering an environment conducive to equitable vaccine distribution and uptake.

Integral to the improved findings is the recognition of the nuanced interplay between socio-demographic variables, vaccine hesitancy, and prevailing attitudes towards vaccination. By meticulously unraveling the complex web of factors underpinning vaccination decision-making processes, the study furnishes invaluable insights into the underlying determinants shaping public attitudes towards COVID-19 vaccination. In doing so, it underscores the imperative for targeted interventions geared towards addressing specific concerns and barriers perceived to impede vaccine acceptance, while simultaneously fostering an environment conducive to informed decision-making and equitable vaccine distribution. Moreover, the study serves as a clarion call for public health stakeholders to adopt a multifaceted approach wherein transparent communication, community engagement, and evidence-based interventions converge to engender trust, dispel misinformation, and foster widespread vaccine acceptance among diverse demographic cohorts.

The seminal inquiry spearheaded by Fisher et al. (2020) represents a pivotal milestone in the ongoing quest to understand and address COVID-19 vaccination behavior within the United States. Through meticulous empirical inquiry and nuanced analysis, the study furnishes invaluable insights into the multifaceted interplay of demographic variables, vaccine hesitancy, and prevailing attitudes towards vaccination. By affording due primacy to the imperatives of transparency, equity, and community engagement, public health stakeholders stand poised to foster an environment conducive to enhancing vaccine acceptance and uptake, thereby advancing the goal of collective immunity and public health resilience in the face of the ongoing COVID-19 pandemic.

Dror et al. (2020) identified vaccination reluctance as a key barrier to fighting COVID-19. The study investigated reluctance among the general public in Israel using an online survey. The data indicated that many respondents were skeptical of a possible COVID-19 vaccination. The chief reasons for reticence were concerns regarding safety, effectiveness, and adverse effects. Hesitancy was impacted by trust in healthcare practitioners and authorities and dependence on alternative medicine. The study stressed the need for focused communication tactics to address misunderstandings, provide factual information, and build confidence in vaccine development. Proactive measures to reduce vaccination reluctance and encourage adoption are critical for effective COVID-19 pandemic control.

2.3.3 Perceptual Factors and COVID-19 Vaccine Uptake

Lazarus et al. (2021) performed a global survey in 19 countries to explore the possible adoption of a COVID-19 vaccination. The survey included over 13,000 people and discovered that vaccination intention varied from 54.8% in Russia to 89.1% in China. Higher trust in healthcare experts, belief in vaccination safety, and lower levels of vaccine misinformation were all connected with vaccine adoption. Concerns regarding safety and negative effects were major roadblocks to adoption. The study underscored the significance of customized communication tactics to meet particular issues and increase vaccination adoption globally. These findings shed light on the global landscape of COVID-19 vaccine acceptability. They will help to influence public health initiatives to increase vaccination uptake (International Trade and Recovery Strategies in Kenya in the Context of COVID-19, January 2022).

The findings of Fisher et al. (2020) underscore the pivotal role played by nuanced socio-demographic factors in shaping individuals' attitudes towards COVID-19 vaccination. The observed associations between older age and higher educational

attainment with increased vaccine acceptance resonate with existing literature highlighting the influence of socio-economic status and health literacy on health-related decision-making processes. Older individuals, often possessing a heightened awareness of COVID-19-related morbidity and mortality severity, may exhibit a greater propensity towards embracing vaccination initiatives as a proactive measure to safeguard personal health and well-being. Similarly, individuals with higher educational attainment levels may exhibit greater receptivity towards vaccination due to enhanced access to accurate health information, heightened health literacy, and a propensity towards evidence-based decision-making.

Moreover, the improved concerns surrounding potential adverse effects, the perceived hastiness of vaccine development, and the politicization of vaccination initiatives underscore the imperative for robust risk communication strategies to address and mitigate vaccine hesitancy. Transparent communication, grounded in scientific evidence and delivered in a culturally sensitive manner, can assuage fears, dispel misinformation, and foster trust in the safety and efficacy of COVID-19 vaccines. Additionally, the observed racial and ethnic disparities in vaccination acceptability highlight the need for targeted interventions tailored to address the unique concerns and informational needs of historically marginalized communities. Culturally competent communication strategies, community engagement initiatives, and partnerships with trusted community leaders can serve as invaluable conduits for fostering trust and enhancing vaccine acceptance within these demographic cohorts.

Furthermore, the findings of Fisher et al. (2020) resonate with the broader imperative of fostering equitable vaccine distribution and uptake within the United States. As the nation grapples with the imperative of achieving herd immunity amidst a backdrop of entrenched disparities and misinformation, the improved insights serve as a clarion

call for collective action and unwavering commitment toward the realization of equitable vaccine delivery techniques. By prioritizing vulnerable populations, addressing systemic barriers to access, and fostering a culture of trust and collaboration, public health stakeholders stand poised to surmount the formidable challenges posed by vaccine hesitancy and forge a path toward collective immunity and societal resilience in the face of ongoing COVID-19 pandemic.

Fisher et al. (2020) represent a seminal contribution to the burgeoning discourse surrounding COVID-19 vaccination behavior within the United States. The study furnishes invaluable insights into the complex interplay of socio-demographic variables, vaccine hesitancy, and prevailing attitudes towards vaccination through meticulous empirical inquiry and nuanced analysis. By affording due primacy to the imperatives of transparency, equity, and community engagement, public health stakeholders stand empowered to foster an environment conducive to enhancing vaccine acceptance and uptake, thereby advancing the goal of collective immunity and public health resilience in the face of the ongoing COVID-19 pandemic.

Callaghan et al. (2021) surveyed individuals in the United States to determine correlations and inequalities related to COVID-19 vaccination reluctance. The research indicated that higher reluctance was linked to specific demographic factors, including younger age, lower levels of education, and belonging to non-white racial or ethnic groups. Political ideology, vaccination conspiracy ideas, and disinformation concerning COVID-19 vaccines all had a role. The study stressed the significance of focused interventions to alleviate reluctance in certain demographic categories and precise information transmission to counteract disinformation.

Wong et al. (2021) explored the acceptance and administration of COVID-19 vaccines in Hong Kong using the Health Belief Model (HBM). The study used a population-based survey to analyze people's beliefs, attitudes, and vaccination intentions. The data demonstrated that vaccine uptake was impacted by anticipated vulnerability to COVID-19, illness severity, advantages and obstacles to immunization, and signals to action. Individuals who reported increased vulnerability, severity, advantages, and action signals were more inclined to accept the vaccination. The study underscored the need to apply the HBM framework to address beliefs and perceptions in order to increase vaccination acceptability. These findings help to understand the factors that influence vaccination acceptability in Hong Kong and help to lead the creation of focused programs to increase uptake.

Wong et al. (2021) embarked on a comprehensive exploration into the dynamics of COVID-19 vaccine acceptance and administration within the unique socio-cultural milieu of Hong Kong, drawing upon the theoretical underpinnings of the Health Belief Model (HBM) as an analytical framework. Leveraging the methodological apparatus of a population-based survey, the study sought to improve the intricate nexus of beliefs, attitudes, and vaccination intentions shaping individual decision-making processes. The empirical findings furnished by this seminal investigation unveiled a nuanced tapestry of vaccine uptake, wherein a constellation of factors—including anticipated vulnerability to COVID-19, perceptions of illness severity, perceived advantages and obstacles to immunization, and salient signals to action—emerged as pivotal determinants shaping individuals' propensity towards embracing vaccination initiatives. Notably, individuals who reported heightened levels of perceived vulnerability, the severity of illness, perceived benefits of vaccination, and exposure to actionable cues were observed to exhibit greater inclination towards

accepting the COVID-19 vaccination, thus underscoring the intricate interplay of cognitive and affective factors underlying vaccine acceptance within the Hong Kong populace.

Integral to the improved findings is the implicit recognition of the pivotal role played by the Health Belief Model (HBM) in providing a theoretical lens through which to understand and address prevailing beliefs and perceptions surrounding COVID-19 vaccination. By positing a conceptual framework grounded in the interplay of perceived susceptibility, severity, benefits, and cues to action, the HBM serves as a valuable heuristic device for elucidating the cognitive pathways underpinning health-related decision-making processes. The observed correlations between HBM constructs and vaccination acceptance underscore the imperative for targeted interventions to address salient beliefs and perceptions, fostering an environment conducive to enhancing vaccine acceptability within the Hong Kong populace. Moreover, the study highlights the pragmatic utility of applying theoretical frameworks such as the HBM in guiding the design and implementation of focused intervention programs to augment vaccine uptake, thereby advancing the goal of population-wide immunity and public health resilience in the face of the ongoing COVID-19 pandemic.

Furthermore, the findings of Wong et al. (2021) hold profound implications for formulating and implementing evidence-based interventions aimed at bolstering vaccine acceptance and uptake within the Hong Kong populace. By elucidating the complex interplay of cognitive, affective, and contextual factors shaping vaccination behavior, the study furnishes invaluable insights into the underlying drivers and barriers shaping public attitudes towards COVID-19 vaccination. In light of these revelations, the imperative for tailored communication strategies aimed at dispelling

misinformation, fostering trust, and engendering informed decision-making assumes heightened salience. Moreover, the observed correlations between HBM constructs and vaccination intention underscore the need for targeted interventions to address systemic barriers to access and foster a culture of health equity and inclusivity within vaccine distribution frameworks.

Moreover, the pragmatic utility of the Health Belief Model (HBM) in guiding the design and implementation of focused intervention programs aimed at augmenting vaccine uptake is underscored by the findings of Wong et al. (2021). By positing a conceptual framework grounded in the interplay of perceived susceptibility, severity, benefits, and cues to action, the HBM offers a valuable heuristic device for elucidating the cognitive pathways underpinning health-related decision-making processes. The observed correlations between HBM constructs and vaccination acceptance underscore the imperative for targeted interventions to address salient beliefs and perceptions, fostering an environment conducive to enhancing vaccine acceptability within the Hong Kong populace. Moreover, the study highlights the pragmatic utility of applying theoretical frameworks such as the HBM in guiding the design and implementation of focused intervention programs to augment vaccine uptake, thereby advancing the goal of population-wide immunity and public health resilience in the face of the ongoing COVID-19 pandemic.

The seminal inquiry spearheaded by Wong et al. (2021) represents a seminal contribution to the burgeoning discourse surrounding COVID-19 vaccination behavior within Hong Kong. Through meticulous empirical inquiry and nuanced analysis, the study furnishes invaluable insights into the complex interplay of cognitive, affective, and contextual factors shaping vaccination behavior. This underscores the imperative for tailored interventions to foster widespread vaccine

acceptance and uptake. By affording due primacy to the imperatives of transparency, equity, and community engagement, public health authorities stand empowered to cultivate an environment conducive to enhancing vaccine acceptance and uptake, thereby advancing the goal of collective immunity and societal resilience in the face of the ongoing COVID-19 pandemic.

Brewer et al. (2020) investigated the psychological aspects influencing vaccine uptake and proposed solutions to increase immunization rates. The study investigates several aspects that impact vaccine-related attitudes and behaviors, such as risk perception, social norms, cognitive biases, and decision-making processes. The authors recommend evidence-based remedies based on psychological theories and research, such as giving correct information, eliminating cognitive biases, capitalizing on social norms, and employing persuasive message tactics. The study emphasizes developing successful treatments and strategies for raising immunization rates using a multidisciplinary approach that integrates psychological considerations. This study emphasizes the importance of psychological aspects in vaccine acceptance and offers useful advice for increasing immunization rates through focused psychological treatments.

Dodd et al. (2021) explored COVID-19 immunization concerns and motives. The study investigated opinions regarding COVID-19 vaccinations using an online poll in Australia. Concerns regarding side effects, immunization safety, and long-term impacts were common. Personal health protection and the desire to safeguard vulnerable people drove vaccination motivations. The study stressed the significance of open and honest communication when it comes to safety and side effects issues. Understanding people's motives and concerns can help lead to tailored vaccination

acceptability and uptake initiatives. This study sheds light on COVID-19 vaccination decision-making and informs successful communication and education initiatives.

