

**COVID VACCINATION UPTAKE AMONGST PUBLIC TRANSPORT  
CREW IN MERU MATATU STAGE, MERU COUNTY**

**MUTHEE JUSTIN THURANIRA**

**A Thesis Report Submitted in Partial Fulfillment of the Requirements for  
The Conferment of the Degree of Master of Health Systems Management of  
Kenya Methodist University**

**August, 2023**

**DECLARATION**

This thesis is my original work and has not been presented for a degree in any other University. Appropriate referencing has been done where other people’s work has been quoted

Signature.....

Date.....

**JUSTIN THURANIRA**

**HSM-3- 4111-3/2009**

**Supervisors:**

This thesis has been submitted for review with our approval as University

Supervisors.

Signature:.....Date.....

Dr. Caroline Kawila, PhD  
Department of Health Systems Management  
Kenya Methodist University

Signature:.....Date.....

Mr. Frederick Kimemia MSc. HSM Department of  
Health Systems Management  
Kenya Methodist University

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## **DEDICATION**

This research work is dedicated to my beloved wife Jackline, cherished children Angel, Alvah and Abbott, and my guiding mentor Dr. Kabeu – your unwavering support fuels my journey.

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## ABSTRACT

The uptake of COVID-19 vaccinations is an essential aspect towards enabling effective control on the spread of the virus. It is important that matatu crew, together with the vulnerable groups should receive vaccination to lower the incidence and disease transmission rate. In the Covid 19 vaccination campaign this group has been greatly sidelined. The study was aimed at determining predictors of Corona Virus vaccine uptake amongst Matatu crew within the Meru matatu stage. The study therefore assessed the individual factors, established the contextual factors, evaluated perceptions and established experiences that predict uptake of the Corona Virus 19 vaccine amongst the Matatu crew in Meru matatu stage. The study population was Matatu crew in Meru matatu stage. Sampling size determination was done using the Fischer's formula. The sampling technique was systematic among the drivers, touts and conductors in Meru Matatu stage. While purposive selection was done among the key informants. The study used of questionnaire for quantitative and for qualitative data collection an interview guide was used. Data analysis from the self- administered questionnaire was analyzed quantitatively using descriptive statistics frequencies, proportions. Chi-square analysis was used to capture associations amongst the categorical variables. Further, statistical significance was placed at  $p < 0.05$ . Qualitative data was analyzed through the use of thematic analysis. Results are presented in tables, pie charts and bar graphs for ease of understanding. The study found a low uptake of Covid 19 vaccine among the Matatu operators. The individual characteristics associated with COVID -19 uptake on different aspects of knowledge included knowledge on mode of administration Chi square = 110.45, d.f= 4, P value < 0.00, knowledge on the doses required, Chi square = 136.521, d.f=4 and p value < 0.000. Contextual issues including politics and sources of information were also to be factors influencing vaccine uptake among the Matatu operations. This study concluded that there was low uptake of Covid -19 vaccine among the Matatu crew in Meru Uptake was influenced by age, gender, marital status, nature of duty as well as the level of education a participant holds. On Individual factors associated with COVID – 19 vaccine uptake, knowledge and beliefs were statistically significant. Knowledge on mode of administration (Chi square = 110.45, d.f= 4, P value < 0.00) and knowledge on the doses required (Chi square = 136.521, d.f=4 and p value < 0.000) were found to be statistically significant. Belief that COVID-19 is preventable was associated with vaccination for COVID-19 Chi square, 129.02, df=3 and P value < 0.00. Belief that COVID-19 is manmade was also significantly associated with vaccination for COVID-19 Chi square 106.584, df=4 and P value < 0.00. Only a small proportion (9%) had prior experience with other vaccines in adulthood. The study therefore concluded that knowledge and beliefs influenced uptake of Covid 19 vaccine. Mass media and Sacco influence were Contextual factors associated with Covid 19 Vaccine uptake. The study concluded that communication and media, Politics and Sacco influence can significantly influence Covid 19 vaccine uptake. Therefore, the study recommended that the ministry of health and other partners to come up with programs to undo the misconception towards COVID-19 vaccine, and that there was continuous need to educate the masses and create awareness on risks and benefits associated with Covid 19.

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## **ABBREVIATIONS AND ACRONYMS**

**WHO** World Health Organization

**CHMT** County Health Management

# CHAPTER ONE

## INTRODUCTION

### 1.1 Study Background

The recently experienced global pandemic caused by Coronavirus disease 2019 (COVID-19) which is largely spread via respiratory droplets has resulted a sudden substantial rise in hospitalizations for pneumonia related symptoms and/or with multiple organ failure (Pan et al., 2020). Of great concern is the fact that the disease can be transmitted by both asymptomatic and symptomatic carriers. It takes approximately one week for symptoms to show, within which the asymptomatic person will still be infectious. Commonly, the symptoms are mimic common cold and flu, with most patients presenting with shortness of breath, dry cough and fever (Zhang et al., 2021)

The effective way to contain spread of COVID-19 is to reduce contact between people and to adopt social distancing measures. Governments imposed lockdowns in many countries, requiring people to stay at home and practice social distancing. Public transportation, schools and non-essential businesses had been closed. Face masks have been recommended for people to wear in public and when social distancing is not possible. Other strategies such as quarantine, contact tracing, testing and isolation have also been implemented in many countries with varying success rates.

COVID-19 was first reported in Wuhan, China from a group of patients presenting with pneumonia of unknown etiology at the close of 2019 (Pan et al., 2020). It then spread all over the world within a short time. In as much as some of the people who contract the COVID-19 disease only experience mild or moderate symptoms and thereafter recover with ordinary common cold treatment, some become seriously ill and require specialized medical attention with critical hospitalization (Zhang et al., 2021).

The epidemiology of the COVID-19 pandemic is dynamic, with the virus continuing to spread swiftly in many parts of the world. As of April 2021, greater than 132 million people had been infected and over 2.9 million died from the disease all over the world (World Health Organization [WHO], 2021). The Covid-19 has been reported in all countries, with varying levels of severity, mortality and transmission rates. Furthermore, the virus is more likely to affect certain groups of people more severely than others, such as older adults, those with underlying medical conditions, and individuals with weakened immune systems (Liu et al., 2020).

The vaccines development and treatments for COVID-19 has been a major focus of research since the onset of the pandemic. Vaccines are being developed to induce protective immunity against the virus. However, it is important to note that the development of effective vaccines requires an understanding of the immunology of the virus. Studies have shown that the virus has a high affinity for ACE2, a cell surface receptor, which is expressed in the lungs, heart, and kidneys (Chen et al., 2020). Furthermore, the virus can also induce a potent T-cell response, which is essential for protection against the virus (Qian et al., 2021).

The diagnosis of COVID-19 is important for initiating early and effective treatment. Early diagnosis is also crucial for preventing transmission of the virus to other people. Diagnosis of the virus is typically done through the use of reverse transcriptase-polymerase chain reaction (RT-PCR) testing, which detects viral proteins in samples such as saliva or mucus (World Health Organization [WHO], 2022). Other less common methods of diagnosis include antigen tests, which detect viral antigens from samples obtained from the nose or throat (WHO, 2021). Treatment The primary treatment for those who have been infected with the COVID-19 virus is supportive care,

which aims to reduce symptoms and improve quality of life. This includes providing adequate hydration and nutrition, maintaining adequate oxygenation levels, and providing pain relief (World Health Organization [WHO], 2019). Additionally, some people may require antiviral medications such as remdesivir or convalescent plasma therapy (Covid, 2021). In severe cases, mechanical ventilation may be used to help patients breathe (Covid, 2021). One of the effective ways to prevent the spread of COVID-19 is to practice social distancing, wear face masks, avoid large gatherings, and wash hands regularly with soap and water or an alcohol-based sanitizer (Covid, 2021). Additionally, it is important to get vaccinated when available, as this will help reduce the risk of infection and transmission of the virus (Covid, 2021).

Natural immunity can be acquired from getting the virus that causes COVID-19 and this may give some protection. However, the risk that comes with severe illness, strain on the healthcare system and deaths associated with COVID-19 dwarf benefits of natural immunity (WHO, 2021). COVID-19 vaccination is therefore necessary to help in creating an antibody response without this risk of severe disease. As at now, more than one hundred vaccines are being investigated and several of them are already authorized by medical agencies. The infection rates of COVID-19 cases highlight the need to ensure increased levels of vaccination to limit the spread of the disease (Mant et al., 2021).

Despite multiple vaccines that have been introduced to help halt the occurrence of these conditions there is still a high extent of Corona Virus vaccine hesitancy from the public (Tavolacci et al., 2021). This is highly likely to impair all the efforts directed towards limiting this trend (Tavolacci et al., 2021). According to WHO (2019) vaccine hesitancy ranks in the top ten threats in the world as irrespective of the availability of

vaccines, such trends limit the capability of dealing with vaccine- preventable illnesses.

In order to achieve herd immunity needed to control and stop spread of Covid 19 pandemic in Africa, more than 60% of each country's total population need to be vaccinated by year 2022. This was endorsed by The AU (African Union) Heads of State bureau. Current studies from west and East Africa however show common trends of slow uptake of COVID-19 vaccinations. Most of these the studies have suggested further research on contextually relevant and culturally acceptable strategies that can at least reverse these trends and increase uptake.

The government of Kenya has laid down plans to ensure that half of its adult population is receive the Covid vaccine by mid-50% 2022. This is to be achieved through a multi phased approach while with priority given to high risk groups. Highest priority was given to essential workers (comprising teachers, healthcare providers, security personnel) followed by individuals deemed to be at risk of severe disease. These include those advanced in age, and those with co- morbidities. Third category comprise of individuals at high risk of infection and transmission such those in highly populated or congregate environments, as well as the tourism and hospitality sector. Matatu crew fit in this third category.

The multi-phased approach involves rolling out the vaccine in stages, starting with the highest priority groups and gradually expanding to the rest of the population. The government has also set up various vaccination centers and is working with various partners, such as hospitals and community health workers, to ensure that the vaccines are easily accessible to all eligible individuals.

In addition, the government is also engaging in public education campaigns to raise



awareness about the importance of vaccination and dispel any misinformation or myths about the vaccines. They are also working to address any logistical challenges, such as vaccine storage and transportation, to ensure that the vaccines are delivered to the right places at the right time.

The goal of the plan is to achieve herd immunity and reduce the spread of COVID-19 in Kenya. The success of this plan will depend on the cooperation and participation of all eligible individuals, as well as the government's ability to effectively implement the plan and overcome any challenges that may arise (Tavolacci et al., 2021).

Research evidence indicates that achieving a vaccine coverage rate of 60-70% is necessary to attain herd immunity, which is the point at which a sufficient proportion of the population is immune to the virus, reducing its spread and allowing the community to become more resistant to outbreaks. Herd immunity not only protects individuals who are unable to receive the vaccine, but it also helps to minimize the severity of illness in those who are vaccinated and still contract the virus. However, it is important to note that herd immunity is not a static threshold, and the actual level of coverage needed can vary depending on various factors, such as the characteristics of the virus and the population being vaccinated (WHO, 2021)

Vaccine hesitancy, or the reluctance or unwillingness of some individuals to receive the vaccine, is one of the biggest challenges to achieving high levels of vaccine coverage and attaining herd immunity. This hesitancy can be due to a variety of reasons, such as misinformation or lack of trust in the vaccine, fear of side effects, or religious or cultural beliefs.

Overcoming vaccine hesitancy is critical to the success of any vaccine rollout and

requires a multi- faceted approach that addresses the underlying reasons for hesitancy. This may involve educating the public about the safety and efficacy of the vaccine, addressing any concerns about side effects, and working with community leaders and influencers to promote the importance of vaccination. The government, health organizations, and the media all have important roles to play in addressing vaccine hesitancy and promoting vaccine uptake. (Lazarus et al., 2021).

Studies from sub-Saharan Africa, have identified mistrust of pharmaceutical industries, concerns on safety of the vaccine, cost and low or lack of confidence in the government as some of the reasons fueling hesitancy (Islam et al., 2021). This Vaccine hesitancy is also specific to context meaning that it varies according to time, person and place. There is a sharp contrast with Kenya reports on childhood diseases vaccination, where confidence is high. Over 85% uptake is reported with high rating on vaccines safety, effectiveness and importance for. As regards Covid 19 Vaccination, evidence on understanding, confidence and willingness of adult population to accept the vaccine is still limited.

In this light, it is not clear how the time Kenya will take to achieve herd immunity given that, by end of 2021 October; approximately 5 % of the Kenyan population had taken up the vaccine fully. With vaccination being a key component of public health service-delivery and management in Kenya, these figures are reasons for some serious concerns (Barasa et al., 2021). There has emanated misinformation and misconceptions on the efficacy and unwanted effects of several of the vaccines administered. The matter of vaccine uptake and hesitancy is of a global public health importance in containment of COVID-19. There may exist many possible demographic and socioeconomic factors that influence individuals' decisions that require investigation (Crawshaw et al, 2021).

Road transport constitutes an important component of the transport in Kenya. Matatu transport accounts for above 57 per cent of current transport road transport in major cities and towns (Republic of Kenya, 2022). This value has been on a steady rise. Total transport by road accounts for over 93 per cent of Kenya's domestic passenger traffic. Matatu is a colloquial term commonly used in Kenya to refer to a minibus or similar vehicle that is used as a taxi. These vehicles play a significant role in the country's transportation system, accounting for a large proportion of road transport in major cities and towns. Because of the high volume of people that use Matatus, they can become concentrated areas for the spread of airborne diseases like COVID-19. It is important to understand the extent of vaccine uptake among the crew, who have constant contact with many people and travel through many different counties, in order to protect the health and well-being of the crew and the wider population. Therefore, it's clear that Matatus account for a large proportion with the sector being the fourth biggest contributor of formal employment and the third largest contributor of informal sector jobs in urban areas (Republic of Kenya, 2022b).

With such a high percentage of urban population using this mode of transport, matatu stages become the second concentrated with human traffic, the first being food and non food markets (Macharia, 2022). The industry has thus become a focal point of interest in containment of air borne diseases like Covid 19. This could involve measures such as requiring masks, implementing social distancing, and promoting hygiene practices, as well as vaccinating Matatu crew to protect them and those they come into contact with. The Matatu crew refers to the people who work in the Matatu industry, including drivers, conductors, and any other staff. These individuals play a critical role in the transportation sector in Kenya and have constant contact with many people as they

transport passengers on a daily basis. Given their high level of exposure to the public, it is important to assess the extent of COVID-19 vaccine uptake among the Matatu crew in order to protect their health and the health of the wider population.

This study therefore seeks to assess Covid uptake amongst matatu crew in Meru stage, which falls under the pillar of Service Provision in health systems management. According to the World Health Organization (WHO, 2019), the provision of health services can be greatly influenced by factors such as access to care, transparency of coverage, a focus on the needs of patients, and the generation of relevant information. By assessing the vaccine uptake among Matatu crew, the study will provide valuable information on the effectiveness of the government's plan to prioritize and protect high-risk groups, as well as identify any barriers to vaccine uptake that need to be addressed. The results of the study can inform future efforts to improve the health and well-being of the Matatu crew and the wider population in Meru stage.

## **1.2 Problem Statement**

Studies show that during a disease outbreak infected individual have unequal chances of spreading the disease to others. For COVID 19, 80% of the transmissions can be traced to approximately 20% of individuals within the given population (Shen, 2020). There are credible evidence placing transport workers at a greater susceptibility in contracting the Covid pathogen, and thereafter spreading the same to their customers owing to duration of exposure and proximity (Fineberg, 2020; Van, 2020). This is compounded by the fact that they transverse several counties and regions.