2.4 Research Gaps

There were many loopholes in the uptake of COVID-19 vaccines. Investigating the level of knowledge and awareness about COVID-19 vaccines among traders in Wakulima Market helped understand and provided insights into targeted education and awareness campaigns. The study assessed the traders' accessibility to COVID-19 vaccination services, including the proximity of vaccination centers, availability of convenient vaccination schedules, and any logistical barriers that hindered vaccine uptake. We explored the factors contributing to vaccine hesitancy among traders in the market. This included understanding their concerns, beliefs, and attitudes towards vaccines and addressing any misinformation or misconceptions that may have influenced their decision-making. We examined the level of trust in the healthcare system among traders and how it influenced their confidence in COVID-19 vaccines. Understanding their perceptions of healthcare providers and institutions provided insights into building trust and improving vaccine acceptance. Additionally, we understood the cultural and religious beliefs and practices that influenced vaccine acceptance among traders. The study explored the intersection of cultural values, religious beliefs, and vaccine decision-making processes. In addressing these research gaps, the study provided a comprehensive understanding of the aspects influencing the COVID-19 vaccine uptake amongst traders in Wakulima Market and helped in tailoring interventions to improve vaccine acceptance and coverage in this specific population.

2.5 Conceptual Framework

A theoretical structure or model that governs the creation and organization of research studies or initiatives is referred to as a conceptual framework. It provides a foundation for understanding, analyzing, and interpreting complex phenomena by outlining the key concepts, variables, relationships, and assumptions involved in the research inquiry. The independent variables are contextual, individual, and perceptual factors, while the COVID-19 vaccine uptake was the dependent variable, as presented in Figure 1 below.



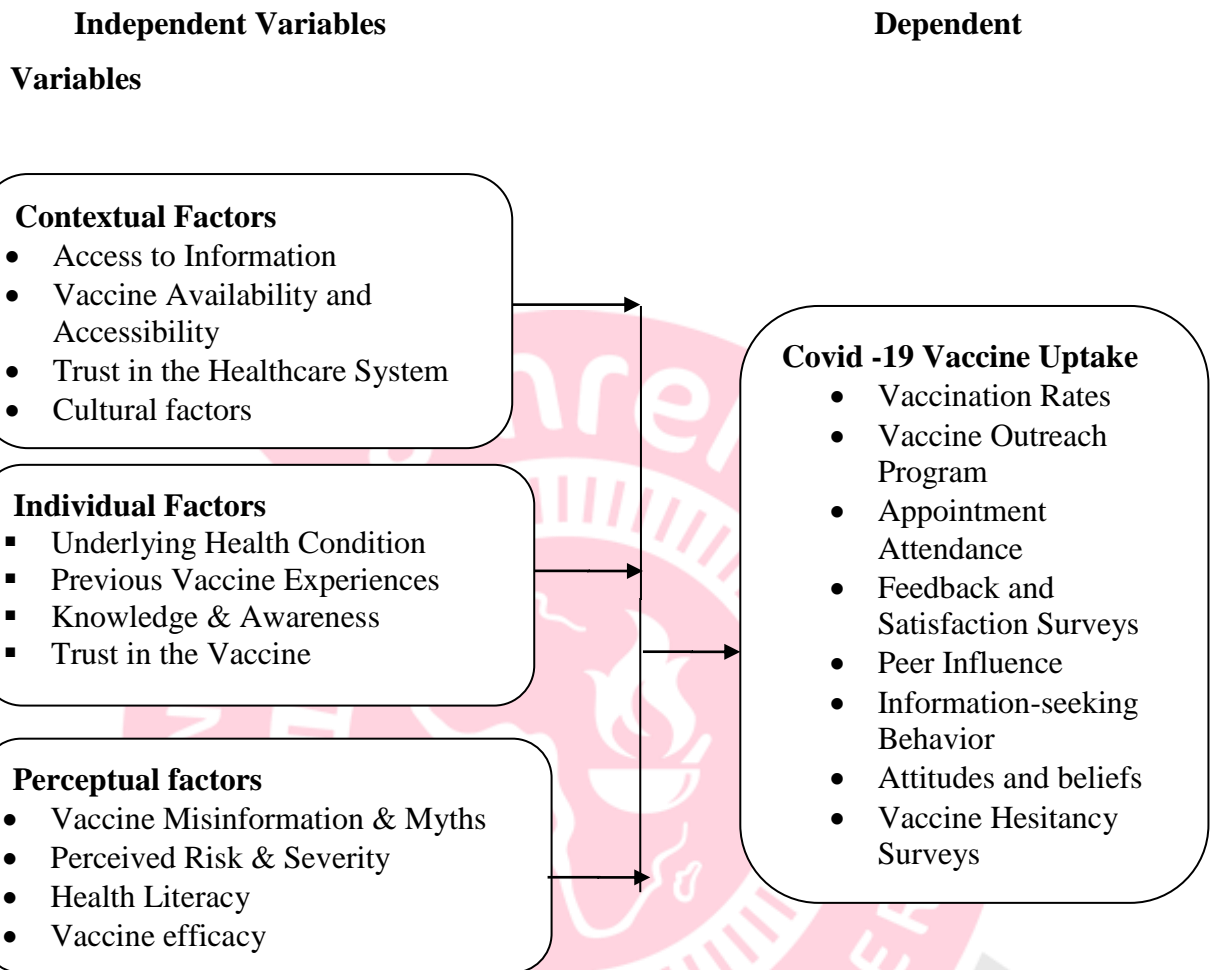


Figure 1: Conceptual Framework

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapter details the methodologies and approaches used to fulfill the study's objectives. It specifically covers the research design adopted, the target population identified for the study, the size of the sample, the sampling techniques employed, the instruments used in the research, the procedures implemented for data collection, the techniques applied in analyzing the data, and the ethical considerations taken into account.

3.2 Research Design

The research design is a strategy for answering the problems the study seeks to solve. A mixed-methods research strategy was used in this study. This study used qualitative and quantitative data to identify the determinants of COVID-19 vaccination uptake amongst traders in Wakulima Market, Nairobi City County, Kenya. Mugenda and Mugenda (2003) outlined a mixed-methods research approach aimed at gathering data without altering the research environment and focused on naturally unfolding events beyond the study's control. This methodology was selected because it permits researchers to comprehensively comprehend a research subject by combining qualitative and quantitative data. It facilitates a thorough examination of intricate phenomena by capturing the research issue's extensive scope and intricate details (Kothari, 2014). Generally, the rationale for the study design was pegged on its ability to provide a comprehensive understanding of the components influencing COVID-19 vaccine uptake among traders in Wakulima Market.

Subsequently, adopting a simple random sampling methodology epitomizes a meticulous approach geared towards impartiality and statistical robustness. A

comprehensive list of all 3,000 traders operating in Wakulima Market was obtained from the market administration. This list served as the sampling frame. The sample size was calculated to be 353 traders. To ensure systematic selection, a sampling interval (k) was determined by dividing the total population (3,000) by the desired sample size (353). The calculated interval was approximately 8.5, which was rounded to 8. A random number generator selected a random start point within the first sampling interval (1 to 8). Suppose the random number generated was 5, meaning the fifth trader on the list was the first to be selected. From the fifth trader, every eighth trader on the list was selected to participate in the study. This process continued until the desired sample size of 353 traders was reached. Equitable representation across the market's various segments was assured through this methodological framework, fostering a scenario wherein every trader stood an equal prospect of inclusion within the study cohort. By mitigating the inherent biases associated with selective sampling practices, this systematic approach upholds the integrity and fidelity of the ensuing data, thereby bolstering the reliability and generalizability of subsequent findings.

3.3 Study Area

Wakulima Market was the study area of interest. Wakulima Market is situated in Muthurwa along Haile Selassie Avenue within Nairobi City County. The products sold at the market mainly include potatoes, vegetables, fruits, and maize. The Market had a population of three thousand traders (Nairobi County Government, 2022). The rapid growth in traders had been because of rural-urban migration, whereby many people search for jobs and a livelihood in urban areas. The other factor was the strategic location of the Market. The high population within the small market

enhances much contact amongst people through trade leading to high rates of infection of COVID-19, hence the study.

3.4 Target Population

The study's target population was all Wakulima Market, Nairobi City County traders. The market had a population of three thousand traders (Nairobi County Government, 2022). These provided information on determinants of COVID-19 vaccine uptake amongst traders in Wakulima Market, Nairobi City County. Wakulima Market was an appropriate study population as it held people from all walks of life and with different educational backgrounds. Therefore, their reasoning towards the vaccine may have differed, presenting a relatively well-informed conclusion on the study matter. Large-scale traders, mostly farmers, operated in the early morning hours as they supplied the traders with commodities. However, the proposed study was conducted during the day to ensure the exclusivity of traders. Furthermore, the study targeted Key Informant Interviews (KII) to participate in the face-to-face interviews. The KII included county health officials and market leadership/management.

3.4.1 Inclusion Criteria

The study included traders operating in Wakulima Market, Nairobi City County. However, the participants had to consent after being presented with a consent form. This aspect ensured the respondents had adequate experience and exposure within the market atmosphere. More importantly, only traders aged 18 years and above were included, as they are legally considered adults capable of consenting to occurrences.

3.4.2 Exclusion Criteria

The traders in Wakulima Market, Nairobi City County, declined to sign the participation approval. Also, the study excluded the traders who were not of age. They

were not legally considered adults and hence, could require parental consent or make uninformed decisions.

3.5 Sample Size

3.5.1 Sample Size

The Yamane's formula of 1967 was employed in determining the sample size.

$$n = \frac{N}{1 + N(e)^2}$$

Where: N = Population size

n = sample size

e = Margin error of the study set at $\pm 5\%$

Sample size was

$$n = \frac{3000}{1 + 3000(0.05)^2} = 353 \text{ respondents}$$

353 respondents, which was 12% of the target population.

3.5.2 Sampling Procedure

The sampling procedure involves the approach or method employed to choose a portion of individuals or entities from a larger population for research or data collection. It is essential to ensure that the selected sample accurately represents the population, enabling broader conclusions (Bryman & Bell, 2015). This research employed a simple random sampling method. This approach guaranteed that everyone in the population had an equal chance of being selected for the sample. This aided in

producing a representative sample that correctly reflected the population's traits and variety. Furthermore, random sampling reduces the possibility of selection bias, which occurs when particular groups or people are systematically over- or under-represented in a sample. Furthermore, the study used a purposive sampling strategy to choose 30 Key Informant Interview (KII) respondents to participate in face-to-face interviews. Purposive sampling is important because of its capacity to target specific individuals or groups who bring unique viewpoints or knowledge to the study issue (Palinkas et al., 2015).

The research endeavor availed itself of a simple random sampling methodology, a cornerstone in quantitative research methodologies renowned for its efficacy in eliminating systematic biases. This methodological choice conferred a vital attribute of fairness upon the sampling process, ensuring that each constituent of the target population possessed an identical likelihood of inclusion within the study sample. By adhering rigorously to principles of randomness, the resultant sample garnered an inherent representativeness that closely mirrored the intricate tapestry of the broader population. Through the systematic annulment of predispositions and predilections, this methodological approach engendered a level playing field wherein every individual within the population stood poised to contribute meaningfully to elucidate research inquiries.

Moreover, in recognition of the multifaceted nature of the research domain, the study also embraced a purposive sampling strategy to identify and engage 30 Key Informant Interview (KII) respondents. Purposefully selecting individuals possessing specialized insights or experiential acumen pertinent to the research context afforded a nuanced depth to the investigative pursuits (UN Trade and Development, 2023). This deliberate sampling modality, characterized by its precision and discernment,

facilitated the identification and recruitment of individuals deemed instrumental in providing unique perspectives or unparalleled expertise germane to the thematic underpinnings of the study. In effect, incorporating purposive sampling enriched the data corpus with nuanced insights and diverse viewpoints, enriching the interpretive landscape and augmenting the comprehensiveness of the study outcomes.

The utilization of face-to-face interviews as the primary mode of engagement with KII respondents accentuated the qualitative dimensions inherent within the research design. The interpersonal exchange fostered by this mode of inquiry facilitated the solicitation of in-depth narratives and experiential insights. It cultivated an environment conducive to exploring nuanced nuances and subtle nuances. By transcending the limitations inherent within quantitative data modalities, face-to-face interviews afforded a fertile ground for the cultivation of rich, contextually embedded narratives, thereby enriching the qualitative dimensions of the study and engendering a holistic understanding of the phenomena under scrutiny.

3.6 Instrumentation and Data Collection Procedure

The researcher employed both questionnaires and interviews. This dual approach was chosen to ensure a comprehensive and reliable dataset. Questionnaires were distributed primarily among traders to leverage their broad reach and yield generalizable results. They consisted of closed-ended questions to maintain uniformity in responses, aiding comparative analysis. Concurrently, interviews were conducted to obtain in-depth insights. These interviews, structured and aligned with the study's objectives, allowed for a more nuanced exploration of topics. They were chosen for their analytic simplicity, cost-effectiveness, and facilitation of generalizable findings.