Following several months of lockdown and public service vehicles only carrying half capacity in Kenya, the directive was finally lifted towards the end of year 2021. Since then, PSVs have emerged as a weak link in the efforts towards containment of Covid-

19 pandemic with passengers reporting that Matatu crew are bending Covid-19 rules mostly by overloading and allowing passengers without masks to board their vehicles.

In the Meru matatu stage, Matatus vary from fourteen sitters, ten sitters and forty-two sitters. Most of this carry and drop passengers along the routes they traverse. Previous studies have shown that over 75% of Meru residents rely on matatu transport. Meru is among counties highlighted as being at heightened risk from both health as well as humanitarian impacts of COVID-19. Matatu crew specifically have been found to have higher exposure and vulnerability to COVID-19 due to their high interpersonal interaction and low adherence to in place COVID-19 protocols (Osunga et al, 2021; Kuchler et al., 2022). This is also evident in the CHMT daily report (see Appendix vi).

It is therefore important that matatu crew, together with the vulnerable groups should receive vaccination to lower the incidences of Covid 19. In the Covid 19 vaccination campaign this group has been greatly sidelined. Matatu crew at Meru stage may lack necessary information and it is not yet clear what of the predictors of vaccine uptake is owing to lack of previous studies.

### **1.3 Study Purpose**

This study geared at identifying the factors that predict Covid 19 vaccine uptake amongst Matatu crew in Meru County. This information will be valuable in understanding the motivations and barriers to vaccine uptake in this high-risk population, and in developing strategies to improve vaccine uptake in the future. By understanding these factors, the study can provide important insights into ways to increase vaccine uptake and protect the health and well-being of the Matatu crew and the wider population.

#### **1.4 Research Objectives**

Broadly, the study sought to determine the predictors of COVID vaccine uptake among Matatu crew in Meru Matatu stage. This was guided by the following specific objectives:

- i. To assess the individual factors associated with the uptake of COVID vaccine among Matatu crew in Meru Matatu stage.
- ii. To establish the contextual factors associated with uptake of COVID vaccine among Matatu crew in Meru Matatu stage.
- iii. To evaluate perceptions associated with uptake of COVID vaccine among Matatu crew in Meru Matatu stage.
- iv. To establish experiences associated with uptake of COVID vaccine among Matatu crew in Meru Matatu stage.

#### **1.5 Research Questions**

- i. What are the individual factors associated with the uptake of COVID vaccine among Matatu crew in Meru Matatu stage?
- ii. What are the contextual factors associated with uptake of COVID vaccine among Matatu crew in Meru Matatu stage?
- iii. What are the perceptions associated with uptake of COVID vaccine among Matatu crew in Meru Matatu stage?
- iv. What are the experiences associated with uptake of COVID vaccine among Matatu crew in Meru Matatu stage?

#### **1.6 Study Justification**

The findings of this study have provided a comprehensive understanding of the levels, determinants and correlates of COVID-19 vaccine uptake and help to inform public

health policy makers in the formulation of effective strategies to increase uptake of the vaccine. In particular, the findings point to the importance of providing adequate education about the safety and efficacy of the Covid vaccine, as well as addressing economic, social and cultural barriers to uptake. In addition, the study has provided evidence-based justification for the need to increase the availability of COVID-19 vaccines and the need to ensure equitable access to them across different population segments.

### **1.7 Limitations of the Study**

Matatus are mostly on transit and only stop at the stage to pick and drop. To overcome this challenge, the questionnaire was brief and straight forward which has been pretested and can take not more than 8 minutes to be administered. The study being cross sectional, data was collected keenly to avoid serving questionnaires to the same people more than once.

The study only sought to find out individual factors, contextual factors, perceptions and experiences associated with uptake of COVID vaccine and was limited to Matatu crew in Meru Main Matatu stage.

### **1.8 Delimitation of the Study**

This study was carried out in Meru Matatu Stage which is in Meru County which serves various surrounding counties including Nairobi, Nakuru, Laikipia, Embu, Isiolo, Machakos, Tharaka nithi among others.

The study focused on public transport specifically matatus and not motorcycles, trains, ship, and aeroplanes

After seeking approval from the county government, Sacco and stage managers were

notified a day prior to data collection exercise. This enabled smooth data collection. Respondents were assured of anonymity with questionnaires only identified by random numbers.

### **1.9 Study Significance**

The extent of COVID-19 vaccine uptake among matatu crew was not known despite their being in constant contact with many people, and traversing many counties. The selection of the Meru Matatu stage was purposeful as it provides a clear perspective on the vaccine uptake among Matatu crew in urban, peri-urban, and rural areas since Meru had been one of counties flagged as being under high risk from health and humanitarian impacts of COVID-19. This information will be crucial in understanding the vaccine uptake among Matatu crew and the impact it has on the health and well-being of the crew and the wider population. The results of the study can inform future efforts to improve access to vaccines, address any barriers to vaccine uptake, and protect the health and well-being of the Matatu crew and the wider population.

### **1.10 Study Assumptions**

The study assumed that matatu crew were literate, and had awareness of existence of Covid 19 pandemic.



### **1.11 Operational Definition of terms**

**Beliefs:** Beliefs refer to ideas, opinions, or convictions that an individual holds to be true, often without any proof or evidence

**Conductors:** A person working with a matatu driver whose responsibility is to help passengers board the public service vehicle.

**Loaders:** People who help in loading and offloading customers luggage in matatus

**Matatu crew:** People working in matatu industry

**Matatu Sacco:** Matatu Sacco refers to a savings and credit cooperative society that is specific to the Matatu industry in Kenya

**Matatu:** Matatu is a colloquial term commonly used in Kenya to refer to a minibus or similar vehicle that is used as a taxi.

**Perceptions:** Perceptions refer to the way in which an individual interprets and gives meaning to information and experiences.

**Politics:** Politics refers to the process of making decisions for a group or society, often involving the use of power and authority.

**Predictors:** Something such as an event or fact that enables something else

**Stage managers:** county council and matatu Sacco employees who ensure smooth running of operations in a stage

**Touts:** These are unofficial/seasonal matatu crew who work as conductors

**Vaccination:** Administration of preparation which is used to stimulate or activate the body's immune response against diseases

**Vaccine uptake:** The proportion of the eligible population who are vaccinated within a defined period of time

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Introduction

The following chapter reviewed works done by other authors on Covid 19 uptake as well as the arguments around predictors such as individual factors, Contextual factors, Perceptions and Experiences associated with uptake of COVID vaccine. Further the theoretical framework and finally the conceptual framework are also covered here.

#### 2.2 Covid 19 Vaccine Uptake

The overall level of COVID-19 vaccine uptake in Kenya is reported to be low, as compared to vaccines against common childhood diseases. In sub-Saharan Africa, previous studies have indicated that 85% of Cameroonians, 50% of Zimbabweans and 52% of South Africans were found either to be hesitant or totally reject the COVID- 19 vaccine (Barasa et al., 2021) In Kenya, hesitancy or refusal was found to be at 24% as of July 2021 (Rego et al, 2021). Further studies have identified education level, age and socio-economic status as the socio-economic and demographic as factors that predict hesitancy to vaccination (Kyobutungi, 2021)

A recent study in Kenya showed that vaccine uptake is determined by vaccine saliency, behavioral intentions, and environmental constraints. To improve uptake this factors must be addressed (Oriaso, 2022). In effort to increase uptake the Kenyan government had announced that from December 2021, people would be barred from certain public places unless they had received atleast two doses of Covid- 19 vaccine. This was however retracted since very few residents meet this condition. Fewer than 8% of the Kenyan population had been fully vaccinated with another 5% only partly vaccinated

(Oriso, 2022). A study by Barasa et al. (2021) recommended that a successful vaccination drive campaigns must be promoted in an environment of open access to real time safety data at both national and regional level with and risk-based assessments to help people make informed decisions.

## **2.3 Individual Factors Associated with Covid 19 Vaccine Uptake**

### **2.3.1 Awareness**

Studies conducted in China where Covid 19 originated have shown majority of the people have sufficient knowledge on risks associated with COVID-19 vaccine and this knowledge has significantly affected their attitudes towards accepting the vaccine. This was seen in the high numbers that accepted and showed up for vaccination (Fan et al., 2021). Further, Khalis et al. (2021) revealed that people who showed greater information on the COVID-19 vaccine information showed higher likelihood of accepting the vaccine.

Community participation is essential to ensure health education and vaccine promotion strategies are be responsive and sensitive to local communities (Barasa et al, 2021). Further, administration of vaccines should be by usual health practitioners in an environment that is familiar and convenient (Aschwanden, 2021).

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and vaccine promotion strategies are be responsive and sensitive to local communities (Barasa et al, 2021). Further, administration of vaccines should be by usual health practitioners in an environment that is familiar and convenient (Aschwanden, 2021). Campaigns and programs should also be designed and implemented to educate people on the benefits of taking the vaccine and address myths and misinformation associated with it (Garcia et al., 2021). This could be done through the use of social media campaigns and other forms of media, such as radio, television, and print media (Garcia et al., 2021). Healthcare provider's should also be engaged in order to help educate people on the efficacy and safety of the vaccine, as well as to address any concerns or questions they may have (Aschwanden, 2021). This could include providing easy access to relevant and trustworthy information, such as information from the CDC or WHO (Aschwanden, 2021). Finally, it is important to ensure that policies and strategies in place to promote vaccine uptake are equitable and inclusive for all members of the community (Barasa et al., 2021). This could include ensuring access to the vaccine for all members of the community and providing additional resources and support for those who are at higher risk of contracting the virus (Barasa et al., 2021).

### **2.3.2 Beliefs**

Beliefs highly influence decision to take up COVID-19 vaccine or not. These include conspiracy beliefs propagated on social media. Notable hesitancy have been associated with conspiracy beliefs such as COVID-19 being a man generated disease, that the virus was enforced to increase vaccination against other conditions, the intention of the COVID-19 vaccination to implant microchips in people and the vaccination being associated with increased incidence of infertility (Sallam et al., 2021).

A study that sought to find out the predictors associated with COVID-19 vaccination uptake among young adults showed they displayed less intention towards COVID-19 vaccination. This is linked to the perception that the vaccination trials were hurried which influenced their intention to get the vaccine within 6 months (Gala et al., 2022). A different study by Gurley et al. (2021) found a significant association between unwillingness to receive the vaccination with concern that the vaccine approval process was rushed. However, a study conducted by Husain et al. (2021) disagreed, and reported that these misconceptions had no significant impact on the intention of the masses to receive the vaccine. Furthermore, a study conducted by Kosarkova et al. (2021) investigated the role of religion/spirituality and religious conspiracy beliefs towards COVID-19 vaccination uptake and hesitancy among a population in Czech. A significant association was captured between religion and spirituality, and COVID-19 uptake.

Other beliefs associated with COVID-19 vaccination uptake include concerns about the safety of the vaccine, the potential for adverse effects, and the untrustworthiness in the government and healthcare systems (Sallam et al., 2021; Gurley et al., 2021). Additionally, a study conducted by Kosarkova et al. (2021) found that respondents with higher religiosity were more likely to report vaccine hesitancy and were more likely to express negative attitudes towards vaccination. In addition, lack of knowledge and awareness about the benefits of vaccination, the fear of needles and the cost of the vaccine are also believed to be associated with hesitancy towards the COVID-19 vaccine (Gala et al., 2022; Husain et al., 2021).

### **2.3.3 Experience with Past Vaccination**

According to the study by Fan et al. (2021) it was found that those who took past influenza vaccine were likely to take the COVID-19 vaccine. A study by Mo et al.

(2021) revealed that development of side effects with medication or pain from injections were a factor in determining uptake of the vaccine.

Moreover, mothers who had taken their children through immunization against childhood diseases were inclined to take the vaccine as opposed to their counterparts of the same age group who had not (Shen, 2020). This shows that those who had an experience with other vaccines were more likely to take Covid 19 vaccine. In conclusion, individuals who have had experience with past vaccinations are more likely to be willing to get vaccinated with Covid 19 vaccine.

## **2.4 Contextual Factors Associated with Covid 19 Vaccine Uptake**

### **2.4.1 Communication and Media Environment**

A study conducted by Silva et al. (2021) revealed that in as much as majority of the people were in favor of having the COVID 19 vaccine, there were concerns associated with the Safety (37%), effectiveness (24%) relayed through mass media. The information people consumed from social medial whether verified or not was likely to impact the decision on whether to take Covid 19 vaccine or not.

Another study in the U.S revealed that most people were more likely to accept COVID-19 vaccine uptake based on information from three major sources which include social networks (40.5%), mass media (49.5%) and health agencies. Higher vaccine acceptance was correlated with information from scientists and health agencies while the social media was associated with low levels of vaccine acceptance (Qiao, 2020).

Furthermore, news media was identified as a crucial factor that can influence the views and opinions of people on the COVID 19 vaccine uptake. Studies have shown that negative news reports and stories surrounding the COVID 19 vaccine can create doubt or fear in the minds of the public and can ultimately affect the decision on whether to

take the vaccine or not (Matos et al., 2020). Therefore, it is important to have effective communication and media environment with regards to Covid 19 vaccine uptake in order to ensure that the public is informed with accurate and reliable information which can ultimately influence their decisions.

#### **2.4.2 Politics**

Politics also has a significant impact on vaccine uptake and/or hesitancy according to a study conducted in US, which found a significant association between vaccine uptake and political affiliation (Schoch-Spana et al., 2021). In China, Mo et al. (2021) study results showed that factors such as national pride and collectivism were critical in influencing the people to take up the vaccine. It is also reported that those who found it difficult to stick to government protocols regarding COVID-19 prevention such as failure to wear face masks were also more likely not to take Covid 19 vaccine. This is because reduced adherence could also be a result of low or lack of trust in government institutions promoting and enforcing such initiatives.

In other countries such as India, there is a correlation between Covid 19 vaccine acceptance and people's understanding of the disease, its severity, and the effectiveness of the vaccine. Since the government has been heavily promoting the vaccine, those who trust the government and its messages are more likely to accept the vaccine. Similarly, those who are aware of the dangers of the virus and its spread are more likely to accept the vaccine (Srivastava et al., 2021). Other political factors that have been found to influence Covid 19 vaccine uptake are the economic impact of the pandemic and the availability of resources to acquire the vaccine. For example, in India, there have been reports of people not taking the vaccine because it is too expensive or not available in their area. In conclusion, politics plays a vital role in the uptake of Covid 19 vaccine. Factors such as trust in government messages and policies, national pride,

collectivism, economic impact, and availability of resources all affect the decision to accept or reject the vaccine.

### **2.4.3 Sacco Influence**

In Kenya, general barriers to vaccine uptake have been found to include low confidence in makers and promoters of the vaccine, low perception of risk, distrust in government institutions, lack of accessibility, disruption of schedules, and lack of endorsement by community and elected leaders (Kyobutungi, 2021). To overcome these barriers, audience appropriate communications should be produced and shared, including visible endorsements from trusted leaders to increase awareness and to address different cultural and religious concerns.

Organizations that facilitated their employees to access vaccinations were found to have a positive influence in uptake of Covid 19 vaccination. Employees who were granted time off to get vaccination and recover from side effects were found to have a positive attitude towards uptake of the vaccine as opposed to those who were not (Kyobutungi, 2021).