During the data collection phase, participants received questionnaires with a clear instructions and consent form. To optimize response rates and prevent loss, the "drop and pick on the spot" method was employed, with each participant taking roughly 15-20 minutes to complete the questionnaire. This phase lasted three weeks, allowing sufficient time for comprehensive data gathering. Interviews were scheduled at the participants' places of work and typically lasted 25-30 minutes, ensuring convenience for the respondents and thorough data collection.

3.7 Pretest

While creating a questionnaire, conducting a pretest is crucial for enhancing the internal coherence and structure of the research tool (Kothari, 2014). Therefore, a pretest was conducted among twenty traders at the Village market. The objective was to identify and rectify any inconsistencies or errors, enhancing the quality of the data collected for the primary study. The Village market was chosen due to its similarity to Wakulima market in conditions, and it was not included in the main study.

Conducting a pretest is a foundational step in the methodological refinement process, offering researchers a valuable opportunity to scrutinize the internal coherence and structural integrity of the research instrument before its deployment in the primary study (Kothari, 2014). In this investigation, the pretest was strategically conducted among twenty traders at the Village market. This methodological decision was predicated upon the perceived similarities between the Village market and the focal Wakulima market regarding prevailing conditions, thereby rendering it a suitable proxy for gauging the efficacy and appropriateness of the research instrument in a real-world setting.

The objective of the pretest was to systematically identify and rectify any inconsistencies or errors inherent within the questionnaire, thus enhancing the quality and reliability of the data collected for subsequent analyses. By subjecting the research instrument to empirical scrutiny within a controlled environment, researchers can effectively gauge its efficacy in eliciting accurate and meaningful responses from study participants. Moreover, the pretest serves as a mechanism for validating the comprehensibility and relevance of the survey items, thereby ensuring their alignment with the research objectives and theoretical framework underpinning the study.

The decision to conduct the pretest among traders at the Village market aligns with established methodological principles emphasizing the importance of piloting research instruments within contexts analogous to the study population. By selecting a market with comparable characteristics to the focal Wakulima market, researchers sought to mitigate potential confounding variables and extraneous influences that could compromise the validity and generalizability of the pretest findings. Moreover, excluding the Village market from the main study underscores the methodological rigor underpinning the pretest, whereby researchers exercised caution in delineating distinct phases of data collection to prevent contamination or bias in subsequent analyses.

Throughout the pretest process, meticulous attention was devoted to soliciting participant feedback regarding the survey items' clarity, relevance, and comprehensibility. This iterative approach facilitated a nuanced understanding of potential sources of ambiguity or confusion, empowering researchers to refine and optimize the research instrument. Additionally, the pretest provided an invaluable opportunity to assess the feasibility and practicality of data collection procedures,

thereby informing logistical considerations and resource allocation strategies for the primary study.

The pretest conducted among traders at the Village market represents a pivotal methodological endeavor aimed at enhancing the internal coherence and structural integrity of the research instrument deployed in the primary study. By subjecting the questionnaire to empirical scrutiny within a real-world setting analogous to the study population, researchers could identify and rectify potential inconsistencies or errors, thereby enhancing the quality and reliability of the data collected for subsequent analyses. Through meticulous attention to detail and a commitment to methodological rigor, the pretest served as a foundational step in the research process, laying the groundwork for the successful execution of the primary study and the generation of meaningful insights into the determinants of COVID-19 vaccination uptake among traders in Nairobi City County, Kenya.

3.7.1 Validity

As stated by Mugenda and Mugenda (1999), validity is defined as the correctness and significance of conclusions guided by the findings of this study. It is the extent to which the data analysis results accurately represent the research variables. Face and content validity will be evaluated in the study to enhance presentability and ensure that the tools collect the correct required data. The study instruments were distributed to supervisors, researchers, and department peers to evaluate accuracy and adequacy. Their ideas and explanations were employed to enhance the sufficiency of the studied subject, leading to the refinement of tools. To ensure credibility, the data collection instruments needed to incorporate information directly pertinent to establishing the necessity or identifying gaps (Koul, 1992).

To fortify the credibility and robustness of the data collection instruments, concerted efforts were directed toward incorporating information directly pertinent to establishing the necessity of the study and identifying potential gaps in existing knowledge paradigms (Koul, 1992). By aligning the content and scope of the research tools with the research objectives and theoretical framework, researchers sought to ensure the fidelity and relevance of the data collected for subsequent analyses. Moreover, the iterative process of soliciting feedback from domain experts and stakeholders served as a mechanism for enhancing the comprehensiveness and precision of the study instruments, thereby bolstering their efficacy in capturing the multifaceted dimensions of the research phenomenon under scrutiny.

The concept of reliability pertains to the consistency and stability of research findings over time and across different contexts (Bryman & Bell, 2015). By employing rigorous data collection protocols and standardized procedures, researchers sought to mitigate potential sources of error or bias, thereby enhancing the reliability and trustworthiness of the empirical findings. Furthermore, the systematic evaluation of face and content validity served as a mechanism for fortifying the research instruments' internal coherence and structural integrity, thereby engendering a robust foundation upon which subsequent analyses could be predicated.

Meticulous attention was devoted to safeguarding the research findings' credibility, validity, and reliability. Through a systematic process of soliciting feedback, refining research instruments, and aligning data collection protocols with established methodological principles, researchers endeavored to ensure the fidelity and accuracy of the empirical findings. Moreover, by incorporating insights gleaned from domain experts and stakeholders, researchers enhanced the comprehensiveness and relevance

of the study instruments, thereby facilitating a nuanced understanding of the research phenomenon under scrutiny.

The methodological framework adopted in this study underscores a steadfast commitment to upholding the principles of credibility, validity, and reliability in pursuing empirical inquiry. Through a systematic process of methodological refinement and validation, researchers sought to fortify the internal coherence and structural integrity of the research instruments, thereby enhancing the fidelity and relevance of the data collected for subsequent analyses. By adhering rigorously to established methodological principles and soliciting feedback from domain experts and stakeholders, researchers were able to engender a robust foundation upon which meaningful conclusions could be drawn, thus advancing the goal of generating empirical insights into the determinants of COVID-19 vaccination uptake among traders in Nairobi City County, Kenya.

3.7.2 Reliability

Reliability was a major concern in the study, and the researcher pre-tested the tools to determine reliability. The determination of reliability involved giving a single test to a group of individuals, and the scores from one specific item were compared with scores from other items. The reliability index was computed using the internal consistency method. Cronbach's Coefficient Alpha value of .7 and above was accepted for the reliability of the tools.

3.8 Data Analysis

Following the field data collection, a systematic data analysis process ensued. The collected data, encompassing quantitative and qualitative information, underwent organization, coding, and entry into SPSS version 25.0. Descriptive statistical

methods like percentages, frequencies, and tables proved beneficial as they facilitated the straightforward presentation of results through visual aids when needed. Additionally, the research involved correlation and regression analyses to ascertain the interconnections among the variables under study. Thematic analysis guided by the research objectives was employed to analyze the qualitative data. The regression model outlined below was employed to illustrate the association between the study variables: -

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon$$

Where;

Y = COVID-19 vaccine uptake

X_1 = Contextual Factors

X_2 = Individual Factors

X_3 = Perceptual Factors

β_1 , β_2 , and β_3 = Coefficients of determination

ϵ = Error term.

3.9 Pretest Results

The researcher conducted a pretest on 20 traders at the Village market. This step aimed to identify and rectify any inconsistencies, mistakes, or typographical errors, thereby enhancing the quality of the data gathered for the main study. The internal consistency of the study tool was determined using Cronbach's alpha. The results are shown in Table 1 below:

Table 1: Summarized Cronbach's Coefficients

	Cronbach's Alpha	N of Items	Conclusion
Contextual Factors	0.771	8	scale reliable
Individual Factors	0.769	7	scale reliable
Perceptual factors	0.794	7	scale reliable
COVID-19 Vaccine Uptake	0.757	9	
Overall	0.773	31	Instrument reliable

The study tool's internal consistency was .773, which was sufficient for analysis and reporting as it was above .70.

3.10 Response Rate

From a distribution of 353 surveys among participants, 256 were filled out and sent back, resulting in a response rate of 73%, as presented in Table 2 below. According to Mugenda and Mugenda (2009), a response rate exceeding 50% is considered favorable for analysis and presentation purposes.

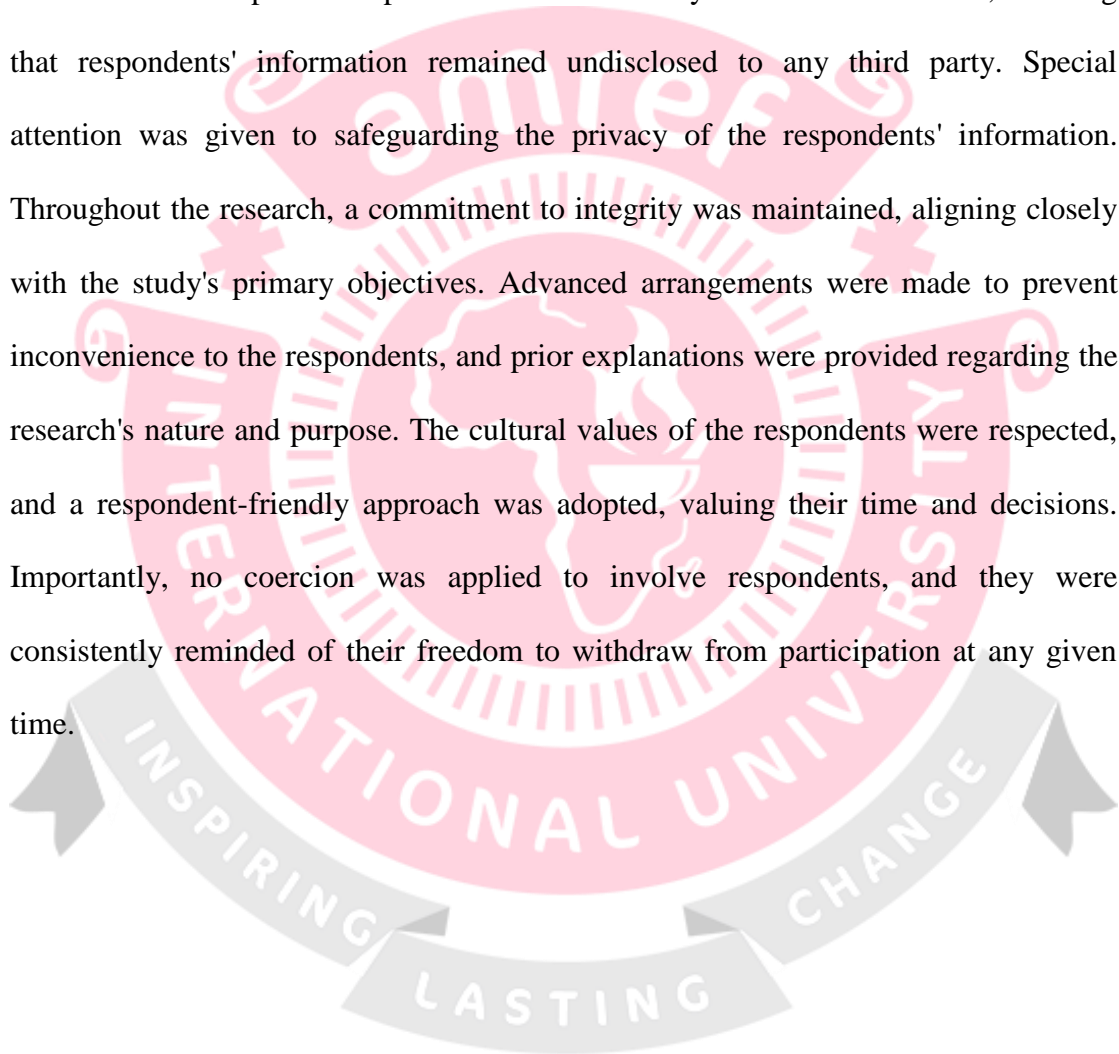
Table 2: Response Rate

Response	Frequency (N)	Percentage (%)
Returned questionnaires	256	73
Unreturned questionnaires	97	27
Total	353	100

3.11 Ethical Considerations

Ethical considerations were deeply integrated into every research project phase, from its planning to the actual execution. The researcher obtained official permissions from

various authorities, including a letter from the AMIU Graduate School, Nairobi City County Government, and a permit from the National Council of Science and Technology (NACOSTI) to conduct the study. Additionally, explicit consent was sought from all participants, granting them the freedom to withdraw from the study at any point or decline to answer specific questions without any pressure. Strict measures were in place to uphold the confidentiality of the collected data, ensuring that respondents' information remained undisclosed to any third party. Special attention was given to safeguarding the privacy of the respondents' information. Throughout the research, a commitment to integrity was maintained, aligning closely with the study's primary objectives. Advanced arrangements were made to prevent inconvenience to the respondents, and prior explanations were provided regarding the research's nature and purpose. The cultural values of the respondents were respected, and a respondent-friendly approach was adopted, valuing their time and decisions. Importantly, no coercion was applied to involve respondents, and they were consistently reminded of their freedom to withdraw from participation at any given time.