Organizational policies such as providing information on the vaccine, encouraging conversations about it, and providing incentives to employees who receive it have also been found to influence uptake of the vaccine (Kyobutungi, 2021). Similarly, workplace health promotion activities such as providing health check-ups, providing counselling, and creating a vaccination friendly environment can also help to increase vaccine uptake (Kyobutungi, 2021).

## **2.5 Perceptions Associated with Covid 19 Vaccine Uptake**

### **2.5.1 Risk Benefit**

Vaccine uptake is associated with a variety of socio-demographic factors which



influence the ability to ensure complete control of the condition. A study conducted by Graupensperger et al. (2021) revealed people had high intentions of getting the COVID-19 vaccines when they perceived it as being important. However, the study revealed that younger adults were less likely to be vaccinated as they did not consider themselves at risk of severe disease.

The risks and benefits associated with vaccination are highly instrumental in enabling uptake of the COVID-19 vaccine. A study conducted by (Zhou et al., 2021) sought to capture factors that are associated with COVID-19 intentions among Chinese students. The results captured from the study revealed that only 51% of the students were willing to be vaccinated against the COVID-19. A majority of those who were hesitant to get vaccinated was as a result of the doubt on the efficacy of COVID-19 vaccines since those vaccinated were still at risk of getting the disease.

A study conducted in U.S revealed that a majority of the people who had a previous encounter with Covid 19 were willing to take the vaccine. Other studies have shown people were also concerned about the side effects and vaccine mandates associated with the taking the vaccine (Lucia et al., 2020).

Overall, the risk-benefit perception of the COVID-19 vaccine has significant implications on the uptake of the vaccine. This perception is influenced by multiple factors, including socio-demographic characteristics and the perceived risk, benefits and side effects associated with the vaccine.

### **2.5.2 Mode of Administration**

A medication administration route is often classified by the location at which the drug is applied, such as oral or intravenous. The choice of routes in which the medications are applied depends not only on the convenience but also on the drug's properties and

pharmacokinetics. An intramuscular route can be used when oral drug absorption occurs in an erratic or incomplete pattern; the drug has high first-pass metabolism or when the patient is none compliant. A depot preparation of the drug can be given intramuscularly, and the medication dissolves slowly into the blood circulation to provide a sustained dose over a more extended time. Vaccines can also be administered via the intramuscular route. The mode of delivery for Covid vaccines is limited to intramuscular vaccination (WHO, 2022).

Even if intramuscular vaccination is safe and effective, some people would prefer other modes of administration such as intra mucosal. With Reports suggesting an increased risk of thrombosis with thrombocytopenia syndrome and Myocarditis, a general fear caused vaccine hesitancy. However, these conditions are rare, and most of the reported cases were very mild and self- limiting. Some reported concerns on mode of administration include needle size, perceptions of pain and fear/anxiety, and seeing the needle. Therefore, understanding mode drug administration can potentially inform treatment adherence decisions (WHO, 2022).

Moreover, different patient preferences and cultural beliefs and practices might affect the selection of the mode of administration in the Co vid-19 vaccine uptake. For example, in some societies, the use of intramuscular injections is frowned upon, and hence the need for more information about other modes of administration. The availability and accessibility of alternative routes of administration for Covid-19 vaccines could increase the acceptance of the vaccines and help in the acceptance of the vaccine by those who are hesitant (WHO, 2022).

### **2.5.3 Accessibility**

Accessibility for a service is creating an enabling environment for the service to be

used. Economic, political and socio-cultural factors may influence the vaccine's uptake (WHO, 2021). Access to COVID-19 vaccination sites and coverage is important for effective planning of vaccination programmes (Mistry et al., 2022).

Beyond geographical access, other factors that may affect COVID-19 vaccination coverage at population level including vaccine availability and, individual factors such as literacy, vaccination perception and acceptability, and, household level factors including location (WHO, 2022)

The impact of accessibility on COVID-19 vaccine uptake is complex and can be further divided into three main components: 1) Accessibility to the vaccine: Accessibility to the vaccine is a key factor in determining how many people get the vaccine. This includes factors such as availability, affordability and insurance coverage. If the vaccine is not available, or if it is too expensive, people may not be able to get the vaccine. 2) Accessibility to information about the vaccine: Accessibility to information about the vaccine is also an important factor in determining how many people get the vaccine. People need to be informed about the vaccine in order to make an informed decision about whether or not to get it. This includes factors such as educating people about the vaccine, making sure they understand the risks and benefits, and providing resources that explain the vaccine in different languages. 3) Accessibility to healthcare providers: Accessibility to healthcare providers is also important in determining how many people get the vaccine. People need to be able to find healthcare providers who can provide the vaccine and make sure that those providers are accessible. This includes factors such as making sure there are enough healthcare providers to meet the demand, that the providers are located in convenient areas, and that they accept the insurance plans people have.

## **2.6 Experiences with Covid 19 Vaccine Vaccination**

### **2.6.1 Vaccination**

Those who have been vaccinated and those who haven't have different experiences. Previous studies have shown age, level of education; gender and occupation to influence decision to or not to get vaccinated (Sherman, 2022). Two studies that focused on healthcare workers found that majority felt at risk due to the nature of their job, and were likely to take the vaccine. Some health careworkers were reluctant thus wanted to delay until more data was available, and only a small proportion rejected being vaccinated (Mistry et al., 2022).

Another study found that Vaccine acceptance was more in young (76%) and female gender (63.3%). 31.48% of women refused to take vaccine due to doubts about the effectiveness of the vaccine while (42.19%) of men refused to take vaccine because of previous exposure to COVID-19 and (33.17%). Refused to take the vaccine due to side effect profile of the vaccine Nonetheless, many people are reluctant to receive the COVID-19 vaccine as they were concerned about side effects (Shah et al., 2022).

It was reported in the media recent in Germany that only 33% of the population showed a willingness to receive the vaccine; however, they were slightly more hesitant about the side effects. While about 19% of people said, they do not want to receive this vaccine at all. As rumors emerge, some of those who received first dose were reluctant to get second dose. Among those who were unvaccinated majority showed mistrust in vaccine benefits and concerns about unforeseen future effects, and commercial profiteering from pharmaceutical companies and preferred natural immunity (Lazarus et al., 2020)

### **2.6.2 Side Effects Experienced**

Many studies showed that majority of those who took part in studies had a bigger level of belief in vaccination necessity and safety. However, those who got the AstraZeneca vaccination reported more adverse effects than other vaccines. muscle pains, headache, fever, injection site pain and fatigue were the most frequently reported side effects (Shah et al., 2020). (46.9%) more participants were concerned about AstraZeneca thrombotic complications than other vaccine types. The top five side effects reported by participants were muscle pain, sense of fatigue, injection site pain, fever and headache in that order. These Side effects impacted work capacity and was significantly higher among participants who received AstraZeneca (Shah et al., 2020).

A study in Saudi Arabia assessed the short-term side effects associated with COVID-19 vaccines. It study found that most of the participants reported headache, fever, pain at the site of the injection and fatigue. These was more frequent after the second dose. However, only a few patients needed to see a doctor or to be admitted to the hospital due to side effects of the vaccine. Another concluded that corona virus vaccinations were well-tolerated and safe, with most post-vaccine adverse effects being moderate to mild (Mo et al, 2020).

According to WHO (2021), regardless of the vaccine, one may experience body aches, tiredness for a day or two run a fever and headaches. Swollen lymph nodes and chills can also occur. These symptoms do not mean one sick but only signal that the immune system is responding to the shot and building up protection against the corona virus (WHO, 2021)

Studies have recommended that more research on vaccination safety is needed to understand the long-term adverse effects of vaccinations better, improve the public trust, and accelerate vaccine adoption. Since few studies were carried out to increase

knowledge about the COVID-19 vaccine's adverse effects perceptions rather than experiences predict uptake of Covid 19 vaccine. Those reported to have missed work after Covid vaccine were more of anticipating side effect than experiencing work-disruptive symptoms (Lazarus et al., 2020)

## **2.7 Theoretical Frame Works**

### **2.7.1 The theory of Reasoned Action**

This theory lays emphasis on the effect of intentions and attitudes and in changing or modifying an individual's behavior. Actions that mostly lead to a healthy outcome are preceded by adequate knowledge and determination to adopt the healthy behavior. In order to learn and develop healthy behaviors, there are two cognitive processes come to play: the first is what significant others think, and the second one is individual motivation to follow those significant people. If an individual sees a behavior as a social norm, or thinks a behavior by a significant other is important, then that is likely to influence his decision (Collins et al., 1985). More people are likely to take up the Covid vaccine if they see their leaders take it. (Ramayah et al, 2009).

The theory of reasoned action (TRA) is useful in understanding how individuals make decisions regarding the Covid 19 vaccine. According to the theory, an individual's intention to take the vaccine is a direct result of his attitude towards it and subjective norms. An individual's attitude is based on his perception of the benefits and risks associated with taking the vaccine, while subjective norms refer to how individuals perceive the opinion of significant others, such as family, friends, and healthcare providers. If an individual perceives that his significant others will approve and support his decision, then he is more likely to take the vaccine. Similarly, if he perceives the benefits of taking the vaccine to be greater than the risks associated with it, then he is more likely to take the vaccine (Fishbein & Ajzen, 1975).

### **2.7.2 Health Belief Model**

The argument behind health believe model is that people are able to make better decisions if they have better information hence better health. When people understand the how and the why they should make certain choices, they will then be at a much better position to make the decision independently, intelligently and maturely. The lesson from this theory is that one must first believe that s/he is susceptible to Covid 19; that Covid 19 is serious and can lead to severe disease or death; that there is a successful intervention which is the Covid vaccine; and that they have what it takes to overcome the barriers to Covid 19 Vaccination (Hochbaum, 1970). Each step depends on the previous one.

The application of the Health Belief Model to Covid 19 vaccine uptake suggests that people are more likely to get vaccinated if they perceive themselves at risk of getting Covid 19 and if they understand that the vaccine is effective in preventing it. It also suggests that the public needs to be aware of the benefits and risks of the vaccine and be confident in the safety and efficacy of the vaccine. Furthermore, removing barriers such as cost, access, and mistrust of the health care system is necessary to increase vaccine uptake. The model also proposes that providing incentives, such as free vaccinations, or increasing the availability of the vaccine can help to encourage more people to get vaccinated.

### **2.7.3 The Human Development Model**

This model shows a strong link between health, economy and environment, and has its base on sustainable health for all. There is need for equitable distribution of the available resources according everyone an equal opportunity or level ground for meeting their most basic needs. Thus, the economy must be sustainable and

environmentally acceptable. If this happens, then people have an equal opportunity to satisfy their health needs. The better the economy the higher the chances that people will improve health seeking behavior. Higher family income is directly proportional to the more the knowledge about Covid 19 prevention (Ajzen, 2020; Akpabio et al., 2008)

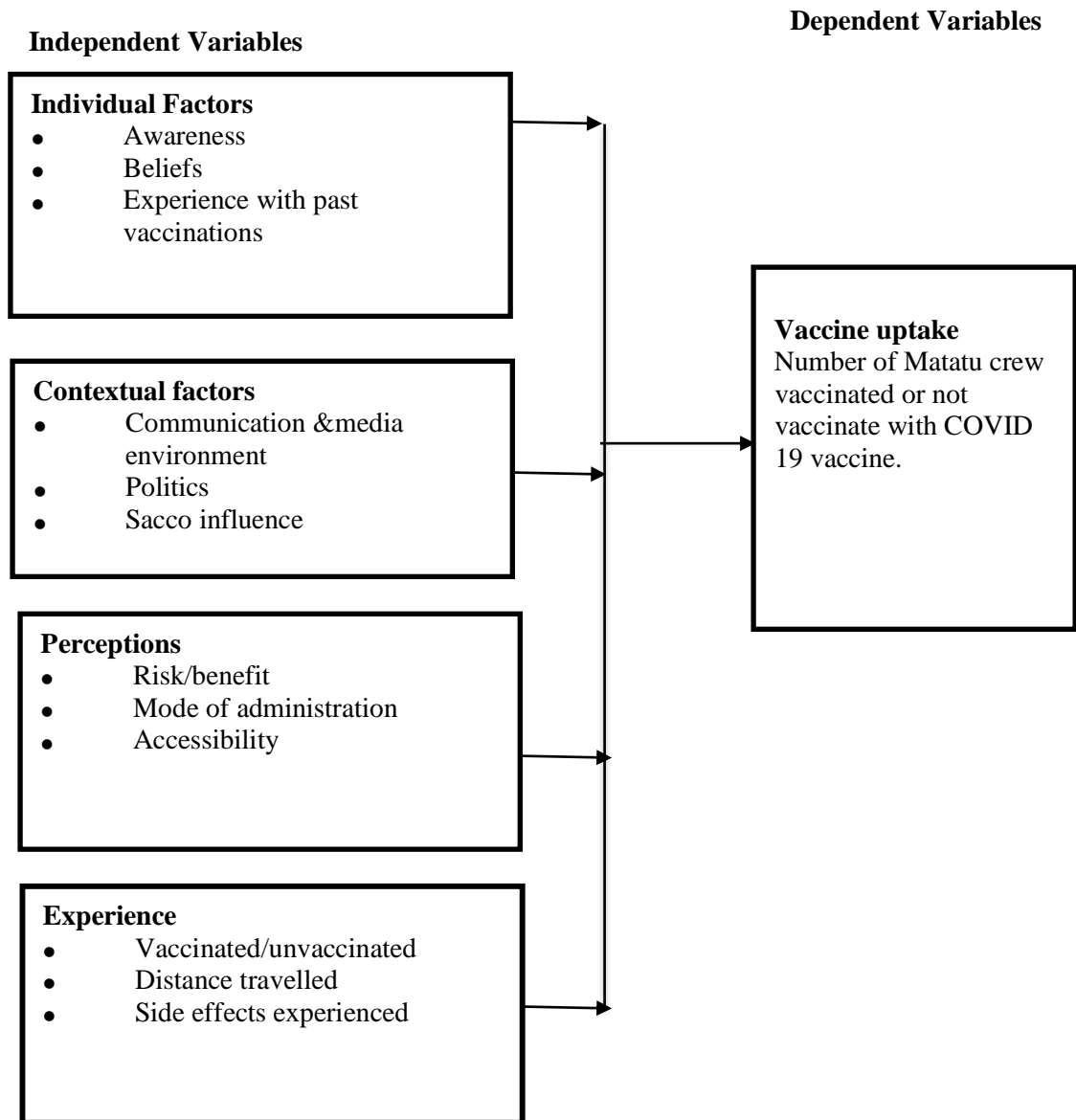
The Human Development model involves four main aspects: 1. Education: Education is an important factor in the development of a person's knowledge and skills, allowing them to acquire the necessary knowledge to understand the benefits of the Covid 19 Vaccine. 2. Health: Access to health services, knowledge of health risks and availability of preventative health measures are all necessary to ensure that people are informed of the risks and benefits of the vaccine. 3. Economic: People require access to financial resources in order to pay for the cost of the vaccine. 4. Social: Social networks and social protection are essential in order to facilitate the uptake of the Covid 19 vaccine. This includes access to information and support networks that can provide guidance and advice on the vaccine.



## 2.8 Conceptual Framework

Figure 2.1

### *Conceptual Framework*



## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

The following chapter describes the materials and methods intended to be used in the study. It covers the research design, the targeted population, determination of sample size, sampling technique, data collection tools, piloting, analysis of data analysis as well as ethical consideration.