CHAPTER 4: RESULTS

4.1 Introduction

The research focused on identifying the factors influencing the acceptance of COVID-19 vaccines among traders in Wakulima market within Nairobi City County, Kenya. The findings were presented using tables and figures, and the analysis and explanations were communicated in written form.

4.2 Background of the Study

The background information sought included the gender, age bracket, marital status, highest level of education, duration of trading at the Wakulima market, income level per month, and whether they had received the COVID-19 vaccination.

4.2.1 Gender

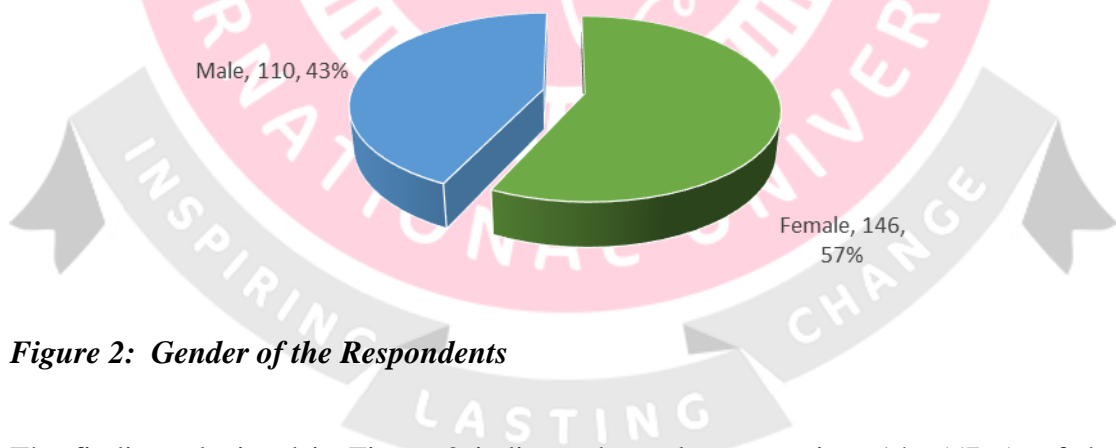


Figure 2: Gender of the Respondents

The findings depicted in Figure 2 indicate that a larger portion, 146 (57%), of the participants were female, whereas 110 (43%) were male. These results suggest that the study paid attention to gender balance during participant selection and data gathering, even though the number of female respondents slightly outnumbered the male participants.

4.2.2 Age Bracket

Table 3: Age Bracket

		_1_Sex_of_the _respondent	Age bracket
N	Valid	256	256
	Missing	0	0
Mean			43.67
Std. Error of Mean			.939
Median			44.00
Mode			52
Std. Deviation			15.020
Variance			225.587
Range			82
Minimum			18
Maximum			100
Sum			11179

As presented in Table 3, the mean age of respondents was 43.67. The median and mode were 44 and 52, respectively, with a standard deviation of 15.02. The variance was recorded at 225.59, with a range of 82 and minimum and maximum of 18 and 100.

4.2.3 Marital Status

Table 4: Marital Status

	Frequency (N)	Percent (%)
Single	100	39
Married	73	29
Divorced	33	13
Widower	13	5
Widow	37	15
Total	256	100

The results in Table 4 show that most 100 (39%) were singles, 73 (29%) were married, and 37 (15%) were widows. Further, 33 (13%) were divorced, while 13 (5%)

were widowers. The outcomes show that over 50% of the traders at Wakulima market were self-dependent, and trading was the main source of livelihood.

4.2.4 Highest Level of Education

Additionally, study Table 5 below the academic qualification achieved by the study participants;

Table 5: Highest Level of Education

_3_What_is_your_level_of_education				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	.8	.8	.8
post_secondary	45	17.6	17.6	18.4
primary	48	18.8	18.8	37.1
secondary	161	62.9	62.9	100.0
Total	256	100.0	100.0	

Table 5 indicates that the majority of the respondents, 161(62.9%), had a secondary school education; 48(18.8%) had a primary school education, and 45(17.6%) had a post-secondary education. The outcomes show that each respondent had a certain level of formal education, which would help in knowing and understanding the contextual, individual, and perceptual factors that influenced the uptake of the COVID-19 vaccines amongst the traders.

4.2.5 Duration of Trading at Wakulima Market

Figure 3 Present outcomes from the respondents on their respective durations of trading at the market.

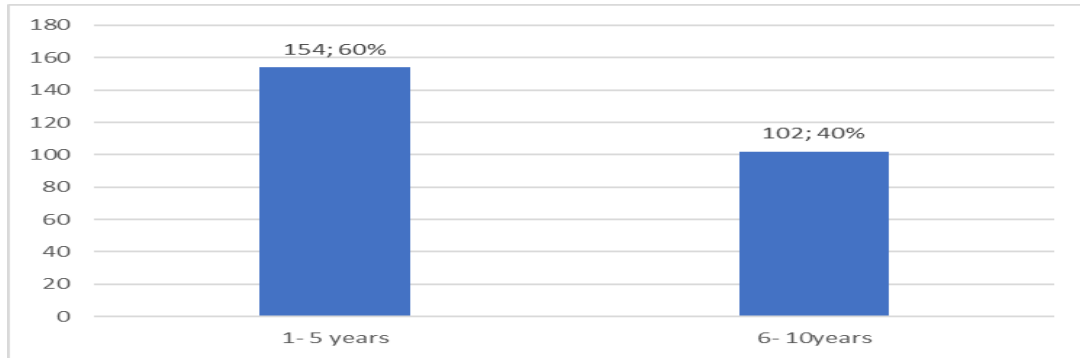


Figure 3: Duration of Trading at Wakulima Market

Figure 3 indicates that the majority, 154(60%) of the respondents had traded at Wakulima Market for a continuous duration of 1-5 years, while 102(40%) had traded at Wakulima Market for a continuous duration of 6-10 years. The results imply that the respondents had been trading in the market during the eruption and spreading of COVID-19; hence, they have information on the challenges of uptaking the COVID-19 vaccines.

4.2.6 Income Level Per Month

In addition, Table 6 presents respondents income level;

Table 6: Income Level Per Month

_1_What_is_your_income_level_per_month

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	.4	.4	.4
above_ksh_20000	50	19.5	19.5	19.9
ksh_0_ksh_10_000	111	43.4	43.4	63.3
ksh_10001_ksh_20000	94	36.7	36.7	100.0
Total	256	100.0	100.0	

Table 6 shows that the majority, 111(43.4%), had a monthly income of Ksh 0 to 10,000; 94(36.7%) had an income of Ksh 10,001-20,000 per month, while 50(19.5%) of the respondents had an income above Ksh 20,000 per month. Results show that the

traders were making a considerable livelihood from the market, and therefore, they had to go to the market irrespective of the presence or absence of COVID-19.

4.2.7 Vaccination

Moreover, the study aimed to establish whether the respondents had received the COVID-19 vaccination, as shown in Figure 4 below;

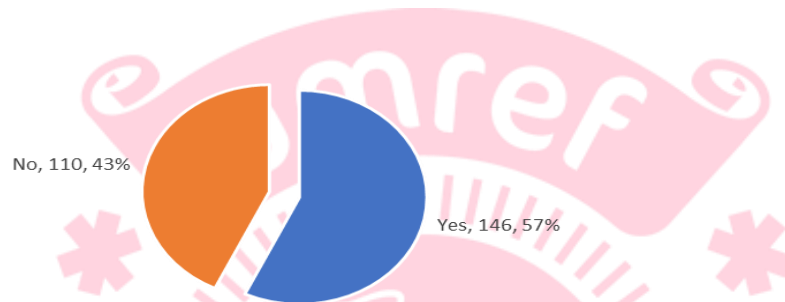


Figure 4: Vaccinated Traders

Figure 4 indicates that 146(57%) respondents had been vaccinated, while 110(43%) had not. The results imply that almost half of the population at Wakulima Market had not received the COVID-19 vaccines.

Using an interview guide, KII was asked to highlight their roles in Nairobi County. Some participants held that they were health officers; a few indicated they worked within the county government offices, while others indicated they were market administrators. In addition, the study asked the KII to rate the uptake of COVID-19 vaccines in Nairobi. Most participants held that COVID-19 vaccine uptake in Nairobi was fairly good, and the vaccination uptake was still growing.

Further, the KII was asked to point out the factors affecting COVID-19 vaccine uptake in Nairobi. Some of the KII held that the availability of vaccines plays a crucial role in determining the uptake. A few explained that if an adequate supply of

vaccines is not consistently maintained, it could lead to hesitancy and reduced uptake among the population. Most held that easy access to vaccination centers and distribution points is important for encouraging uptake. Most held that public trust and confidence in the safety and effectiveness of the vaccines are significant factors. Further, the KII pointed out that misinformation, rumors, and vaccine hesitancy undermined trust and negatively impacted the uptake. Socioeconomic factors such as income level and the traders who opted to go to work rather than visit the vaccination centers. In addition, over 50% of the KII held that cultural and religious beliefs influenced vaccine acceptance and uptake, resulting from misconceptions arising from cultural or religious contexts. A few KII pointed at government policies, regulations, and official recommendations regarding COVID-19 vaccination, where clear and consistent messaging from health authorities helped promote vaccine acceptance and uptake. Further, the majority of the KII held that peer influence and social networks influenced people's decisions to get vaccinated, whereas positive endorsements and experiences shared by friends, family, or influential individuals encouraged vaccine uptake.

4.3 Contextual Factors

The study employed a 5-point rating scale, with 1 indicating strong disagreement and 5 indicating strong agreement. Participants were asked to rate their agreement level with various statements concerning the contextual factors that affect the adoption of COVID-19 vaccines. The rating scale was ideal for the study based on its nature. It has been approved by the WHO Strategic Advisory Group of Experts (SAGE) (Larson et al., 2014). The results of this survey are detailed in Table 7.

Table 7: Contextual Factors

	SD	D	N	A	SA	Mean	Std. Deviation	Skewness	Kurtosis
	N(%)	N(%)	N(%)	N(%)	N(%)				
Trust in the healthcare system affects the uptake	2(1)	2(1)	0(0)	70(27)	182(71)	4.6719	.60208	-2.752	11.687
Religious beliefs negatively impacts the uptake	2(1)	4(2)	0(0)	76(30)	174(68)	4.6250	.65079	-2.538	9.282
There is sufficient access to information on vaccination/vaccines	2(1)	0(0)	0(0)	94(37)	160(63)	4.6016	.57857	-2.118	9.607
Social and peer networks lowers then uptake rates	4(2)	2(1)	0(0)	98(38)	152(59)	4.5313	.69663	-2.427	9.226
Cultural factors negatively affects the uptake	55(22)	101(40)	15(6)	43(17)	42(16)	2.6719	1.40648	.488	-1.170
Vaccine availability influences the uptake	58(23)	107(42)	17(7)	45(18)	29(11)	2.5312	1.31916	.614	-.895
Vaccine accessibility affects the uptake	57(22)	114(45)	18(7)	44(17)	23(9)	2.4609	1.25809	.696	-.681
Literacy barriers affects the uptake	68(27)	127(50)	20(8)	32(13)	29(11)	2.1680	1.06601	.991	.309

As per the outcomes in Table 7, the respondents strongly agreed that trust in the healthcare system affected the uptake (Mean=4.6719) and that religious beliefs negatively impacted the uptake (Mean=4.6250). In addition, the respondents agreed that there was sufficient access to information on vaccination/vaccines (Mean=4.6016) and that social and peer networks affected the uptake rates (Mean=4.5313). Further, the respondents disagreed that cultural factors negatively affected the vaccine uptake (Mean=2.6719) and vaccine availability influenced the uptake (Mean=2.5312). Moreover, the respondents agreed that vaccine accessibility affected the uptake (Mean=2.4609) and that literacy barriers affected the uptake

(Mean=2.1680). The findings suggest that the participants understood how contextual factors impact the uptake of COVID-19 vaccines.

In addition, using an interview guide on KII the study sought to establish their view on the influence of contextual factors on the COVID-19 vaccine uptake amongst traders in Wakulima Market, Nairobi City County. Most of the KII pointed out that the availability and accessibility of accurate and reliable vaccine information play a crucial role. They argued that traders in the Wakulima market had limited access to information due to educational disparities or limited internet access. Further explained that providing clear and concise information in local languages and utilizing various communication channels improved vaccine awareness, understanding, and uptake. Additionally, some KII held that a lack of trust and confidence in vaccines affected the uptake, where traders had specific concerns or doubts about the safety and efficacy of the vaccines. Most of the KII pointed out how health literacy levels among traders vary, impacting their ability to comprehend health-related information. Visual aids, simple language, and interactive educational materials can enhance understanding and facilitate informed decision-making regarding vaccination.

4.4 Individual Factors

Table 8 presents the results of the agreement to statements relating to individual factors on COVID-19 vaccine uptake.

Table 8: Individual Factors

	SD	D	N	A	SA	Mean Statistic	Std. Deviation Statistic	Skewness Statistic	Kurtosis Statistic
	N(%)	N(%)	N(%)	N(%)	N(%)				
Underlying health condition prevents uptake	0(0)	0(0)	0(0)	95(37)	161(63)	4.6289	.48404	-.537	-1.725
Vaccine confidence affects the uptake	0(0)	5(2)	3(1)	103(40)	145(57)	4.5156	.62603	-1.413	3.011
Previous vaccine experiences lowers uptake rates	0(0)	9(4)	1(0)	104(41)	140(55)	4.4688	.69098	-1.576	3.302
Vaccine safety concerns makes people fear uptake	2(1)	4(2)	0(0)	116(45)	134(52)	4.4687	.66199	-1.846	6.464
Trust in the vaccine lowers the uptake	2(1)	22(9)	2(1)	108(42)	122(48)	4.2734	.90934	-1.515	1.998
Knowledge & awareness on vaccine affects the uptake	2(1)	12(5)	2(1)	148(58)	92(36)	4.2344	.75651	-1.515	3.764

Working hours convenience prevents hospital visits	8(3)	16(6)	8(3)	115(45)	109(43)	4.1758	.98038	-1.567	2.345
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The outcomes in Table 8 indicate that the respondents strongly agreed that underlying health conditions prevented uptake (Mean=4.6289) and that vaccine confidence affected the uptake (Mean=4.5156). In addition, the respondents agreed that previous vaccine experiences affected the uptake rates (Mean=4.4764) and that vaccine safety concerns made people fear uptake (Mean=4.4687). Further, the respondents agreed that trust in the vaccine affected the uptake (Mean=4.2734), knowledge and awareness of the vaccine affected the uptake (Mean=4.2344), and that working hours' convenience prevented hospital visits (Mean=4.1758). The results imply that the respondents were aware of individual factors influencing the COVID-19 vaccine uptake.

The KII were asked to indicate their views on the effects of individual factors on the COVID-19 vaccine uptake amongst traders in Wakulima Market, Nairobi City County. Most of the KII held that individual perceptions of personal risk regarding COVID-19 influenced vaccine uptake, where traders who believed they were at a higher risk of contracting the virus or experiencing severe illness were more motivated to get vaccinated. A male KII held that the level of knowledge and awareness about COVID-19 vaccines among individual traders was crucial, where those who had access to accurate information, understood the benefits of vaccination, and were aware of the vaccination process were likely to get vaccinated. Some KII pointed out that individual attitudes and concerns towards vaccines contributed to vaccine hesitancy, where most traders had reservations about the safety, efficacy, or

side effects of COVID-19 vaccines rejected uptake. Few KII indicated that previous experiences with vaccines influenced individual attitudes towards COVID-19 vaccination in that traders with positive experiences with vaccines in the past were open to receiving the COVID-19 vaccine. Further, a few KII held that individual health beliefs and practices shaped vaccine acceptance for some traders, explaining that some traders prioritized traditional or alternative health practices over vaccines. Some of the KII held that the influence of family, friends, and trusted individuals within personal networks affected individual decisions regarding vaccination, where positive endorsements and recommendations from close contacts who had already been vaccinated encouraged individuals to follow suit. A few KII held that time constraints and work commitments affected uptake, where traders had demanding work schedules, which created time constraints and barriers to accessing vaccination services.

4.5 Perceptual Factors

Table 9 tabulates results on the level of agreement to statements relating to perceptual factors on COVID-19 vaccine uptake.

Table 9: Perceptual Factors

	SD	D	N	A	SA	Mean Statistic	Std. Deviation Statistic	Ske wne ss Stati stic	Kurtos is Statisti c
	N(%)	N(%)	N(%)	N(%)	N(%)				
Fear of side effects lowers the uptake	0(0)	0(0)	6(2)	102(40)	148(58)	4.5547	.54317	-.663	-.705
Perceived risk and severity makes traders fear the uptake	2(1)	2(1)	6(2)	104(41)	142(56)	4.4922	.66269	-1.764	5.706
Vaccine misinformation and myths is widespread in the market	2(1)	4(2)	2(1)	118(46)	130(51)	4.4453	.67223	-1.751	5.821
Vaccine efficacy influences the uptake	0(0)	4(2)	10(4)	126(49)	116(45)	4.3828	.64011	-.910	1.390
Medical experimentation negatively affects the uptake	0(0)	4(2)	16(6)	132(52)	104(41)	4.3125	.65977	-.769	.913
Health literacy affects uptake among traders	0(0)	20(8)	4(2)	124(48)	108(42)	4.2344	.85391	-1.384	1.906
Waiting times during injection lowers uptake	80(31)	104(41)	20(8)	25(10)	27(11)	2.2773	1.28842	.945	-.234

Table 9 indicates that the respondents strongly agreed that fear of side effects lowered the uptake (mean=4.5547). Further, the respondents agreed that the perceived risk and severity made traders fear the uptake (mean=4.4922) and that vaccine misinformation and myths were widespread in the market (mean=4.4453). In addition, it agreed that vaccine efficacy influenced the uptake (mean=4.3828), medical experimentation negatively affected the uptake (mean=4.3125), and health literacy affected uptake among traders (mean=4.2344). On the contrary, the respondents disagreed that waiting times during injection lowered uptake (mean=2.2773). The results imply that

the respondents were aware of the aspects of perceptual factors influencing the COVID-19 vaccine uptake.

Finally, using an interview guide on KII the study sought to determine the influence of perceptual factors influence the COVID-19 vaccine uptake amongst traders in Wakulima Market, Nairobi City County. The KII unanimously held that Risk Perception associated with COVID-19 could impact vaccine uptake where traders who perceived themselves or their close contacts as at higher risk of contracting the virus got vaccinated. Further, most KII held that perceptions about the effectiveness and efficacy of COVID-19 vaccines influenced acceptance and uptake in that traders who had confidence in the vaccines' ability to protect against infection, reduce the severity of illness, and prevent transmission were motivated to vaccinate. In addition, some of the KII held that perceptions of vaccine safety played a significant role in vaccine acceptance and uptake, and traders concerned about the potential side effects or adverse reactions of the vaccines were hesitant to get vaccinated. Most of the KII highlighted that the perceived benefits of vaccination, such as the ability to resume normal activities, protect loved ones, and contribute to community health, influenced vaccine uptake. A few held that traders' perceptions of trust in the healthcare system and healthcare providers impacted vaccine acceptance. Further, some KII held that perceptions influenced by misinformation, rumors, or conspiracy theories led to vaccine hesitancy among traders. Additionally, most KII held that peer influence and social norms influenced uptake, where traders who observed their peers, friends, or influential individuals within the market getting vaccinated perceived vaccination as good and followed suit.

4.6 COVID-19 Vaccine Uptake Amongst Traders

Table 10 presents results on the level of agreement among traders on statements relating to COVID-19 vaccine uptake. The outcomes are presented in.

Table 10: COVID-19 Vaccine Uptake Amongst Traders

	SD	D	N	A	SA				
	N(%)	N(%)	N(%)	N(%)	N(%)	Mean	Std.	Skewne	Kurtos
						Statistic	Deviation	ss	is
						c	Statistic	Statistic	Statistic
Vaccination rates have increased	113(44)	94(37)	16(6)	18(7)	15(6)	1.9375	1.14618	1.351	1.042
Vaccine outreach programs have been increased	0(0)	2(1)	4(2)	126(49)	124(48)	4.4531	.57202	-.702	.964
Appointment attendance is growing daily	117(46)	92(36)	16(6)	21(8)	10(4)	1.8867	1.09135	1.340	1.083
Feedback and satisfaction surveys produce positive results on uptake	111(43)	88(34)	15(6)	25(10)	17(7)	2.0195	1.21897	1.180	.347
Peer influence have increased the uptake	92(36)	73(29)	13(5)	46(18)	32(13)	2.4258	1.44248	.600	-1.114

Information-seeking behavior has been elevated	0(0)	0(0)	0(0)	114(45)	142(55)	4.5547	.49797	-.221	-1.966
Attitudes, beliefs, and concerns about COVID-19 vaccines have positively changed	0(0)	13(5)	0(0)	130(51)	113(44)	4.3398	.73414	-1.530	3.607
Vaccine hesitancy surveys increase uptake	120(47)	75(29)	11(4)	29(11)	21(8)	2.0469	1.30675	1.114	-.044
Vaccine registration have increased	45(18)	106(41)	18(7)	37(15)	50(20)	2.7695	1.41338	.457	-1.224

Table 10, the participants strongly agreed that information-seeking behaviour had been elevated (Mean=4.5547) and, in addition, agreed that vaccine outreach programs had been increased (Mean=4.4531) and that attitudes, beliefs, and concerns about COVID-19 vaccines had positively changed (Mean=4.3398). Further, the respondents disagreed that vaccine registration had increased (Mean=2.7695) and that peer influence had increased the uptake (Mean=2.4258). Moreover, respondents disagreed that vaccine hesitancy surveys increased uptake (Mean=2.0469) and that feedback and satisfaction surveys produced positive results on uptake (Mean=2.0195). Finally, the respondents disagreed that vaccination rates had increased (Mean=1.9375) and appointment attendance was growing daily (Mean=1.8867). The outcomes suggest

that the participants were aware of roles played by various factors in influencing the COVID-19 vaccines uptake.

4.7 Bivariate Analysis

Table 11 below presents the Pearson correlations results aimed at determining the direction and magnitude of the connection that exists between the study variables.

Table 11: Bivariate Analysis

		Individual			
		Contextual Factors	Individual Factors	Perceptual factors	COVID-19 Vaccine Uptake
Contextual Factors	Pearson Correlation	1	.024	.389**	.202**
	Sig. (2-tailed)		.679	.000	.000
	N	311	311	311	311
Individual Factors	Pearson Correlation	.024	1	.154**	.062
	Sig. (2-tailed)	.679		.006	.278
	N	311	311	311	311
Perceptual factors	Pearson Correlation	.389**	.154**	1	.137*
	Sig. (2-tailed)	.000	.006		.016
	N	311	311	311	311
COVID-19 Vaccine Uptake	Pearson Correlation	.202**	.062	.137*	1
	Sig. (2-tailed)	.000	.278	.016	
	N	311	311	311	311

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

The results presented in Table 11 above show that contextual and individual factors had a weak and positive correlation of .024**. In addition, contextual and perceptual factors significantly correlated with a value of .389**. Also, contextual factors and

COVID-19 vaccine uptake had a positive and significant correlation of .202**. Further, the results show that individual and perceptual factors had a strong and positive connection with a correlation value of .154*. Moreover, perceptual factors and COVID-19 vaccine uptake strongly correlated with a value of .137**.

The findings suggest that the study's elements showing positive correlations were strongly associated and moving consistently.

4.8 Inferential Statistics

In establishing the predictive power of the independent factors in the COVID-19 vaccine uptake amongst traders in the Wakulima market, Nairobi-Kenya, the researcher adopted a linear model, which included the Model, ANOVA of regression, and coefficients of determination. Table 12 below presents the model summary.

Table 12: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.740	.547	.432	.11496

a. Predictors: (Constant), Perceptual factors, Individual Factors, Contextual Factors

The study indicates that the three factors considered as independent variables had an influence of 74.0% on the COVID-19 vaccine uptake among traders at the Wakulima market in Nairobi, Kenya, as shown by the R². This suggests that approximately 26.0% of the COVID-19 vaccine uptake among these traders is affected by factors not accounted for in this study.