#### **3.2 Research Design**

The research design used in this study is a cross sectional descriptive research design, because it described Covid 19 vaccination uptake amongst Matatu crew in Meru Matatu stage alongside the predictors of its uptake (Orodho, 2007). Additionally, the mixed-methods research design can provide more comprehensive understanding of the complex issues surrounding COVID-19 vaccine uptake, as it allows for the collection and analysis of both qualitative and quantitative data. The use of cross-sectional descriptive research design also provides a snapshot of the current situation, giving insight into the extent of vaccine uptake and the predictors of vaccine uptake among Matatu crew in Meru Matatu stage. By combining these two research approaches, the study can provide a more comprehensive picture of the predictors that influence COVID-19 vaccine uptake and the perspectives of Matatu crew towards the vaccine (Ngechu, 2004).

#### **3.3 Variables**

##### **3.3.1 Independent Variables**

These comprise: Individual factors; Contextual factors; Perceptions and Experiences associated with uptake of COVID vaccine among Matatu crew in Meru Matatu stage

### **3.3.2 Dependent Variable**

The dependent variable in this study is predictors of COVID vaccine uptake among Matatu crew in Meru Matatu stage

### **3.4 Study Location**

The study was done in Meru town which is in the eastern side of Kenya. Meru is among counties highlighted by MOH as being at heightened risk from both health as well as humanitarian impacts of COVID-19. It houses the county headquarter, and is in the top ten urban Centre in the country by size. It hosts the Meru matatu stage at Latitude: 0.0463405 and Longitude: 37.6566535. Meru matatu stage opens up Meru to other counties including Isiolo, Laikipia, Nakuru, Tharaka Nithi, Kitui among others, and serves about 50,000 people in a day

### **3.5 Study Population**

The study population of this study were the Matatu crew in Meru Matatu stage. All Saccos (18) within the Meru stage were sampled. At any given time, the Meru stage can accommodate 400 Matatus with Matatus taking an average 30 minutes to load/offload. On average the stage is usually at 80% capacity according to the head stage manager. The population of this study were 18 Sacco office clerks (1 per sacco), 18 touts (1 per sacco), 36 loaders and 2560 drivers or conductors (1 respondent from each Matatu) for the duration of data collection(4hours\*2\*320). The inclusion criteria for drivers and conductors was those who were at the Meru Matatu stage on the day of data collection, and bearing Sacco identification badges and having worked there for a period of more than six months. This is shown in the table below.

**Table 3.1**

*Matatu Stage Crew*

Sacco clerks	Touts	Loaders	Conductors/drivers
18	18	36	2560

**3.6 Sampling Design and Sample size**

**The Sampling Techniques**

Meru County is sampled purposefully; all 18 Saccos that have applied for slots in Meru Matatu stage were sampled. 1 clerk, 1 tout and two loaders from each Sacco were sampled making a total of 72 respondents. For quantitative data, Systematic random sampling was used to select matatu drivers and conductors, where in every 6<sup>th</sup> Matatu (2560 matatus) one respondent was selected as a respondent. Where there were cases of more than one respondents eligible in a Matatu ie where Matatu has both driver and conductor, only one of them was selected. Purposive sampling was preferred to pick county staff working at the stage for in-depth interviewing.

**Sample Size Determination**

This study used the Fisher et al., (1998) to compute sample size

$$n = \frac{Z^2 pq}{d^2} + \frac{Z^2 pq}{d^2}$$

Where:

n = sample size desired

Z = the Standard normal deviation (1.96, or a confidence interval of 95%

p = the estimated proportion with the characteristic of interest (placed at 40% for this study)

q=1-p

and

d = is the desired degree of accuracy. This is set at 0.05.

$$\frac{1.96^2 \times 0.40(1.0 - 0.4)}{0.05^2}$$

$$\frac{3.8416 \times 0.246}{0.0025}$$

$$=368.6$$

$$\approx 369$$

A 10% Sample size adjustment was applied to take care of non-response and incomplete questionnaires

$$110\% (369) =406$$

In order to accord every eligible respondent equal probability of selection, Systematic random sampling technique was used. Procedure proportionate to size or stratification was also be applied as shown in the table 3.2 below

**Table 3.2**

*Proportionate Sampling*

<b>Designation</b>	<b>Total number</b>	<b>Determination of Sample</b>	<b>K<sup>th</sup></b>
Sacco clerks	18	18/2632×406=3	18/3= 6th
Touts	18	18/2632×406=3	18/3= 6th
loaders	36	36/2632×406=6	36/6=6th
Drivers/ conductors	2560	2560/2632×406=394	2560/394=6th
			h
<b>Total</b>	<b>2632</b>	<b>406</b>	<b>406</b>

Systematic random sampling procedure was used where every 6<sup>th</sup> matatu entering the stage was sampled, and driver/conductor served with a questionnaire until the desired sample size is achieved.

### **3.7 Instruments of Data Collection**

Guided semi structured questionnaires (see Appendix ii) and interview guides (see Appendix iii) was the primary tools of data collection. This allowed for both open ended and close ended questions. Matatu drivers and conductors who are primary respondents were partially guided through the questionnaire. For Key informants who are County representatives at the stage interview guides was used. This was chosen as it allowed an in-depth interview. The key informants included the stage manager, enforcement officer, a Public health officer, cleaner and a social officer. Data from key informants was collected over a period of three days, with help of research assistants.

### **3.8 Pre-Testing, Validity and Reliability**

#### **3.8.1 Pre-Testing**

The pretest was conducted to ensure the quality and reliability of the data collection tools, and to identify any ambiguities or weaknesses in the tools. By selecting a 10% sample of the sample size from the Embu County main Matatu stage, the researchers were able to test the ease of use and suitability of the data collection tools, and make any necessary adjustments before conducting the main study. The pretest helps to increase the accuracy and validity of the results, and ultimately the overall quality of the study.

### **3.8.2 Validity**

Validity is a measure of the accuracy and truthfulness of the results of a study. It refers to the extent to which the research design measures what it is intended to measure. In this study, the validity of the data collection tool was measured using Cronbach's Alpha, which is a statistic that measures the internal consistency of a set of items on a survey or questionnaire. This measure indicates how well the items on the questionnaire are related to each other, and gives an indication of the reliability and consistency of the results.

### **3.8.3 Reliability**

Reliability refers to stability and consistency of research results over time and with different conditions. In research, reliability is an important factor to consider in order to ensure the results can be trusted and replicated. Correlation is one of the methods used to test the reliability of a research study. It measures the relationship between two or more variables and can help determine if the variables are consistently related to each other, providing evidence of the reliability of the data

### **3.9 Data Analysis**

Confirmation of questionnaire completeness and accuracy was done at the point of data collection. Editing, coding and data entry then followed. SPSS version 26 was used for analysis of quantitative data. To help figure out the characteristic of all the variables, descriptive analysis was applied to describe respondents' sampling structure as well as basic characteristics. Chi-Square and cross tabulation table was used to cluster various parameters. A 95% confidence interval and therefore a 0.05 p- value of was used in this study as the statistical significance standard.

### **3.10 Ethical Consideration**

Data collection carried out after being cleared by Kenya Methodist University Ethical review committee (see Appendix vi). Thereafter, the researcher sought approval permits from both NACOSTI (see Appendix vii) and the Meru County Director of Health (see Appendix v). Participation in the study was voluntary. The respondents who accepted to take part in this study were advised to fill an informed consent form (see Appendix D), while those who declined were not compelled in any way



## **CHAPTER FOUR**

### **RESULTS AND DISCUSSIONS**

#### **4.1 Introduction**

This chapter focuses on data analysis, presentation and interpretation. It presents data analysis as per the study objectives, presentation of data by use of APA table format, pie charts and data interpretation. The findings are derived from the questionnaires and interviews with key informants where a total of 388 primary respondents took part in the study. The chapter is organized as follows: Distribution of the participants according to the different terminus, Demographic characteristics of the operators, Vaccination prevalence, Individual factors, Contextual factors, Perceptions and Experiences associated with Covid 19 Vaccine uptake; and finally a chapter summary.

#### **4.2 Distribution of the Participants According to the Different Terminus**

The total number of participants distributed according to the various termini they were working from. Of all the eighteen (18) registered Saccos operating within the main Meru Matatu Stage, seventeen (17) had a representation on the date of data collection. One Sacco with zero representation was not included in further analysis. Distribution is as shown in table below

**Table 4.1***Distribution of Operators per Sacco*

Sacco name	N=388	
	N	%
Chuka ungwana	10	2.6
Digital	27	7.0
Inana	20	5.2
Kibantu	18	4.6
Mark one	18	4.6
Meiso	37	9.5
Mekina	30	7.7
Menya	35	9.0
Meru luxury	11	2.8
Meru Nissan	17	4.4
Meru shuttle	28	7.2
Millennium	13	3.4
Mitunguu	27	7.0
Nyamena	25	6.4
Prestige	21	5.4
Raha	28	7.2
Ungwana	23	5.9

### 4.3 Demographic Characteristics of the Operators

The table below shows the ages of the of the transport operators at the Meru Matatu Stage. From the results majority (50.5%) of them were between 31-40 years. Meaning majority of the respondents are middle aged individuals. In terms of duties most of the workers were drivers (57.7%). Most of them were married (82.2%) while only 2.8% (11) were divorced. The rest were single. In terms of educational levels most of them had attained up to secondary level (47.2%) while 36.1% (140) were tertiary school graduates. This means that most of the operators are well educated thus understood the subject under study. Only a small portion of 2.3% (9) had informal education. Detailed socio economic details are as shown in the table 4:2 below:

**Table 4.2**

*Socio Economic Characteristics of the Operators*

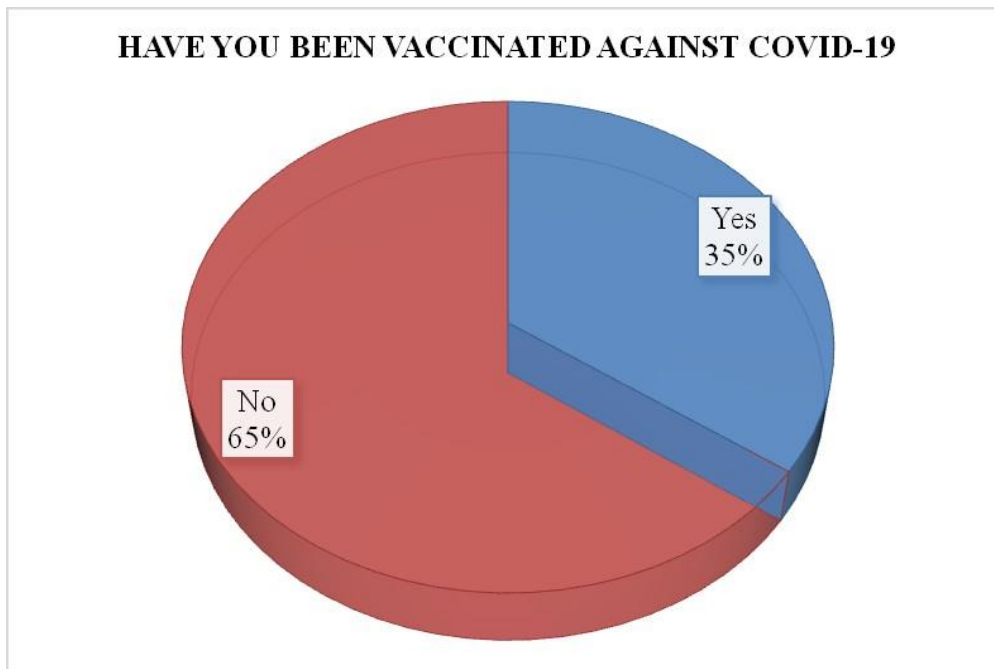
		<b>Frequency</b>	<b>Percent</b>
Age	21 - 30	65	16.8
	31 - 40	196	50.5
	41 - 50	103	26.5
	51 - 60	24	6.2
Marital status	Divorced	11	2.8
	Married	319	82.2
	Single	58	14.9
Duty	Clerk	63	16.2
	Conductor	63	16.2
	Driver	223	57.5
	Loader	10	2.6
	Tout	29	7.5
Highest level of education	College/University	140	36.1
	No formal education	9	2.3
	Primary	56	14.4
	Secondary	183	47.2

#### 4.4 Vaccination against COVID -19

Figure below shows prevalence of Covid 19 vaccination.

**Figure 4.1**

*Prevalence of Covid 19 Vaccination.*



From the above figure, it shows that the number of those not vaccinated were more, at 65%. This indicates that majority of the operators had not accepted the vaccine.

Asked if matatu crew were eager to get vaccinated, most key informants denied. One key informant said:

*“hata kukiwapea ruhusa waende wakachanjwe hawaendi, huwa wanazunguka tu alafu wanarudi hapa, ama wanaenda squodi kwa matatu za mlengo”*

(Even when we give them a day off to go for vaccination they don't go. They just make rounds and come back, or go for casual work in Matatus' that do not carry passengers from the stage”

#### 4.4.1 Reasons for Vaccination

Participants were asked reasons why they would get vaccinated against COVID-19. Majority of the respondents (99 percent) said they would get vaccinated because of prevention. Another 97.4 percent said they fear to transmit to a family member. In addition, 65.2% said going for vaccination is the right thing to do. The table below has the details.

In table 4.4 below, the operators were asked to give reasons why they would go for vaccination procedure for COVID-19 disease. Most of the operators indicated that they would like to go for vaccination and that they fear to transmit the disease to a family member. This shows concern care among the operators when in come to family members during the time of COVID -19 pandemic.

**Table 4.3**

*Reasons for Vaccination*

	No		Yes	
	Frequency	%	Frequency	%
Prevention	4	1.0	384	99.0
Fear to transmit to family member	10	2.6	378	97.4
Right thing to do	135	34.8	253	65.2

This was not in congruent with other findings. A study by [Nasimiyyu et al. \(2022\)](#) found that the reasons cited for vaccine hesitancy in Kibera (Nairobi) were safety concerns decide (18%), insufficient information available to (21%), and a lack of belief in the vaccine (34%), while the reasons in Asembo lack of belief in the vaccine (11%), insufficient information to decide (26%) and (Nyanza) were safety concerns (55%).

#### 4.4.2 Association of Demographic Factors with uptake of COVID -19

Analysis sought to establish association between the different demographic characteristics and Covid -19 vaccine uptake. All the studied demographic factors showed statistical significance association with going to be vaccinated at p value less than 5 as shown in table 4.4 below. This means that vaccine uptake can be influenced by factors such as occupation, marital status, gender, age, and highest level of education achieved by a participant.

**Table 4.4**

*Demographic Factors associated with uptake of COVID-19*

Individual characteristics	Have you been Vaccinated against Covid 19?		Pearson Chi- Square value	df	P - value	
	No	Yes				
Age	21 – 30	24	41	11.94	3	0.008
	31 – 40	53	143			
	41 – 50	47	56			
	51 – 60	11	13			
Gender	Female	32	30	9.201	1	0.002
	Male	103	223			
Marital status	Divorced	0	11	35.891	2	0.000
	Married	96	223			
	Single	39	19			
Duty	Clerk	28	35	99.98	4	0.000
	Conductor	25	38			
	Driver	43	180			
	Loader	10	0			
	Tout	29	0			
Highest level of education	College/University	37	103	32.39	3	0.000
	No formal education	9	0			
	Primary	31	25			
	Secondary	58	125			

This agrees with most public health study findings on various factors that can influence any vaccine uptake. These include Age: Older people tend to have higher vaccine uptake as they are more susceptible to severe illnesses from vaccine- preventable

diseases; Gender: Women tend to have higher vaccine uptake rates than men, although this can vary depending on the country and vaccine; Marital status: Married individuals have higher vaccine uptake compared to those who are single or divorced; Occupation: Frontline workers and healthcare workers have higher vaccine uptake rates compared to others, as they are at higher risk of exposure to vaccine- preventable diseases; and Education: People with higher levels of education tend to have higher vaccine uptake rates, as they are more likely to understand the importance of vaccination and the science behind it (Maleva et al., 2021). Understanding these factors can help health authorities and policymakers design effective strategies to increase vaccine uptake and protect public health.