4.8.1 Analysis of Variance (ANOVA)

Table 13 below presents the ANOVA outcomes;

Table 13: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.137	3	1.046	4.133	.002 ^b
	Residual	52.164	252	.207		
	Total	55.301	255			

a. Dependent Variable: COVID-19 vaccine uptake amongst Traders

b. Predictors: (Constant), Perceptual factors, Individual Factors, Contextual Factors

According to outcomes presented in Table 13 above, the p-value (sig.) was 0.002 ($p < 0.05$), indicating that perceptual factors, individual factors, and contextual factors had a statistically significant effect on the COVID-19 vaccine uptake amongst traders in the Wakulima market, Nairobi-Kenya at 95% confidence level.

4.8.2 Coefficients of Determination

Table 14 below presents outcomes for the multivariate regression analysis to establish the influence of the independent factors on the COVID-19 vaccine uptake amongst traders in Wakulima market, Nairobi-Kenya.

Table 14: Coefficients of Determination

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	2.938	.246		11.945	.000
Contextual Factors	.143	.049	.177	2.926	.004
Individual Factors	.135	.041	.168	2.853	.005
Perceptual factors	.149	.050	.181	2.982	.002

a. Dependent Variable: COVID-19 vaccine uptake amongst traders

As per the SPSS generated Table 4.12 above, the regression equation was:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \varepsilon$$

$$Y = 2.938 + .143X_1 + .135X_2 + .149X_3 + \varepsilon$$

As per the regression model, taking the three independent factors (perceptual, individual, and contextual factors) constant at zero, COVID-19 vaccine uptake amongst traders would be 2.938. The results further indicate that with the three variables, a unit rise in contextual factors would lead to a .143 rise in the COVID-19 vaccine uptake amongst traders. A unit rise in individual factors would lead to a .135 increase in the COVID-19 vaccine uptake amongst traders. In contrast, a unit increase in perceptual factors would lead to a .149 increase in the COVID-19 vaccine uptake amongst traders.

At the significance level of 95%, perceptual, individual, and contextual factors were significant determinants of COVID-19 vaccine uptake amongst traders, with

significant values as .002, .005, and .004, respectively. Further, the results show that perceptual factors were the most significant determinants of the COVID-19 vaccine uptake amongst traders, with a significance value of .002, followed by contextual factors with a significance value of .004, and the least influential were individual factors with a significance value of .005.



CHAPTER 5: DISCUSSIONS

5.1 Introduction

This chapter presents the research findings, contextualizing them within the framework of existing studies on the determinants of vaccine uptake among traders. The discussion includes a comparative analysis of the current results compared to previous research in this area.

5.2 Discussion Guided by Specific Objectives

5.2.1 Contextual Factors in COVID-19 Vaccine Uptake Amongst Traders

The study found sufficient access to information on vaccination/vaccines and that social and peer networks affected the uptake rates. Further, the study found that cultural factors negatively affected the vaccine uptake and that vaccine availability influenced the uptake. Moreover, the study found that vaccine accessibility affected the uptake and that literacy barriers affected the uptake. The study found that contextual factors significantly influenced the COVID-19 vaccine uptake amongst traders, with a significant value of .004. The findings align with Lin et al. (2021) that uncertainty surrounding vaccine safety and effectiveness and the presence of misinformation played significant roles in vaccine hesitancy. In addition, the findings agree with Baumgaertner et al. (2020) that individuals with conservative political ideologies were less willing to vaccinate than those with liberal ideologies. Further, the findings agree with Nguyen et al. (2021) that Black and Hispanic individuals had higher levels of vaccine hesitancy compared to White individuals. The above findings suggested that policymakers should focus on ensuring widespread and accurate dissemination of vaccine information, especially within social and peer networks in

the market. Relatively tailored data campaigns that consider the consistent availability and accessibility of vaccines, potentially through mobile clinics and on-site vaccination drives. Regarding individual health, improved access to accurate vaccine information and addressing cultural hindrances could improve vaccine confidence, thus resulting in higher vaccination rates and more quality protection against the virus.

5.2.2 Individual Factors in COVID-19 Vaccine Uptake Amongst Traders

The study found that underlying health conditions prevented uptake and that vaccine confidence affected the uptake. In addition, the study found that previous vaccine experiences affected the uptake rates, and vaccine safety concerns made people fear uptake. Further, the study found that trust in the vaccine affected the uptake, knowledge/awareness of the vaccine affected the uptake, and convenience in working hours prevented hospital visits. The study found that individual factors significantly influenced the COVID-19 vaccine uptake amongst traders, with a significant value of .005. The findings agree with Speer et al. (2021); individuals suffering from chronic illnesses might have a higher motivation to get vaccinated because of their elevated risk of experiencing severe symptoms if they contract COVID-19. In addition, the findings agree with Fisher et al. (2020) that factors associated with vaccine acceptance included older age, higher educational attainment, and perceived effectiveness of the vaccine. Also agrees with Dror et al. (2020) that hesitation regarding the COVID-19 vaccine primarily stems from concerns about its safety, effectiveness, and possible adverse effects. Policies should focus on overseeing vaccine confidence through training programs that address safety concerns and previous adverse encounters. As such, efforts should be made to accommodate traders' working hours to enhance the convenience of vaccination. Further, addressing

individual concerns and fostering reliable information could significantly increase vaccine uptake. This would ultimately reduce the risk of adverse COVID-19 outcomes among traders, particularly those with existing health conditions.

5.2.3 Perceptual Factors in COVID-19 Vaccine Uptake Amongst Traders

The research discovered that apprehension regarding side effects lowered the uptake. Further, the study found that the perceived risk and severity made traders fear the uptake and that vaccine misinformation and myths were widespread in the market. In addition, the study found that vaccine efficacy influenced the uptake, medical experimentation negatively affected the uptake, and health literacy affected the uptake among traders. On the contrary, the study found that waiting times during injection did not lower uptake. The study established that perceptual factors significantly influenced the COVID-19 vaccine uptake amongst traders, with significant values of .002. The findings agree with Lazarus et al. (2021) that vaccine safety and potential side effects were significant barriers to vaccine acceptance. Furthermore, the results align with Callaghan et al. (2021) that higher vaccine hesitancy was linked to specific demographic characteristics, including being younger, having a lower level of education, and belonging to racial/ethnic groups other than white. Further agree with Wong et al. (2021) that perceived susceptibility to COVID-19, perceived benefits and safety and barriers of vaccination, and cues to action were significant predictors of vaccine acceptance and uptake. Public health policies need to address vaccine misconceptions and myths through targeted communication metrics that stress the benefits and vaccination safety. Notably, efforts to improve health literacy among traders are paramount. Also, it is worth noting that addressing perceptual hindrances and improving health literacy would enable an increase in vaccine uptake, resulting to better individual health outcomes, together with enhanced community immunity.

CHAPTER 6: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

Chapter six contains the derived conclusions and recommendations on the determinants of COVID-19 vaccine uptake among traders in Wakulima market, Nairobi City County, Kenya. It also contains areas for further study.

6.2 Conclusions

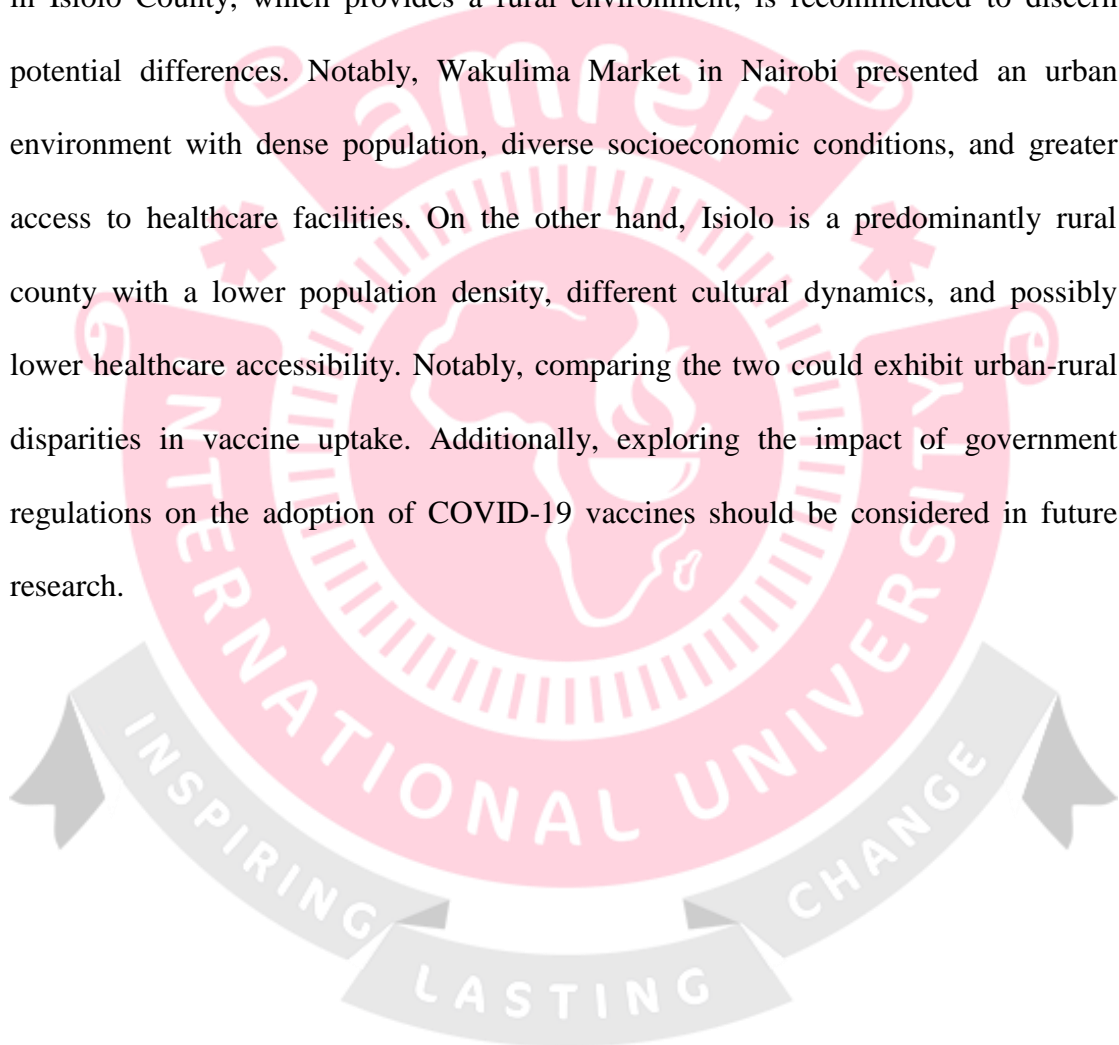
The study concludes that trust in the healthcare system affected the uptake. In addition, the study concludes that there was sufficient access to information on vaccination/vaccines and that social and peer networks affected the uptake rates. The study concludes that underlying health conditions prevented uptake and that vaccine confidence affected the uptake. In addition, the study concludes that previous vaccine experiences affected the uptake rates, and vaccine safety concerns made people fear uptake. Further, the study concludes that the perceived risk and severity made traders fear the uptake and that vaccine misinformation and myths were widespread in the market. The study concludes that information-seeking behaviour has positively changed. There was adequate access to information regarding vaccination, and social and peer networks significantly influenced uptake rates. Nonetheless, cultural attributes and vaccine availability and accessibility were equally crucial determinants. The study also concluded that underlying health conditions could have prevented some traders from taking the vaccine, while the vaccine confidence could have affected uptake. Further, the study found that apprehension regarding side effects, perceived risk and severity of COVID-19, and widespread vaccine misinformation and myths can negatively influence vaccine uptake.

6.3 Recommendations

The Ministry of Health should organize on-site vaccination drives within Wakulima Market to allow traders to receive the vaccine without leaving their businesses. This approach would address contextual factors such as vaccine availability and accessibility. Also, it should develop and disseminate tailored messages targeting traders, stressing how vaccination protects their livelihoods and the market's economic stability. However, this strategy should address individual and perceptual factors, such as vaccine confidence and misinformation. Thirdly, the Ministry of Health should employ a peer-to-peer engagement strategy by recruiting and training a group of vaccinated traders to act as peer advocates. Peer-to-peer interactions can build trust and overcome resistance, addressing perceptual and social network factors. Healthcare providers and practitioners should utilize culturally sensitive and linguistically appropriate communication tactics to convey vaccination information effectively. This approach helps mitigate the negative impact of cultural factors and improves health literacy. Community leaders and organizations must engage in community mobilization efforts to promote COVID-19 immunization among traders. Also, they should advocate for establishing mobile vaccination clinics or outreach initiatives within market premises to ensure easy vaccine access. Lastly, all stakeholders should collaborate to spread accurate information, address vaccine hesitancy, and build trust within the trading community. Community leaders can play a vital role in fostering a supportive environment that encourages vaccine uptake.