#### **4.5 Individual Factors Associated with COVID-19 Vaccine Uptake.**

Away from demographic predictors, the study sought to establish if and how Awareness of Covid 19 Vaccine, Beliefs one had and Experiences with past Vaccines influenced uptake of the Covid 19 Vaccine. The findings are as follows:

##### **4.5.1 Awareness of COVID 19 Vaccines**

On awareness, the participants were tasked to self- rate their knowledge on various issues concerning the COVID-19 vaccines. When it comes to the knowledge where the vaccine is obtained, Majority of the respondents had a moderate extent 44.1%, thus they knew where to get the vaccine. In terms of mode of administration, also majority had a great extent (53.3%) meaning they were aware of the mode of administration. This was similar to doses required, awareness on requirements and the mode of transmission where majority knew at fifty-nine (58.8%), 58.5% and forty-nine (48.5 %) respectively, as shown in the 4.5.

**Table 4.5*****Rating Your Knowledge of COVID 19 Vaccines***

<b>How would you rate your knowledge of Covid 19 vaccines?</b>	<b>Where to get the vaccine</b>	<b>Mode of administration</b>	<b>Doses Required</b>	<b>Requirements</b>
	<b>n (%)</b>	<b>n (%)</b>	<b>n (%)</b>	<b>n (%)</b>
Very little extent	8 (2.1)	28 (7.2)	37 (9.5)	49 (12.6)
Little extent	30 (7.7)	56 (14.4)	43 (11.1)	43 (11.1)
Moderate extent	171 (44.1)	209 (53.9)	228 (58.8)	227 (58.5)
Great extent	54 (13.9)	48 (12.4)	39 (10.1)	35 (9.0)
Very great extent	125(32.2)	47 (12.1)	36 (9.3)	30 (7.7)
No answer	0 (0)	0	5 (1.3)	4 (1.0)

The above findings did not agree with information obtained from majority of the key informants, who believed that the Matatu crew lacked basic knowledge on Covid 19 vaccine.

It is evident that there was a significant association between the different aspects of knowledge on Covid –19 vaccination. All were statistically significant with p values less than 0.05. The individual characteristics associated with COVID-19 uptake on different aspects of knowledge included knowledge on mode of administration Chi square =110.45, d.f= 4, P value <0.00, knowledge on the doses required, Chi square = 136.521, d.f=4 and p value <0.000. Table (4.6) shows association on knowledge and the different aspects of COVID-19 vaccine.



**Table 4.6**

*Association of Knowledge on Different Aspects of COVID - 19 Vaccination and the Uptake of the Vaccine*

How would you rate your knowledge of covid 19 vaccines		Have you been vaccinated for Against COVID -19		Chi-Square Tests	df	P value
		Yes	No			
Mode of administration	Very little extent	0	28	110.45	4	0.000
	Little extent	27	29			
	Moderate extent	160	49			
	Great extent	19	29			
	Very great extent	47	0			
Doses required	Very little extent	0	37	136.521	5	0.000
	Little extent	25	18			
	Moderate extent	190	38			
	Great extent	9	30			
	Very great extent	24	12			
Requirement	Very little extent	28	21	14.161	5	0.015
	Little extent	34	9			
	Moderate extent	146	81			
	Great extent	19	16			
	Very great extent	25	5			

These results agree with previous studies that knowledge on risks associated with COVID-19 significantly influence attitudes towards accepting the vaccine. People who show greater knowledge on the COVID-19 vaccine have higher likelihood of accepting the vaccine (Fan et al., 2021; Khalis et al., 2021; Barasa et al, 2021).

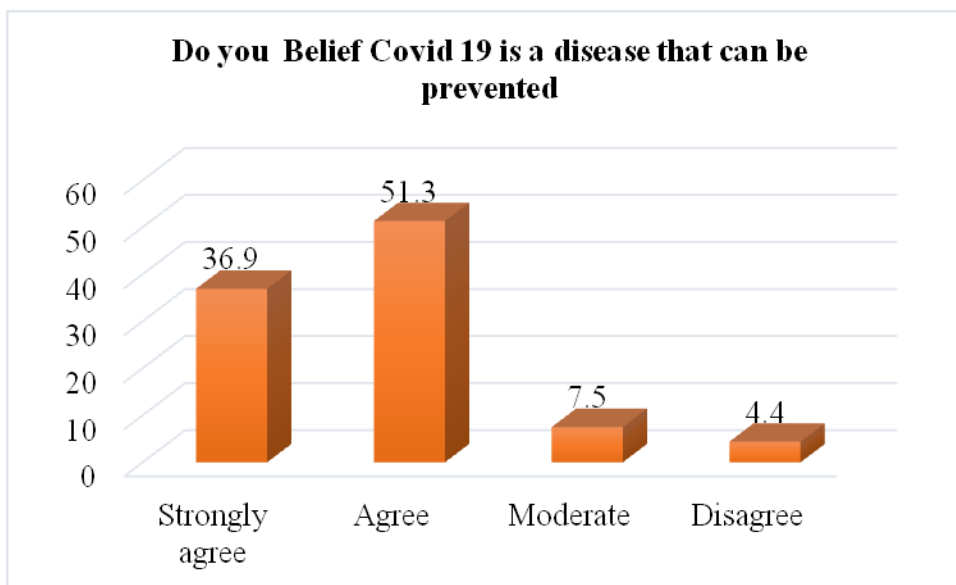
#### 4.5.2 Beliefs on COVID -19 Disease

This study sought to find out what beliefs respondents had regarding Covid 19, and its vaccines. Respondents were asked if they knew how the disease was transmitted.

Further, this study sought to find out if the respondents believed Covid 19 can be prevented.

**Figure 4.2**

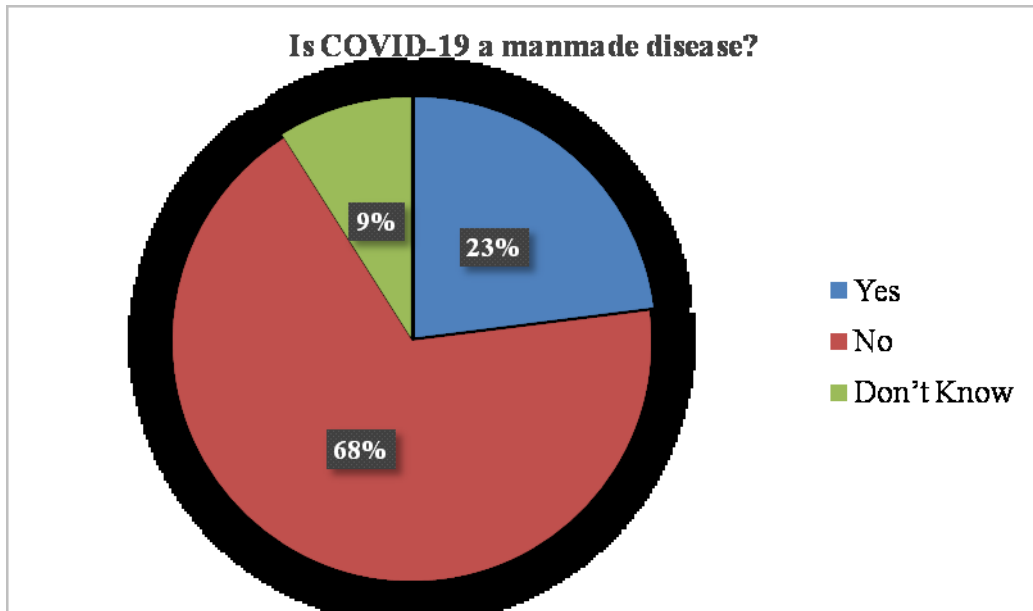
*Belief Covid 19 is a Disease that can be Prevented*



In the figure 4.2 above, the participants were asked if they thought that COVID -19 disease can be prevented. Majority of the respondents agreed (51.3%), that COVID -19 can be prevented. Another 36.9 % were also of the opinion that COVID -19 disease is preventable. While only a few people (4.4%) did not agree that COVID-19 can be prevented. This shows that there was a strong belief among the Matatu operators that that COVID-19 disease can be prevented.

**Belief that COVID-19 is a Manmade Disease**  
**Figure 4.3**

*COVID-19 is a Manmade Disease*



The respondents we asked to give information as to whether COVID -19 was a manmade disease. A majority (68%) of the respondents believed that the disease was not manmade, 23% of the respondents believed that it was a manmade disease while the rest (9%) did not have an opinion of the matter.

**Table 4.7*****Association Between Beliefs and COVID – 19 Vaccination***

Have you been Vaccinated against Covid 19?		Yes	No	Chi-Square Tests	df	P value
Do you belief Covid 19 is a disease that can be prevented?	Disagree	9	8	129.02	3	0.000
	Strongly disagree	34	9			
	Moderately Agree	29	0			
	Agree	171	28			
	Strongly agree	44	99			
How much do you agree with these statements: COVID-19 is a man-made disease	Disagree	8	0	106.584	4	0.000
	Strongly disagree	155	18			
	Moderately Agree	30	17			
	Agree	220	50			
	Strongly agree	38	50			
How much do you agree with these statements: The intention of the COVID-19 vaccination is to implant microchips to control people	Disagree			81.275	2	0.000
	Strongly disagree	42	17			
	Moderately Agree	76	236			
	Agree					
	Strongly agree	17	0			

Personal belief on COVID 19 also had a significant association with COVID -19 vaccination uptake. Belief on the preventability of the disease was significantly associated with the COVID-19 vaccine uptake. Belief that COVID-19 is preventable was associated with vaccination for COVID-19 Chi square, 129.02, df=3 and P value <0.00. On belief that COVID-19 is manmade was also significantly associated with vaccination for COVID-19 Chi square 106.584, df=4 and P value <0.00.

This finding is congruent to a finding by Mo et al. (2021)) revealed that individual factors such the perceived personal benefits and perceived social benefits were all critical in determining the uptake of the vaccine. Further, Studies have shown that people's beliefs about the COVID-19 vaccine are significantly influenced by their level of knowledge about the vaccine. A study published in the Journal of Medical Virology, the more people know about COVID-19 vaccines, the more likely they are to accept them. Individuals with higher levels of knowledge about the COVID-19 vaccine were more inclined to intend to get vaccinated (Shah et al., 2022). By increasing public education and addressing misinformation, public health officials can work to increase vaccine uptake and help control the spread of COVID-19. This finding is congruent to a finding by Mo et al. (2021)) revealed that individual factors such the perceived personal benefits and perceived social benefits were all critical in determining the uptake of the vaccine. The results suggest that personal beliefs about the preventability of COVID-19 and the belief that it is manmade can significantly influence people's decision to get vaccinated. This could be due to the fact that people who believe that the virus is preventable may be more likely to get vaccinated in order to protect themselves and those around them. Similarly, people who believe that the virus is manmade may be more likely to take preventive measures such as getting vaccinated. As such, it is important that health authorities, health care workers, and government officials take these beliefs into consideration when designing public health campaigns and policies that aim to increase vaccination uptake. This could involve designing campaigns that highlight the benefits of vaccination and debunk any myths about the virus being manmade. Additionally, campaigns should be tailored to different target audiences based on their beliefs about the virus. For example, campaigns for those who believe that the virus is preventable could focus on the importance of protecting oneself and others, while those for those who believe

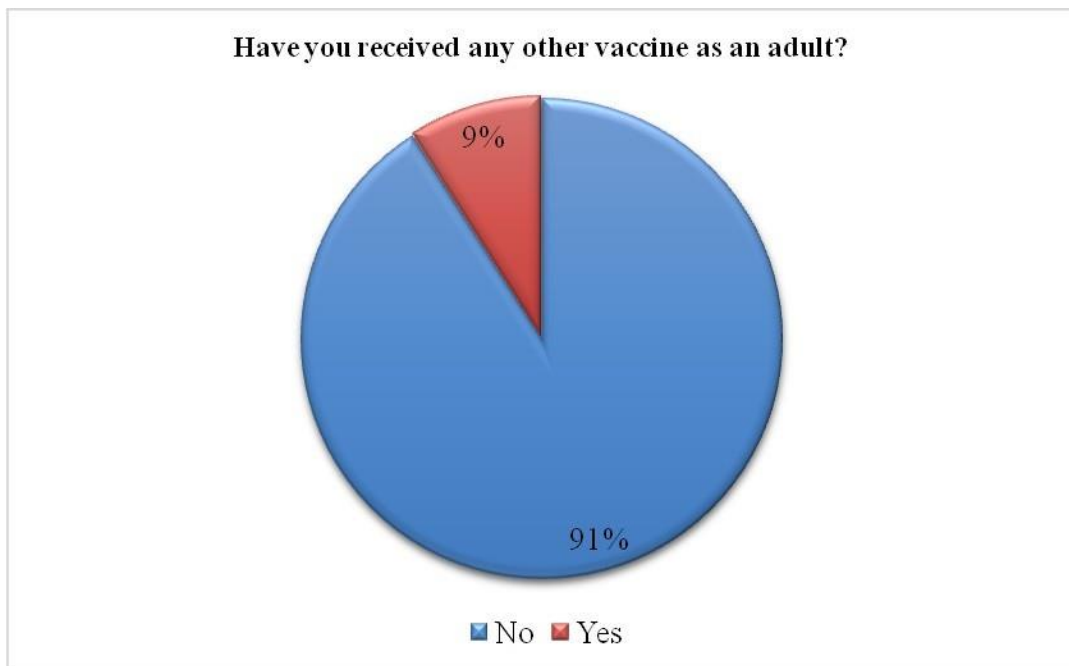
that the virus is manmade could focus on the importance of taking preventive measures.

### 4.5.3 Experience with Past Vaccination

This study sought to find out what experiences respondents had with previous vaccines, and test their association with Covid 19 vaccine uptake.

**Figure 4.4**

*Have had any other Vaccine apart from COVID-19 Vaccine*



The participants were asked if they have had any other vaccine apart from COVID - 19 when they are adults. Only 9% of the participants said they had received a vaccine as adults. This may indicate lower uptake of adults based vaccines. Probably the decreased uptake of COVID-19 vaccine was associated with the behavior of not taking the vaccines in spite of the vigorous communication and the seriousness that was attached to the COVID -19 vaccines.

Respondents were questioned about the Effects they had experienced with other

vaccines received as an adult. The results are as tabulated in table 4.8

**Table 4.8**

*Side Effects of the Other Vaccines you Received as an Adult*

		<b>N = 388</b>
		<b>Percent</b>
Dizziness	No	287 (74.0)
	Yes	101 (26.00)
Side effects	No	313 (80.70)
	Yes	75(19.30)
Headache	No	325 (83.8)
	Yes	63 (16.20)
Fatigue	No	371 (95.6)
	Yes	17 (4.40)
Fever	No	379 (97.7)
	Yes	9 (2.3)
Swelling	No	379 (97.7)
	Yes	9 (2.3)
Sweating at night	No	364 (93.8)
	Yes	24 (6.2)
Can't remember	No	375 (96.6)
	Yes	13 (3.4)
Uncomfortable	No	380 (97.9)
	Yes	8 (2.1)
Affected eyesight	No	388(100.0)
Thirsty	No	316 (81.4)
	Yes	72 (18.6)

From the results above, majority of the results most of the respondents did not experience the said side effects when they were vaccinated with the other vaccines.

From previous studies, it was shown that past vaccination experiences were likely to influence uptake of COVID 19 vaccine (Fan et al., 2021; Mo et al., 2021). However, this study neither agrees nor refutes this finding, since majority did not experience side effects with previous vaccine, it was not possible to agree or disagree with on his findings on whether development of side effects with vaccination or pain from injections was a factor in determining uptake of the COVID 19 vaccine.

#### 4.6 Contextual Factors Associated with Vaccine Uptake

The study also sought to find out contextual factors associated with Covid 19 which included communication and media environment; politics and Sacco influence.

##### Communication and Media Environment

The respondents were asked to respond to Sources of information on COVID-19 Vaccines.

**Figure 4.5**

*Sources of Information on COVID-19*

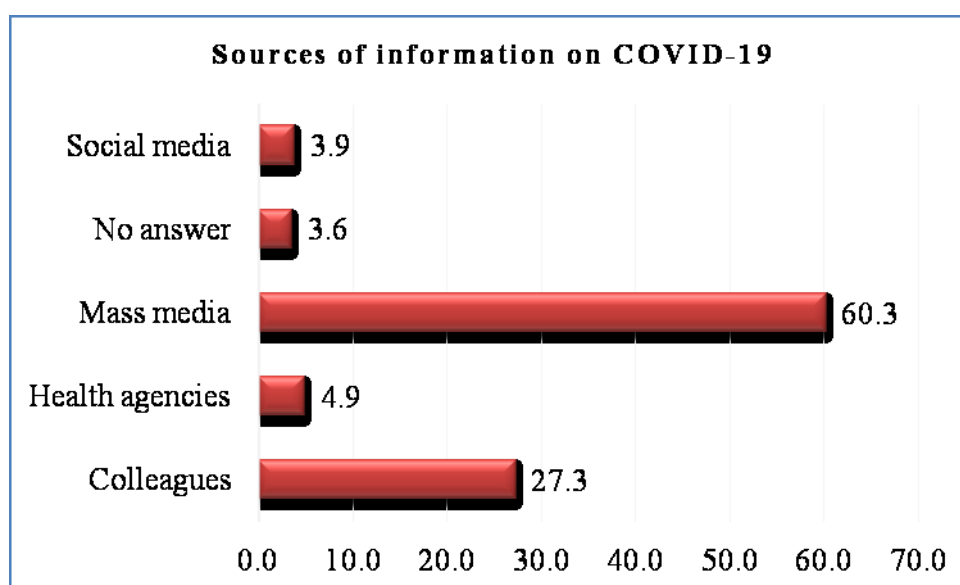


Figure 4.5 above shows that the various sources of information that the participants received COVID-19 vaccine information from. Most of the participants (60.3%) received information from mass media, 27.3% received information from their colleagues while they few of them received from social media (3.9%), Health agencies (4.9%) while 3.6% gave no answer. This means that mass media still remains the major source information on health. The same was upheld by majority of the key informants. However some dissented



*“huwa wanapata ujumbe mbaya huko kwa facebook na whatsapp inawapoteza. Wengi hawana wakatiwa kusikiza radio ama kusoma magageti sababu kazi yao inaaza usiku, na inaisha usiku’* said one key informant

(They get wrong information on face book and WhatsApp which misleads them. They don't have time to listen to news or read newspapers, because their work starts at night, and ends at night)

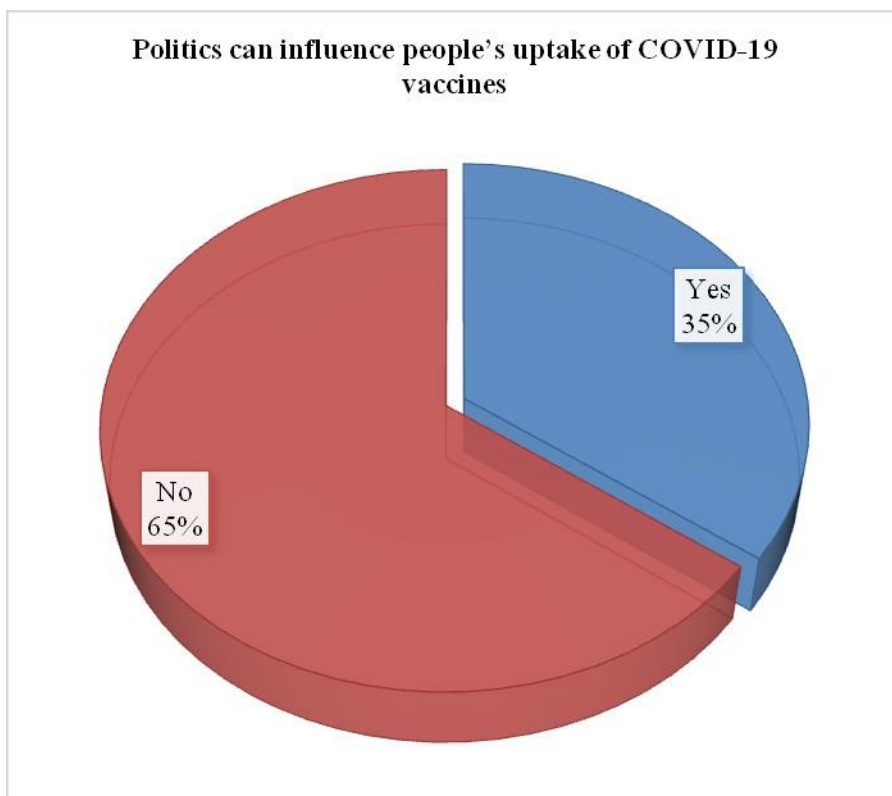
This finding agreed with those of a study conducted by) that revealed that in as much as majority of the people were in favor of having the COVID 19 vaccine, there were concerns associated with the Safety (37%), effectiveness (24%) relayed through mass media. The findings further agree with Qiao (2020) that mass media has had a significant impact on people's attitudes and beliefs towards the COVID-19 vaccine. It has provided the public with information and education on the vaccine's safety, efficacy, and importance in controlling the pandemic. The media has also helped to dispel misinformation and counter vaccine hesitancy. Overall, it was agreed that the mass media has played a critical role in shaping public perceptions and driving vaccine uptake.

#### **4.6.1 Politics and COVID 19 -Vaccine**

The operators were asked if politics can be a factor to influenced vaccine uptake among them. Majority of them (65%) said they cannot be influenced by politics to take up the vaccine. This means that politics is not a major factor among the Matatu operators as far as vaccine uptake is concerned.

**Figure 4.6**

*Ways through which Politics can Influence Vaccine Uptake among the  
Matatu Operators*



Other that were looked at included the political interest which can influence vaccine uptake, 70.6% said they vaccine uptake can be influenced through political interest, 86.6% said they it can be influenced through propaganda, all the operators said political self- interest can influence them to take up the Covid 19 vaccine. Another 99 % said embezzlement of funds, religious beliefs and misinformation can influence COVID -19 vaccine intake. Finally 74.2% said that political social belief can influence Covid 19 uptake as tabulated in table 4.9

**Table 4.9*****Ways through which Politics can Influence Vaccine Uptake among the Matatu******Operators***

<b>Political ways</b>		<b>n</b>	<b>%</b>
Political Interest	Yes	274	70.6
	No	114	29.4
Propaganda	Yes	336	86.6
	No	52	13.4
Self interest	Yes	388	100.0
Embezzlement of COVID funds	Yes	384	99.0
	No	4	1.0
Misinformation	Yes	384	99.0
	No	4	1.0
Religious beliefs	Yes	384	99.0
	No	4	1.0
Social beliefs	Yes	288	74.2
	No	100	25.8

The study looked at the contextual issues especially the political influence to COVID -19 intake and the sources of information. In this category, the factors that were looked at included the political interest and its influence vaccine uptake, political propaganda, all the operators said political self- interest can influence them to take up the Covid 19 Vaccine. Another 99 % said embezzlement of funds, religious beliefs and misinformation can influence COVID -19 vaccine uptake. Finally 74.2% said that political social belief can influence Covid 19 vaccine uptake.

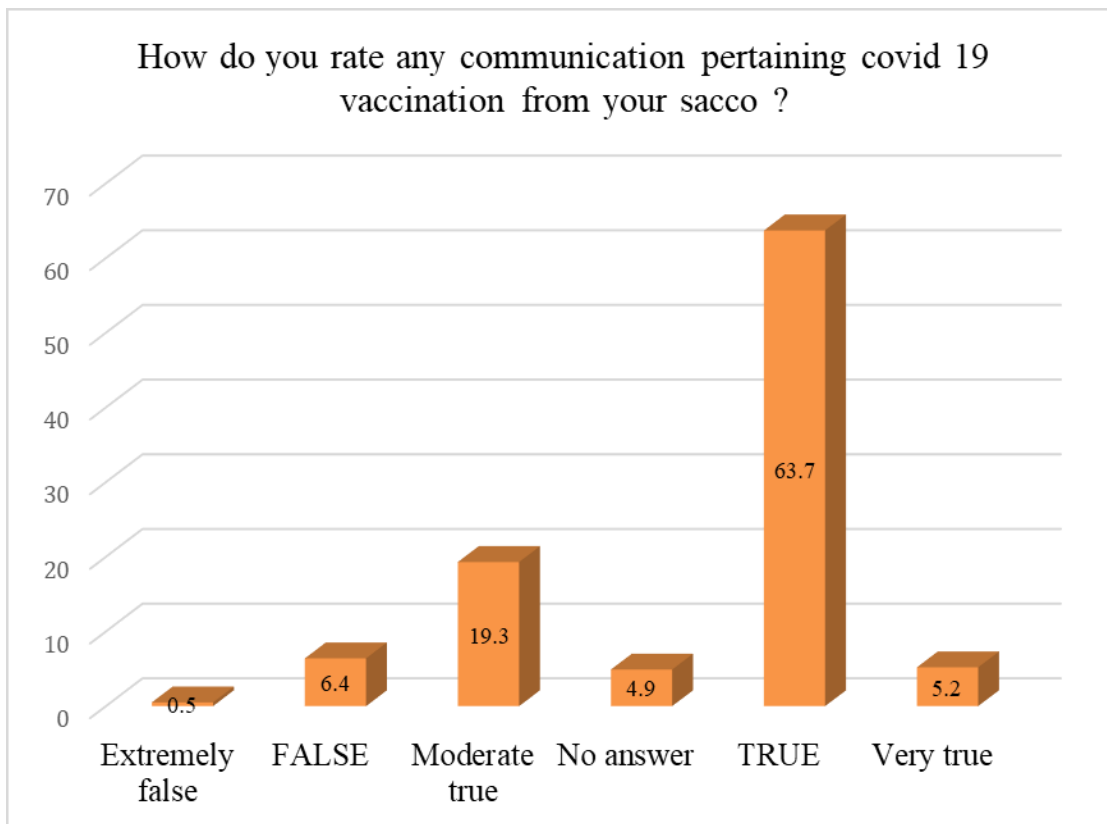
This was in agreement with previous studies that Governments can influence vaccine uptake by implementing policies that make vaccines mandatory for certain groups of people or in certain settings, such as schools or healthcare facilities, playing a crucial role in promoting the benefits of vaccines and addressing misinformation and concerns and also influencing availability and accessibility of vaccines to different populations (Schoch-Spana et al., 2021; Mo et al., 2021)

#### 4.6.2 Sacco Influence

The study further sought to find out the influence the various matatu Saccos had in the uptake of Covid 19 vaccines amongst Matatu crew, in Meru Matatu Stage. First, the respondents were required to respond on whether they thought information coming from the Saccos was factual. The findings are as shown

**Figure 4.7**

*Rating of Communication Pertaining Covid 19 Vaccination from your Sacco.*



Most of the operators regard information coming from their Sacco as true (63.7%) while another 5.2% said they regard information coming from their Sacco as Very true and 19.3% as moderately true. Cumulatively this brings then number to of true, moderately true and very true to over 85%. Meaning majority of the operators regards information coming from their Sacco as the truth.

**Table 4.10**

***Influence of Information from Matatu Saccos on COVID-19 Pandemic***

		Have you been Vaccinated against Covid 19? * Do you get any communication pertaining covid 19 vaccination from your Sacco?						Total	Chi-Square	Df	P Value
		Cross tabulation									
Count		Do you get any communication pertaining covid 19 vaccination from your Sacco?									
		Extremely false	False	Moderate	No answer	True	Very true				
Have you been Vaccinated against Covid 19?	No	2	20	42	9	50	12	135	71.109	5	.000
	Yes	0	5	33	10	197	8	253			
	Total	2	25	75	19	247	20	388			

The research sought to understand whether the information coming from the Sacco had influence on the participant’s perception on COVID-19. There was a great statistical influence on going for vaccination when information was received from the Sacco officials. Information from the Sacco officials had significant influence on going for vaccination (Chi square=71.109, df=5 and 0.00).

One of the Sacco officials said:

*“Most of these Matatu people will go for this vaccination but officials must be involved to quicken the steps”.*

On Sacco influence, respondents were found to have a lot of faith in information relayed from the Sacco, agreeing with previous findings by Kyobutungi (2021) that organizations that facilitated their employees to access vaccinations were found to have a positive influence in uptake of Covid 19 vaccination. It also sgrres that Organizations that make it easier for their employees to access Covid-19 vaccinations through with providing information about vaccine benefits and safety, arranging on- site or nearby vaccine clinics, and offering incentives or time off for getting

vaccinated tend to have higher rates of vaccine uptake among their staff (Kyobutungi, 2021).

#### **4.7 Perceptions towards COVID -19 Vaccine**

This study further sought to investigate the perceptions the Matatu crew had toward Covid 19 vaccines. Respondents were required to give responses on perceptions they had on risk versus benefit, mode of administration and vaccine accessibility

##### **4.7.1 Risk and Benefit**

The respondents were asked to rate the Covid -19 vaccine in order to determine their perception towards it. Different aspects of the perceptions were looked at, perception on the effectiveness, accessibility, cost effectiveness, friendly process when it comes to vaccine administration, perception on infertility, that is, if it causes infertility, if it reduces the lifespan and finally of the vaccine was rushed in production. The responses are given in the table 4.11.

**Table 4.11*****Perception Rating of the COVID Vaccine***

	Effective	Accessible	Cost effective	Chi square	df	P value
	n (%)	n (%)	n (%)	41.21	4	0.00
Great extent	83 (21.4)	82 (21.1)	83 (21.4)			
Little extent	33 (8.5)	34 (8.8)	33 (8.5)			
Moderate extent	188 (48.5)	190 (49.0)	188(48.5)			
Very great extent	76(19.6)	73(18.8)	76(19.6)			
Very little extent	8(2.1)	9(2.3)	8(2.1)			

Most respondents believed that Covid 19 vaccine caused infertility. A KI said:

*“The vaccine in meant to control the population. Hii uki dukwa huwezi pata watoto tena, ndui maana haindukwi watoto wandogo!”*

(This vaccine will make one infertile, unable to sire children that why it is not being administered to small children).

The same response was echoed by drivers and conductors. One conductor said;

*“Ukishaa pata hii chanjo watu wanajua huwezi pata watoto tena, na ulipata watoto watasema sio wako. Ka hivyo, mbona nichanjwe dhidi ya Corona na nikose kizazi?haina maana!”*

(Once you take the Covid vaccine people know you can no longer have your own biological children, and if you get they will say those children are not yours. So, why would I want to prevent myself from Corona Virus by getting the vaccine, and fail to have a lineage? It is not needful!)