6.4 Areas for Further Research

The study results reveal that 26% of the COVID-19 vaccine uptake among traders in Wakulima market, Nairobi-Kenya, was influenced by factors not addressed in this research. Therefore, further investigation is warranted to identify these additional factors impacting vaccine uptake in this population. Conducting a comparative study in Isiolo County, which provides a rural environment, is recommended to discern potential differences. Notably, Wakulima Market in Nairobi presented an urban environment with dense population, diverse socioeconomic conditions, and greater access to healthcare facilities. On the other hand, Isiolo is a predominantly rural county with a lower population density, different cultural dynamics, and possibly lower healthcare accessibility. Notably, comparing the two could exhibit urban-rural disparities in vaccine uptake. Additionally, exploring the impact of government regulations on the adoption of COVID-19 vaccines should be considered in future research.



REFERENCES

- Anino, C. O., Wandera, I., Masimba, Z. O., Kirui, C. K., Makero, C. S., Omari, P. K., & Sanga, P. (2023). Determinants of Covid-19 vaccine uptake among the elderly aged 58 years and above in Kericho County, Kenya: Institution based cross sectional survey. *PLOS Global Public Health*, 3(9), e0001562.
- Alleaume, C., Verger, P., Dib, F., Ward, J. K., Launay, O., & Peretti-Watel, P. (2021). Intention to get vaccinated against COVID-19 among the general population in France: Associated factors and gender disparities. *Human Vaccines & Immunotherapeutics*, 17(10), 3421-3432.
- Bandura, A. (1989). Social cognitive theory for personal and social change by enabling media. In *Entertainment-Education and Social Change* (pp. 97-118). Routledge.
- Barello, S., Nania, T., Dellafiore, F., Graffigna, G., & Caruso, R. (2020). 'Vaccine hesitancy' among university students in Italy during the COVID-19 pandemic. *European Journal of Epidemiology*, 35(8), 781-783. doi: 10.1007/s10654-020-00670-8.
- Baumgaertner, B., Ridenhour, B. J., Justwan, F., Carlisle, J. E., Miller, C. R., & Davis, J. R. (2020). The influence of political ideology and trust on willingness to vaccinate. *PLoS ONE*, 15(2), e0229788.
- Brewer, N. T., Chapman, G. B., Rothman, A. J., Leask, J., & Kempe, A. (2020). Increasing vaccination: Putting psychological science into action.

Psychological Science in the Public Interest, 21(2), 55-68. doi:
10.1177/1529100620933100.

Bryman, A., & Bell, E. (2015). *Business research methods*. Oxford: Oxford University Press.

Callaghan, T., Moghtaderi, A., Lueck, J. A., Hotez, P. J., Strych, U., Dor, A., ... & Motta, M. (2020). Correlates and disparities of COVID-19 vaccine hesitancy. Available at SSRN 3667971. doi: 10.2139/ssrn.3664323.

Champion, V. L., & Skinner, C. S. (2008). The health belief model. *Health Behavior and Health Education: Theory, Research, and Practice*, 4, 45-65.

de Figueiredo, A., Simas, C., & Larson, H. J. (2023). COVID-19 vaccine acceptance and its socio-demographic and emotional determinants: A multi-country cross-sectional study. *Vaccine*, 41(2), 354-364.

Dodd, R. H., Pickles, K., Nickel, B., Cvejic, E., Ayre, J., Batcup, C., ... & MacIntyre, C. R. (2021). Concerns and motivations about COVID-19 vaccination. *The Lancet Infectious Diseases*, 21(2), 161-163. doi: 10.1016/S1473-3099(20)30926-9.

Dror, A. A., Eisenbach, N., Taiber, S., Morozov, N. G., Mizrahi, M., Zigran, A., ... & Nadler, V. (2020). Vaccine hesitancy: The next challenge in the fight against COVID-19. *European Journal of Epidemiology*, 35(8), 775-798.

Dwinantoaji, H., & Sumarni, D. W. (2020). Human security, social stigma, and global health: The COVID-19 pandemic in Indonesia. *Journal of the Medical Sciences (Berkala Ilmu Kedokteran)*, 52(3).

- Erega, B. B., Ferede, W. Y., Sisay, F. A., Tiruneh, G. A., Ayalew, A. B., shigign Malka, E., ... & Alemu, A. (2023). COVID-19 vaccine hesitancy in Ethiopia in 2021: A multicenter cross-sectional study. *IJID regions*, 6, 120-124.
- Eriksson, J. (2023). COVID-19 vaccine uptake among female students at Pwani University in Kilifi, Kenya. <https://www.diva-portal.org/smash/record.jsf?pid=diva2:1737629>
- Fisher, K. A., Bloomstone, S. J., Walder, J., Crawford, S., Fouayzi, H., & Mazor, K. M. (2020). Attitudes toward a potential SARS-CoV-2 vaccine: A survey of US adults. *Annals of Internal Medicine*, 173(12), 964-973.
- Gudayu, T. W., & Mengistie, H. T. (2023). COVID-19 vaccine acceptance in sub-Saharan African countries: A systematic review and meta-analysis. *Heliyon*, e13037.
- Hajra, A., Gupta, M., Ghosh, B., Ashish, K., Patel, N., Manek, G., ... & Bandyopadhyay, D. (2022). Proposed pathogenesis, characteristics, and management of COVID-19 mRNA vaccine-related myopericarditis. *American Journal of Cardiovascular Drugs*, 22(1), 9-26.
- He, W., Zhang, Z. J., & Li, W. (2021). Information technology solutions, challenges, and suggestions for tackling the COVID-19 pandemic. *International Journal of Information Management*, 57, 102287.
- Herzog, L. M., Norheim, O. F., Emanuel, E. J., & McCoy, M. S. (2021). Covax must go beyond proportional allocation of COVID vaccines to ensure fair and equitable access. *BMJ*, 372.

Hou, Z., Tong, Y., Du, F., Lu, L., Zhao, S., Yu, K., ... & Lin, L. (2021). Assessing COVID-19 vaccine hesitancy, confidence, and public engagement: A global social listening study. *Journal of Medical Internet Research*, 23(6), e27632.

IMF. (July 01, 2021). *Policy responses to COVID-19*.

Kawuki, J., Namboze, J., Chan, P. S. F., Chen, S., Liang, X., Mo, P. K., & Wang, Z. (2023). Differential COVID-19 vaccination uptake and associated factors among the slum and estate communities in Uganda: A cross-sectional population-based survey. *Vaccines*, 11(2), 440.

Kothari, C. R. (2014). *Research methodology: Methods and techniques*. New Delhi: New Age International.

Krpan, K. M., Atkinson, K. M., Amedzrator, K. J., & Marotta, P. L. (2021). COVID-19 vaccination intentions and outcomes: A systematic review of the social and behavioral determinants. *Vaccine*, 39(13), 1902-1924

Larson, H. J., Jarrett, C., Eckersberger, E., Smith, D. M. D., & Paterson, P. (2014). Understanding vaccine hesitancy around vaccines and vaccination from a global perspective: A systematic review of published literature, 2007–2012. *Vaccine*, 32(19), 2150-2159.
DOI: 10.1016/j.vaccine.2014.01.081

Lazarus, J. V., Ratzan, S. C., Palayew, A., Gostin, L. O., Larson, H. J., Rabin, K., ... & El-Mohandes, A. (2021). A global survey of potential acceptance of a COVID-19 vaccine. *Nature Medicine*, 27(2), 225-228. doi: 10.1038/s41591-020-1124-9.

- Li, A. J., Tabu, C., Shendale, S., Okoth, P. O., Sergon, K., Maree, E., ... & Ogbuanu, I. U. (2020). Qualitative insights into reasons for missed opportunities for vaccination in Kenyan health facilities. *PloS ONE*, *15*(3), e0230783.
- Lin, C. A., Lagoe, C., Park, S., & Sanders, M. (2021). Uncertainty and misinformation: The context of COVID-19 vaccine hesitancy. *Vaccines*, *9*(3), 240.
- Lindholt, M. F., Jørgensen, F., Bor, A., & Petersen, M. B. (2021). Public acceptance of COVID-19 vaccines: Cross-national evidence on levels and individual-level predictors using observational data. *BMJ Open*, *11*(6), e048172.
- Ministry of Labour and Social Protection. (June,2023). *Survey of training outturns in local institutions in Nairobi*. Nairobi: State Department for Labour.
- Moucheraud, C., Phiri, K., Whitehead, H. S., Songo, J., Lungu, E., Chikuse, E., ... & Hoffman, R. M. (2023). Uptake of the COVID-19 vaccine among healthcare workers in Malawi. *International Health*, *15*(1), 77-84.
- Msuya, S. E., Manongi, R. N., Jonas, N., Mtei, M., Amour, C., Mgongo, M. B., ... & Mboya, I. B. (2023). COVID-19 vaccine uptake and associated factors in Sub-Saharan Africa: Evidence from a community-based survey in Tanzania. *Vaccines*, *11*(2), 465.
- Muchangi, J. M., Mturi, J., Mukasa, H., Kithuki, K., Kosgei, S. J., Kanyangi, L. M., ... & Nankaja, M. (2023). Enablers and barriers to handwashing and vaccine uptake in Kenya, Uganda, and Tanzania in relation to COVID-19 prevention and control: A systematic review. <https://www.researchsquare.com/article/rs-2877995/latest>

- Mugenda, O. M., & Mugenda, A. G. (2003). *Research methods: Quantitative and qualitative approaches*. Nairobi: Acts Press.
- Nairobi County Government (2022). *Annual Report*. Government Publishers. Nairobi. Kenya
- Naseer, S., Khalid, S., Parveen, S., Abbass, K., Song, H., & Achim, M. V. (2023). COVID-19 outbreak: Impact on global economy. *Frontiers in Public Health, 10*, 1009393.
- Ndejjo, R., Chen, N., Kabwama, S. N., Namale, A., Wafula, S. T., Wanyana, I., ... & Wanyenze, R. K. (2023). Uptake of COVID-19 vaccines and associated factors among adults in Uganda: A cross-sectional survey. *BMJ Open, 13*(3), e067377.
- Nguyen, L. H., Joshi, A. D., Drew, D. A., Merino, J., Ma, W., Lo, C. H., ... & Richterman, A. (2021). Racial and ethnic differences in COVID-19 vaccine hesitancy and uptake. *MedRxiv*.
- Oduwole, E. O., Mahomed, H., Ayele, B. T., & Wiysonge, C. S. (2021). Estimating vaccine confidence levels among healthcare students and staff of a tertiary institution in South Africa: Protocol of a cross-sectional survey. *BMJ Open, 11*(5), e049877.
- Omer, S. B., Benjamin, R. M., Brewer, N. T., Buttenheim, A. M., Callaghan, T., Caplan, A., ... & Hotez, P. J. (2021). Promoting COVID-19 vaccine acceptance: Recommendations from the Lancet Commission on Vaccine Refusal, Acceptance, and Demand in the USA. *The Lancet, 398*(10317), 2186-2192.

- Orangi, S., Ojal, J., Brand, S. P., Orlando, C., Kairu, A., Aziza, R., ... & Barasa, E. (2022). Epidemiological impact and cost-effectiveness analysis of COVID-19 vaccination in Kenya. *BMJ Global Health*, 7(8), e009430.
- Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health and Mental Health Services Research*, 42(5), 533-544. doi: 10.1007/s10488-013-0528-y
- Peña, J. M., Schwartz, M. R., Hernandez-Vallant, A., & Sanchez, G. R. (2023). Social and structural determinants of COVID-19 vaccine uptake among racial and ethnic groups. *Journal of Behavioral Medicine*, 1-11.
- Rosenstock, I. M. (1974). Historical origins of the Health Belief Model. *Health Education Monographs*, 2(4), 328-335.
- Roy, D. N., Azam, M. S., Biswas, M., & Islam, E. (2023). Potential factors influencing COVID-19 vaccine acceptance and hesitancy among university students in Bangladesh: A cross-sectional comparative study. *Epidemiology & Infection*, 151, e11.
- Salmon, D. A., Dudley, M. Z., Glanz, J. M., Omer, S. B., & Halsey, N. A. (2021). Vaccine hesitancy: Causes, consequences, and a call to action. *Jama*, 324(5), 456-457.
- Shah, J., Abeid, A., Sharma, K., Manji, S., Nambafu, J., Korom, R., ... & Ali, S. K. (2022). Perceptions and knowledge towards COVID-19 vaccine hesitancy

among a subpopulation of adults in Kenya: An English survey at six healthcare facilities. *Vaccines*, *10*(5), 705.