Still, some respondents believed that Covid 19 was just like normal flu, hence no need to get vaccinated:

*“Tuliambiwa hii ni homa, homa huja na inaenda. Sasa ukiendea chanjo juu ya homa ni kumaanisha kila wakati ukipata homa unaendea chanjo ingine?”*

(We were told that Covid 19 is just like normal common cold. Now, if you get vaccinated against Covid 19, does that mean you will need to be vaccinated every time you contract a cold?)

Another responded said;

*(Corona ni homa ya wazingu, wazae na masonko. Corona haina haja na sisi.”*

(Covid 19 is a disease for the whites, the elderly and the rich. We are not susceptible!”

The findings are congruent with a study done by Graupensperger et al. (2021) which found that participants had high intentions of acquiring the COVID-19 immunizations when they considered it as being significant. Further research indicated that younger persons were less likely to get vaccinated since they did not perceive themselves at danger of serious illness (Gurley et al., 2021)

#### **4.7.2 Perception Rating of the COVID Vaccine.**

All the three variables measure of perception were statistically associated with vaccine intake among the operators, Chi square 25.23, d.f =4, p value 0.00.



**Table 4.12*****Perception rating of the COVID Vaccine Administration Process and Effects***

	<b>Friendly process</b>	<b>Cause infertility</b>	<b>Reduce life span</b>	<b>Vaccine rushed</b>	<b>Chi square</b>	<b>df</b>	<b>P value</b>
	n (%)	n (%)	n (%)	n (%)	25.23	4	0.00
Great extent	81(20.9)	81 (20.9)	83 (21.4)	83(21.4)			
Little extent	34(8.7)	32 (8.2)	33 (8.5)	33(8.5)			
Moderate	189(48.7)	190 (49.0)	188 (48.5)	188(48.5)			
Very great extent	75(19.14)	76 (19.6)	76(19.6)	76 (19.6)			
Very little extent	9(2.4)	9 (2.3)	8 (2.1)	8(2.1)			

In both instances, researchers observed a strong correlation between refusal to take the immunization and anxiety that the vaccine licensing procedure was hurried. In this particular study there seems to be a poor perception on the COVID -19 vaccine as a big number of the responds were generally not satisfied with the vaccine on the different areas that were looked at. Most were not satisfied on the civic education, the inclusion, process legitimacy, access to information and accessibility of the vaccine. In addition, participants were more likely to have had a vaccination if they considered that vaccines in general are safe, that getting vaccinated against COVID-19 is important, and that pharmaceutical companies manufacture effective and safe vaccines. On the other hand, participants who believed COVID-19 vaccines may be faulty or fake, may cause some medical complications in the future, and that vaccines are being promoted for commercial gain were less likely to have received the vaccine. This was the case because participants believed vaccines are being commercialized.

## 4.8 Experiences with Covid 19 Vaccine

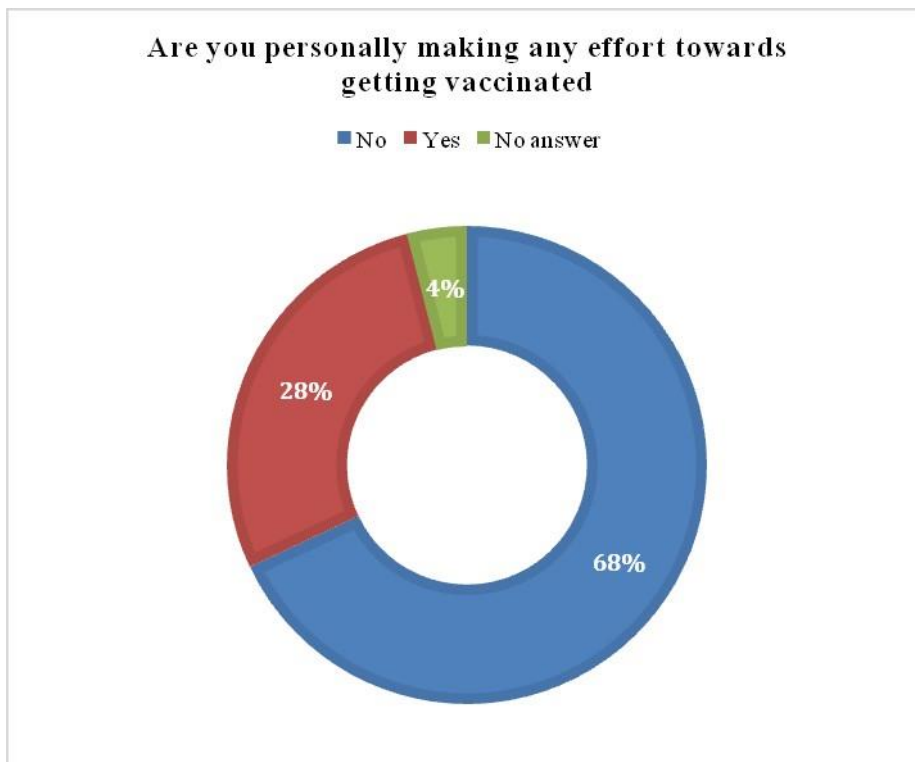
Lastly, the research sought to find out the experiences respondents had with Covid 19 vaccines. Respondents were asked if they were making any effort towards getting vaccinated and if they were satisfied with Covid vaccination as regarded Civic education, Inclusivity, Process legitimacy, adequate access to information and accessibility

### 4.8.1 Personally Making any Effort Towards Getting vaccinated

On the question on whether the respondents were making any efforts to get vaccinated, minority responded in the affirmative.

**Figure 4.8**

*Effort towards getting vaccinated*

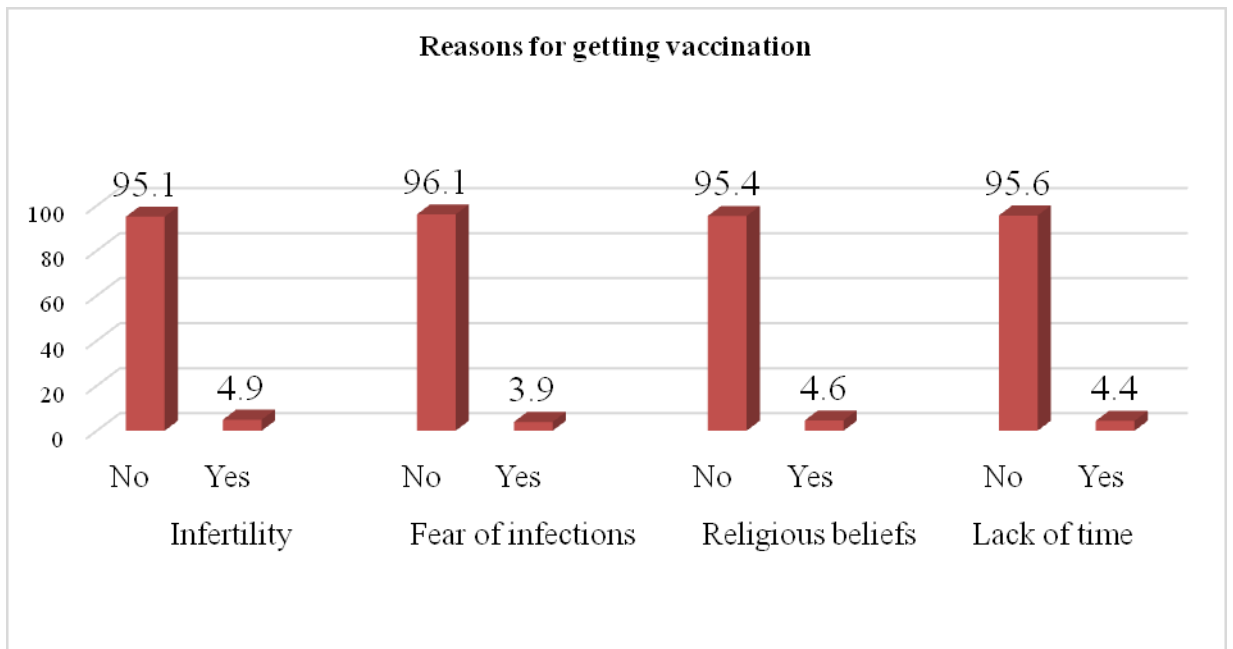


As shown in the figure above, more than two thirds had not made an attempt to get vaccinated. Reasons given by those who had not made attempt to be vaccinated

included fear of side effect and specifically infertility, fear of unknown, religious beliefs while others said that they had simply not found time.

**Figure 4.9**

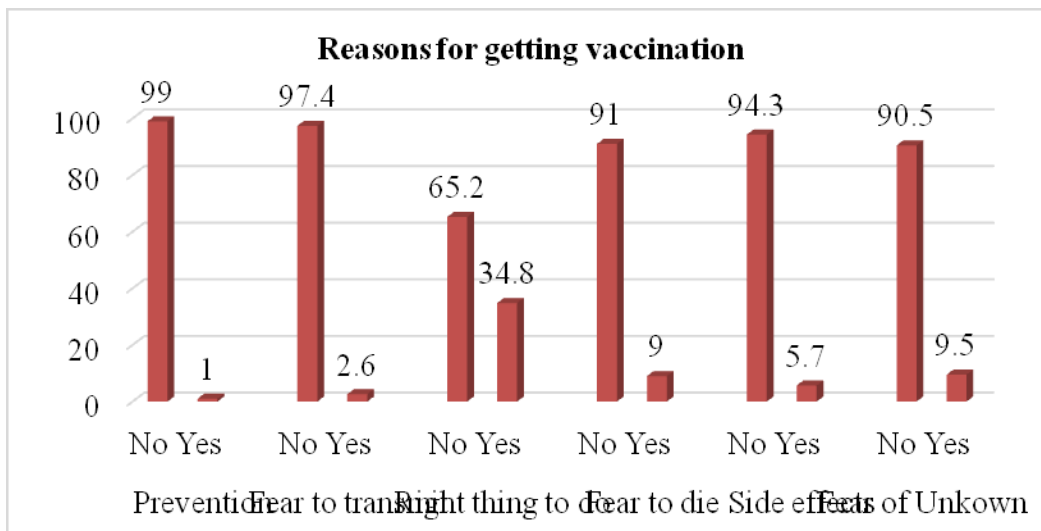
***Reasons for not Getting Vaccination***



For those who had made personal attempts to be vaccinated, the reasons given included prevention, fear of transmitting Covid 19 to family and loved ones, belief that it was the right thing to do and fear of unknown, like complications associated with Covid 19 disease

**Figure 4.10**

*Reasons for Getting Vaccination*



These findings agree with Zhou et al., 2021 in his report that while It's important to note that getting vaccinated against COVID-19 is a private choice and everyone has a right to make their own decision, several factors play a role including: Personal beliefs and concerns about vaccine safety and effectiveness, Religious or philosophical objections to vaccines, Lack of access to vaccine sites or information, Fear of side effects and adverse reactions, Misinformation or conspiracy theories about the vaccine, Health conditions that prevent them from being able to receive the vaccine and trust issues with the government or pharmaceutical companies.

**4.8.2 Satisfaction with Covid 19 Civic Education**

This study further sought to find out the experiences of those who had taken the vaccine. The table below shows their level of satisfaction with the COVID-19 vaccination and the experiences that the operators went through for those who went through the vaccination program. In terms of level of satisfaction with the civic education done on the COVID -19 vaccination programs, most of the respondents (58.5%) were not sure

whether it was done adequately or not. Moreover, another 60.3% were also not sure of the nature of inclusivity that was done. Table 4-11 summarizes the rest of the responses towards level of satisfaction with various activities regarding Covid-19 vaccine.

**Table 4.13**

*Satisfaction with COVID 19 Vaccine Civic Education*

	Civic education		Inclusivity		Process legitimacy		Adequate access to information		Accessibility (distance traveled)	
	N	%	n	%	n	%	n	%	n	%
No answer	53	13.7	32	8.2	31	8.0	81	20.9	168	43.3
Not sure	227	58.5	23	60.3	67	17.3	42	10.8		
Very satisfied	0	0	4	13	3.4	8	2.1	9	2.3	
Satisfied	44	11.3	52	13.4	156	40.2	135	34.8		
Unsatisfied	64	16.5	57	14.7	107	27.6	86	22.2	197	50.8
Very unsatisfied					19	4.9	35	9.0	23	5.9

A likelihood test was done to determine if the satisfaction with COVID 19 vaccine was influenced by civic education, inclusivity, process legitimacy and the accessibility to vaccination center. The test results tabulated in table 4-14 below shows that all the satisfaction variables were not likely to influence COVID-19 vaccination process. Their p values were 1.000

**Table 4.14**

***Likelihood that Satisfaction Influences COVID-19 Vaccination***

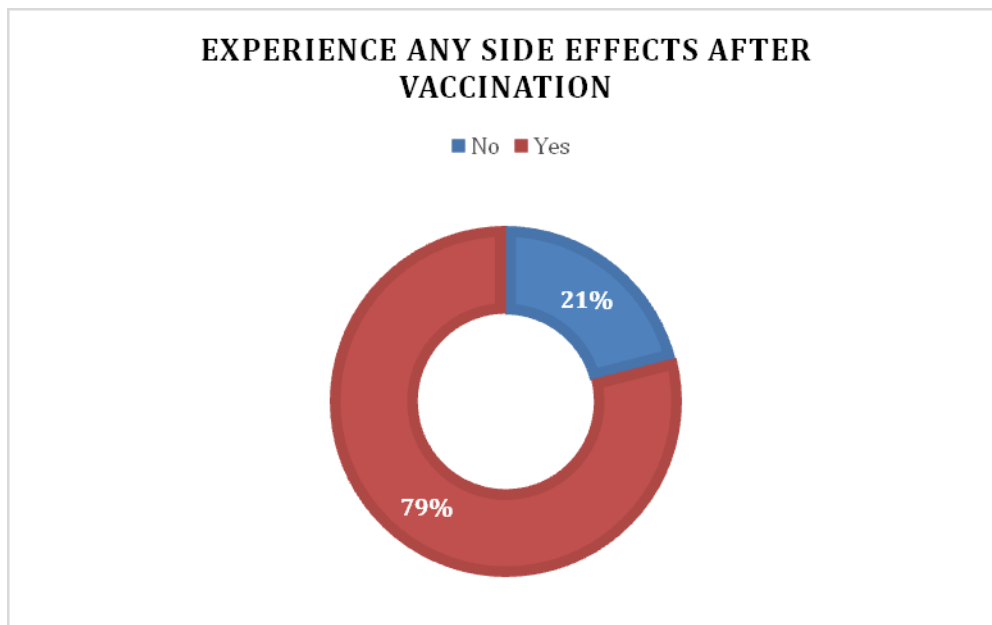
Effect/ Are you satisfied with the following as regard covid vaccination	Model Fitting Criteria		Chi-Square	Df	Sig.
	-2 Log Likelihood of Reduced Model	Likelihood Ratio Tests			
Intercept	0.000	0.000	0	.	
Inclusivity	0.000	0.000	4	1.000	
Process legitimacy	0.000	0.000	5	1.000	
Adequate access to information	0.000	0.000	5	1.000	
accessibility (distance traveled)	0.000	0.000	2	1.000	

**4.8.3 Side Effects Experienced After Vaccination**

Majority of those who took the vaccine did not experience any side effects as shown below.

**Figure 4.11**

***Experience any Side Effects After Vaccination***



On specific side effects experienced, the responses were captured and presented in the table 4.15 below.