Shakeel, C. S., Newton, C., Hussein, A., & Win, M. N. (2021). Determinants of COVID-19 Vaccine Hesitancy in Africa: A Systematic Review. *Journal of Public Health in Africa*, *12*(1). doi: 10.4081/jphia.2021.1921.

Shakeel, C. S., Mujeeb, A. A., Mirza, M. S., Chaudhry, B., & Khan, S. J. (2022). Global COVID-19 vaccine acceptance: A systematic review of associated social and behavioral factors. *Vaccines*, *10*(1), 110.

Speer, K. L., Nguyen, A. B., Colin, A. A., & Lynn, J. (2021). COVID-19 vaccination in adults with chronic conditions in the United States. *The Journal of Pediatrics*, *235*, 259-261.e1.

Tagoe, E. T., Sheikh, N., Morton, A., Nonvignon, J., Sarker, A. R., Williams, L., & Megiddo, I. (2021). COVID-19 vaccination in lower-middle income countries: National stakeholder views on challenges, barriers, and potential solutions. *Frontiers in Public Health*, *9*, 709127.

The Executive Office of the President. (Sept, 2023). *Measures taken and progress achieved in the realisation of national values and principles of governance*. Nairobi: The Government Printer.

UN Trade and Development. (2023). *Trade and development report*.

Velarde, V. D. V. (2012). Determinants of online purchasing behavior: An empirical investigation using an extension of the Theory of Planned Behavior. *Aarhus University*.

- Wang, B., & Ping, Y. (2022). A comparative analysis of COVID-19 vaccination certificates in 12 countries/regions around the world: Rationalising health policies for international travel and domestic social activities during the pandemic. *Health Policy*, 126(8), 755-762.
- Wang, G., Yao, Y., Wang, Y., Gong, J., Meng, Q., Wang, H., ... & Zhao, Y. (2023). Determinants of COVID-19 vaccination status and hesitancy among older adults in China. *Nature Medicine*, 29(3), 623-631.
- Wong, M. C., Wong, E. L., Huang, J., Cheung, A. W., Law, K., Chong, M. K., ... & Chan, P. K. (2021). Acceptance of the COVID-19 vaccine based on the health belief model: A population-based survey in Hong Kong. *Vaccine*, 39(7), 1148-1156.
- World Economic Forum. (2022). *The Global Risks Report 2022*. World Economic Forum.
- Yamey, G., Garcia, P., Hassan, F., Mao, W., McDade, K. K., Pai, M., ... & Udayakumar, K. (2022). It is not too late to achieve global COVID-19 vaccine equity. *BMJ*, 376.
- Yoda, T., Katsuyama, H., Willaby, H. W., & Mason, H. L. (2021). Factors influencing COVID-19 vaccine hesitancy and acceptance: A scoping review. In *Vaccination: A global perspective*, *IntechOpen*. doi: 10.5772/intechopen.97190.
- Yu, Z., Razzaq, A., Rehman, A., Shah, A., Jameel, K., & Mor, R. S. (2021). Disruption in global supply chain and socio-economic shocks: A lesson

from COVID-19 for sustainable production and consumption. *Operations Management Research*, 1-16.

Zabaniotou, A. (2020). A systemic approach to resilience and ecological sustainability during the COVID-19 pandemic: Human, societal, and ecological health as a system-wide emergent property in the Anthropocene. *Global Transitions*, 2, 116-126.



APPENDICES

Appendix I: Research Questionnaire

Part A: BIO Data

1. Gender

Female []

Male []

2. Age bracket

18-29 years []
years []

30-39 years []

40-49

50-59 years []

60 years and above []

3. What is your marital status?

Single []
[]

Married []

Widow

Widower []

Divorced []

4. Highest level of education

Primary level []

Secondary level []

Post graduate level []

5. Duration of trading at Wakulima Market?

1- 5 years []

6- 10years []

11- 15 []

Above 15 years []

6. What is your income level per month?

Ksh 0 – Ksh 10,000 []

Ksh 10,001 – Ksh 20,000 []

Above Ksh 20,000 []

7. Have been vaccinated?

Yes []

No []

Part B: Contextual Factors

Statements	1	2	3	4	5
There is sufficient access to information on vaccination/vaccines					
Literacy barriers affect the uptake					
Vaccine availability influences the uptake					

Vaccine accessibility affects the uptake					
Trust in the healthcare system affects the uptake					
Social and peer networks lowers then uptake rates					
Cultural factors negatively affect the uptake					
Religious beliefs negatively impact the uptake					

Part C: Individual Factors

Statements	1	2	3	4	5
Underlying health condition prevents uptake					
Vaccine confidence affects the uptake					
Previous vaccine experiences lower uptake rates					
Knowledge & awareness on vaccine affects the uptake					
Working hours convenience prevents hospital visits					
Trust in the vaccine lowers the uptake					
Vaccine safety concerns makes people fear uptake					

Part D: Perceptual Factors

Statements	1	2	3	4	5
Vaccine misinformation and myths is widespread in the market					
Perceived risk and severity make traders fear the uptake					
Health literacy affects uptake among traders					
Fear of side effects lowers the uptake					
Waiting times during injection lowers uptake					
Medical experimentation negatively affects the uptake					
Vaccine efficacy influences the uptake					

Part E: COVID-19 Vaccine Uptake Amongst Traders

Statements	1	2	3	4	5
Vaccination rates have increased					
Vaccine outreach programs have been increased					

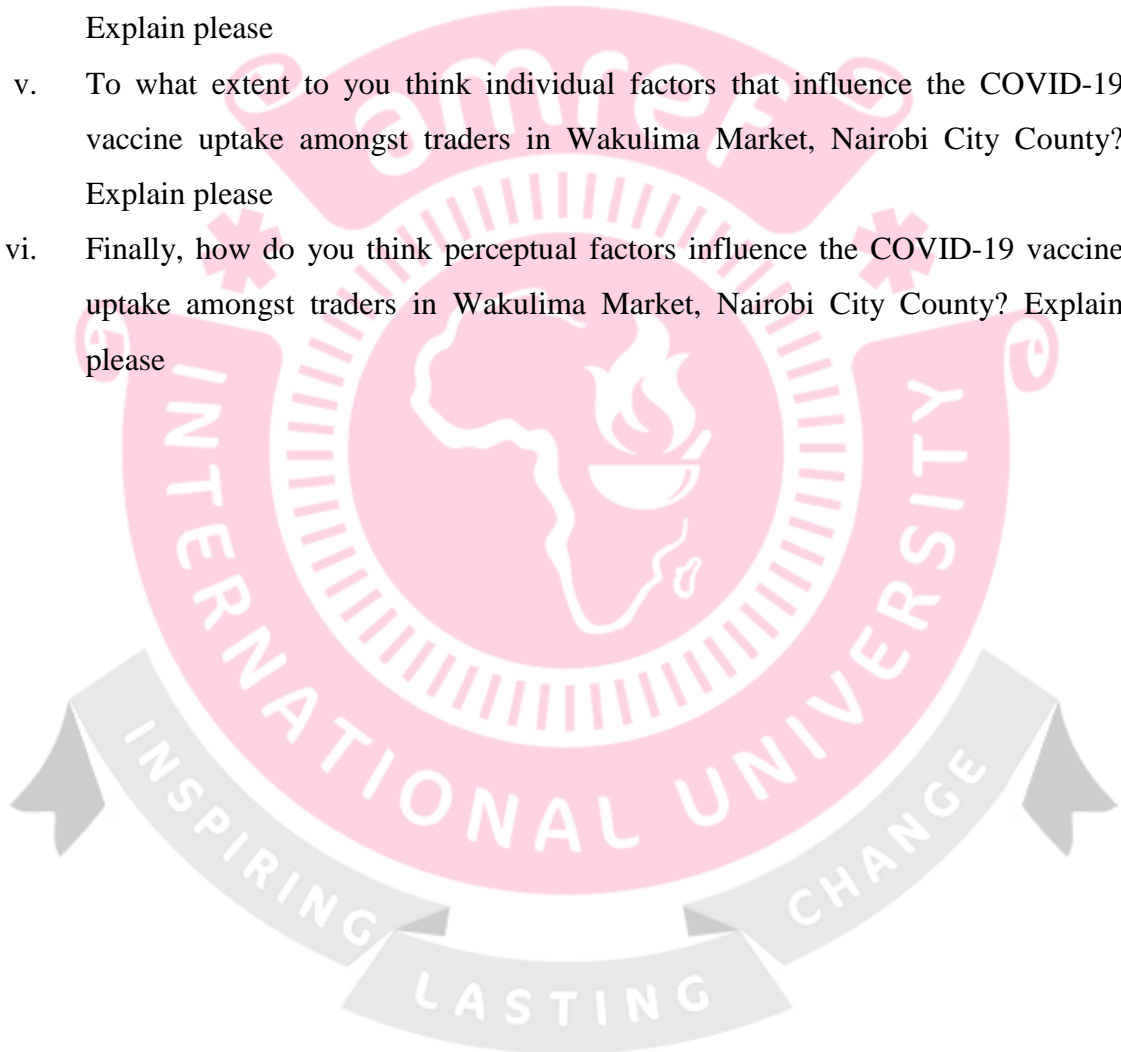
Appointment attendance is growing daily					
Feedback and satisfaction surveys produce positive results on uptake					
Peer influence have increased the uptake					
Information-seeking behavior has been elevated					
Attitudes, beliefs, and concerns about COVID-19 vaccines have positively changed					
Vaccine hesitancy surveys increase uptake					
Vaccine registration have increased					

THANK YOU FOR PARTICIPATING



Appendix II: Interview Guide for Key Informant


- i. What role in the county government of Nairobi?
- ii. How do you rate the COVID-19 vaccines uptake in Nairobi?
- iii. What do you think affects the of COVID-19 vaccines uptake in Nairobi?
- iv. In your opinion, how you think contextual factors influence the COVID-19 vaccine uptake amongst traders in Wakulima Market, Nairobi City County?
Explain please
- v. To what extent to you think individual factors that influence the COVID-19 vaccine uptake amongst traders in Wakulima Market, Nairobi City County?
Explain please
- vi. Finally, how do you think perceptual factors influence the COVID-19 vaccine uptake amongst traders in Wakulima Market, Nairobi City County? Explain please



Appendix IV: Research Data Authorization

NAIROBI CITY COUNTY

Telephone: 020 344194
Web: www.nairobi.go.ke



City Hall,
P. O. Box 30075-00100,
Nairobi,
KENYA.

MARKETS & TRADING SERVICES DEPARTMENT

REF: **NCC/MKT/38/166(2022)** 17th October, 2022

Collins Opande
Amref International University
P.O BOX 27691-00506
Nairobi

**RE: REQUEST FOR ACADEMIC RESEARCH DATA COLLECTION
WAKULIMA MARKET**

Above matter refers.

This is to inform you that your request has been granted subject to the following conditions:-


- Abide by the Nairobi City County Laws as regards the County premises;
- Cooperate with the County staff manning the facility;
- Non-interference with the daily operations in the market;
- The county is exempted from any legal responsibility, compensation, loss whatsoever that may occur during the video shooting.

By a copy of this letter, the market in Charge is detailed to guide you accordingly.

Joyce Kyengo

**JOYCE KYENGO
COUNTY DIRECTOR OF MARKETS**

✓ Copy to:- Market in-charge Wakulima Market



Appendix VI: Similarity Report

Collins Ochieng Opande Final.pdf

ORIGINALITY REPORT

15% SIMILARITY INDEX	13% INTERNET SOURCES	6% PUBLICATIONS	6% STUDENT PAPERS
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PRIMARY SOURCES

1	repository.kemu.ac.ke:8080 Internet Source	1%
2	ir-library.ku.ac.ke Internet Source	1%
3	erepository.uonbi.ac.ke Internet Source	1%
4	www.mdpi.com Internet Source	1%
5	Submitted to Elizabethtown College Student Paper	1%