**Specific Experiences after COVID -19 Vaccination – Multiple response allowed.**

**Table 4.15**

*Experiences after COVID -19 Vaccination*

		N	%	Chi square	df	P value
Fatigue	Yes	186	47.9	392.70	5	0.00
Headache	Yes	92	23.7			
Dizziness	Yes	40	10.3			
Thirst	Yes	14	3.6			
Joint Pains	Yes	9	2.3			
Fever	Yes	6	1.5			

The table above showed that experiences after COVID -19 vaccination were associated with COVID -19 vaccine.  $\chi^2$  test statistic= 392.70, df =5 , p-value= 0.00

**Table 4.16*****Likelihood That Experience with Vaccination Influences COVID-19******Vaccination Uptake***

<b>Did you experience any side effects</b>	<b>Model Fitting Criteria</b>	<b>Likelihood Ratio Tests</b>	<b>1</b>	<b>1.000</b>
	<b>-2 Log Likelihood of Reduced Model</b>	<b>Chi-Square</b>	<b>df</b>	<b>Sig.</b>
Fatigue				
Headache	0.000	0.000	1	1.000
Dizziness	0.000	0.000	1	1.000
Thirst	0.000	0.000	1	1.000
Joint pains	0.000	0.000	1	1.000
Fever	0.000	0.000	1	1.000
Side effects	.0000	0.000	1	1.000

The experiences resulting from vaccination were analyzed using the linear like hood model with a Pearson’s Chi square model fitting and found that none of the factors showed any significant statistical association with the uptake of Covid -19 vaccine.

A study in Saudi Arabia assessed the short-term side effects related with COVID- 19 vaccines. It found that most of the participants reported headache, fatigue, fever, and pain at the site of the injection. These were more common after the second dose. However, only a small percentage of patients needed to see a doctor or to be admitted to the hospital due to vaccines’ side effects. Another concluded that corona virus vaccinations were well-tolerated and safe, with most post-vaccine adverse effects being mild to moderate (Mo et al., 2020).

According to WHO (2021), regardless of the vaccine, one may run a fever, headaches,



tiredness for a day or two and experience body aches, Chills and swollen lymph nodes can also occur. These symptoms do not mean one sick but only signal that the immune system is responding to the shot and building up protection against the corona virus (WHO, 2021)

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

In this chapter the researcher gives the summary of the research. This is a snapshot of the document beginning with the introduction and ending with the conclusions and recommendations. The collusions and the recommendations given have been made based on the findings of the study as guided by the objectives and the research questions.

#### **5.2 Summary**

COVID -19 Vaccination was a key component of public health service-delivery and management in Kenya, especially as one of the tools that was used to control and prevent the COVID-19 disease pandemic. During the implementation of the vaccination program there were a lot of misinformation and misconceptions on the efficacy and unwanted effects of several of the vaccines administered. This brought a concern towards the vaccine hesitancy which was being registered in the African continent. The matter of vaccine uptake is of a global public health importance in containment of COVID-19. There exist many possible demographic and socioeconomic factors that influence individuals' decisions that require investigation.

This study therefore sought to assess Covid uptake amongst Matatu crew in Meru stage, which falls under the pillar of service provision in health systems management. This is a very crucial section of the population that involved in transport and can lead in the promotion of vaccine uptake. The study only sought to find out individual

factors, contextual factors, perceptions and experiences associated with uptake of COVID vaccine and was limited to Matatu crew in Meru Main Matatu stage

The study was a cross sectional study done in Meru stage where most Matatu crew were present. Questionnaires were used to collect data and in depth interviews for key informants. Analysis was done quantitatively for the questionnaires responses and thematically for the interviews. Tables, charts and graphs were used to present the results. On Distribution of the participants according to the different terminus, all eighteen (18) registered Saccos operating within the main Meru Matatu Stage were sampled, but only seventeen (17) had a representation on the date of data collection. Majority (50.5%) of the respondents were middle aged individuals with secondary education and above. This meant that most of the operators are well educated thus understood the subject under study.

Those who had not been vaccinated stood at 65%, and were not eager to get vaccinated according to the Sacco supervisors. Prevention and fear of transmitting to family members was a major reason for vaccine uptake. This showed concerned care among the operators when it comes to family members during the COVID -19 pandemic.

On individual factors associated with COVID-19 vaccine uptake, this study sought to establish if Awareness, Beliefs and Experiences with past Vaccines influenced uptake of the Covid 19 Vaccine. Awareness was found to be moderate. All individual factors tested were found to significantly influence Covid 19 vaccine uptake.

On Contextual factors associated with Vaccine uptake, the study sought to find out contextual factors associated with Covid 19 which included communication and media environment; politics and Sacco influence. Most of the participants (60.3%) received information from mass media. Study found that they vaccine uptake could

be influenced through political interest, propaganda, and self-interest as well as said embezzlement of funds. Majority of the operators regards information coming from their Sacco as the truth, therefore showing that Saccos had an influence on Vaccine uptake.

On perceptions the Matatu crew had toward Covid 19 vaccines, respondents were required to give responses on perceptions they had on risk versus benefit, mode of administration and vaccine accessibility. Most respondents believed that Covid 19 vaccine caused infertility. researchers observed a strong correlation between refusal to take the immunization and anxiety that the vaccine licensing procedure was hurried. Most were not satisfied on the civic education, the inclusion, process legitimacy, access to information and accessibility of the vaccine. In addition, participants were more likely to have had a vaccination if they considered that vaccines in general are safe, that getting vaccinated against COVID-19 is important, and that pharmaceutical companies manufacture safe and effective vaccines.

Finally, the research sought to find out the experiences respondents had with Covid 19 vaccines as regards Civic education, Inclusivity, Process legitimacy, adequate access to information and accessibility. On few respondents were making a concerted effort to get vaccinated while the others made excuses of fear of side effect and specifically infertility, fear of unknown, religious beliefs or simply not founding time. For those who had made personal attempts to be vaccinated, the reasons given included prevention, fear of transmitting Covid 19 to family and loved ones, belief that it was the right thing to do and fear of unknown, like complications associated with Covid 19 disease. Respondents were unsure of adequacy of civic education done on the COVID-19 vaccination programs. Majority of those who took the vaccine did not experience side effects.

### 5.3 Conclusions

The study concluded that there was low uptake of covid 19 vaccine amongst Matatu operators in Meru county Matatu stage. The number of those not vaccinated were 65%. Uptake is influenced by age, gender, marital status, nature of duty as well as the level of education a participant hold.

On Individual factors associated with COVID – 19 vaccine uptake, knowledge and beliefs were statistically significant. Knowledge on mode of administration (Chi square =110.45, d.f= 4, P value <0.00) and knowledge on the doses required ( Chi square = 136.521, d.f=4 and p value <0.000) were found to be statistically significant. Belief that COVID-19 is preventable was associated with vaccination for COVID-19 Chi square, 129.02, df=3 and P value <0.00. Belief that COVID-19 is manmade was also significantly associated with vaccination for COVID-19 Chi square 106.584, df=4 and P value <0.00. Only a small proportion (9%) had prior experience with other vaccines in adulthood. The study therefore concluded that knowledge and beliefs influenced uptake of Covid 19 vaccine

On Contextual factors associated with Covid 19 Vaccine uptake, mass media was found to have played a critical role in shaping public perceptions and driving vaccine uptake. political interest, political propaganda, embezzlement of funds, were the political aspects that influence COVID -19 vaccine uptake; while information from the Sacco officials had significant influence on going for vaccination (Chi square=71.109, df=5 and 0.00). Thus, the study concluded that communication and media, Politics and Sacco influence can significantly influence Covid 19 vaccine uptake.

On Perceptions towards Covid -19 Vaccine, all the three variables measure of risk and benefit were statistically associated with vaccine intake among the operators, Chi square 25.23, d.f =4, p value 0.00. Vaccine effectiveness, accessibility, cost effectiveness were perceptions found to significantly influence Covid 19 vaccine uptake. Therefore, the study concluded that perceptions towards Covid 19 Vaccine influenced uptake

Lastly, on experiences with Covid 19 Vaccine , all the satisfaction variables were not likely to influence COVID-19 vaccination process. Their p values were 1.000. The experiences resulting from vaccination were analyzed using the linear like hood model with a Pearson's Chi square model fitting and found that none of the factors showed any significant statistical association with the uptake of Covid -19 vaccine. Therefore, the study concluded that experience with Covid 19 vaccine was not likely to influence Covid 19 vaccine uptake

#### **5.4 Recommendations**

This study made recommendations from the results as follows:

- 1 The ministry of health and other partners to come up with programs to undo the misconception towards COVID-19 vaccine. This may involve continued health education among the Matatu operators.
- 2 County government should enhance health communication through the matatu Saccos.
- 3 There is continuous need to educate the masses and create awareness on risks and benefits associated with Covid 19 vaccine

4 Vaccines should be made more available and accessible to matatu crew

The study further made these recommendations for further studies:

1. That the study should be escalated to other transport sectors, for example Taxi and Boda boda
2. That further study is carried out with another high risk group, for example teachers and healthcare workers.

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## APPENDICES

### Appendix I: Informed Consent form

#### CONSENT FORM TEMPLATE

Title: **COVID vaccine uptake amongst Matatu crew in Meru stage, Meru County**

Sponsor: **Muthee Justin Thurania**

Principal Investigator: **Muthee Justin Thurania**

Address: Kenya Methodist University

#### **1. Introduction**

This Consent Form contains information about the research named above. In order to be sure that you are informed about being in this research, we are asking you to read (or have read to you) this Consent Form. You will also be asked to sign it (or make your mark in front of a witness). We will give you a copy of this form. This consent form might contain some words that are unfamiliar to you. Please ask us to explain anything you may not understand.

#### **2. Reason for the Research**

You are being asked to take part in research that seeks to determine the predictors of COVID vaccine uptake among Matatu crew in Meru Matatu stage.

#### **General Information about Research**

The uptake of COVID-19 vaccines is an essential aspect towards enabling effective control on the spread of the virus. It is important that Matatu crew, together with the vulnerable groups should receive vaccination to lower the incidence and disease transmission rate. In the Covid 19 vaccination campaign this group has been greatly sidelined. The study is aimed at determining predictors of Corona Virus vaccine uptake amongst Matatu crew within the Meru Matatu stage. The study will therefore seek to assess the individual factors, establish the contextual factors, evaluate perceptions and establish experiences that predict uptake of the Corona Virus 19 vaccine amongst the Matatu crew in Meru Matatu stage. The study population will be Matatu crew in Meru Matatu stage.

#### **3. Your Part in the Research**

Either my research assistant or I will identify himself/herself to you (and your child) after which you (he/she) will be required to fill a detailed questionnaire through an interview. This is supposed to be a private and confidential exercise. You are supposed to fill the questionnaire only after you have accepted and signed a consent form.

#### **4. Possible Risks**

There are no physical risks associated with participation in this study. In case one get thirsty during the interview, a bottle of water will be given for quenching thirst during the interview.

**5. Possible Benefits**

There are no direct benefits to this study but the information you give will be very in future policy formulation in pandemic management

**6. If You Decide Not to Be in the Research**

You are free to decide if you want to be in this research. Your decision will not affect the health care you would normally receive.

**7. Confidentiality**

We will protect information about you and you're taking part in this research to the best of our ability. You will not be named in any reports.

**8. Compensation**

You will not be paid, since you do not have to take part in this research.

**9. Staying in the Research**

If you feel like you cannot carry on with the study you are free to stop your participation. You have a choice to do so and we will still appreciate your willingness to participate in the study. You are also free to avoid any question you are uncomfortable with

**10. Alternatives to Participation**

You do not have to participate in the research in order to receive the government vaccines

**11. Leaving the Research**

You may leave the research at any time. If you choose to take part, you can change your mind at any time and withdraw.

**12. If You Have a Problem or Have Other Questions**

In case you need clarification, do not hesitate to ask before you fill the questionnaire to me or my research assistant.

**13. Your rights as a Participant**

This research has been reviewed and approved by the of Kenya Methodist University Scientific Ethics Research Committee.

**Volunteer Agreement**

The above document describing the benefits, risks and procedures for the research

titled **COVID vaccine uptake amongst matatu crew in Meru stage, Meru County**

has been read and explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree to participate as a volunteer.

\_\_\_\_\_ Date \_\_\_\_\_ Signature or mark of volunteer

**If volunteers cannot read the form themselves, a witness must sign here:**

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

\_\_\_\_\_ Date \_\_\_\_\_ Signature of Witness

I certify that the nature and purpose, the potential benefits, and possible risks

associated with participating in this research have been explained to the above individual.

---

Date

---

Signature of Person Who Obtained

Consent



## Appendix II: Questionnaire

<b>BASIC DATA</b>						
1.	Questionnaire No					
2.	Date					
3.	Name of Enumerator					
4.	Sacco Name					
<b>SECTION A: SOCIAL DEMOGRAPHIC CHAREACTERISTIS</b>						
5.	Age					
6.	Gender	Male			Female	
7.	What is your marital status	(1) Married <input type="checkbox"/>	(2) Single <input type="checkbox"/>	(3) Windowed <input type="checkbox"/>	(4) Divorced <input type="checkbox"/>	(5) Separated <input type="checkbox"/>
8.	What is your current employment capacity?	(1) Driver <input type="checkbox"/>	(2) Conduct or <input type="checkbox"/>	(3) Loader <input type="checkbox"/>	(4) Tout <input type="checkbox"/>	(5) Clerk <input type="checkbox"/>
9.	What is your highest level of Education	(1) No formal education <input type="checkbox"/>	(2) Primary <input type="checkbox"/>	(3) Secondary <input type="checkbox"/>	(4) College/University <input type="checkbox"/>	(5) Postgraduate <input type="checkbox"/>
9.						

### SECTION B: PREDICTORS OF COVID VACCINE UPTAK AMONG MATATU CREW IN MERU MATATU STAGE

10. Have you been Vaccinated against Covid 19? Yes <input type="checkbox"/> Or <input type="checkbox"/> No	
11. If yes what motivated you to go for the vaccine	
If no, what are your reasons	

<b>SECTION C. INDIVIDUAL FACTORS ASSOCIATED WITH THE UPTAKE OF COVID VACCINE AMONG MATATU CREW IN MERU MATATU STAGE</b>						
12.	Do you know how Covid 19 is transmitted	(0) NO <input type="checkbox"/>			(1) Yes <input type="checkbox"/>	
13.	How would you rate your knowledge of covid 19 vaccines	(5) Very great extent	(4) Great extent	(3) Moderate Extent	(2) Little Extent	(1) Very little extent
	A. Where to get the vaccine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	B. Mode of Administration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	C. Doses required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	D. Requirement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	Do you believe Covid 19 is a disease that can be prevented?				(0) No	(1) Yes
15.	How Much do you agree with these statements	(5) Greatly agree	(4) Agree	(3) Moderate	(2) Disagree	(1) Strongly disagree
	Covid -19 is a manmade disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	The Intention of the Covid- 19 vaccination is to implant microchips to control people	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16.	Have you received any other vaccine as an adult	Yes <input type="checkbox"/>			No <input type="checkbox"/>	
17.	If yes, describe the Experience					

**SECTION D: CONTEXTUAL FACTORS**

16.	How do you rate your awareness on Covid 19 vaccination comments	(5) Very aware	(4) Aware	(3) Some aware	(2) Little awareness	(1) Not aware
	What is your main source of Information on matter pertaining to Covid 19 Comments	Social Media	Mass Media	Colleagues	Health Agencies	Others specify
	Do you think politics can influence people's uptake of Covid-19 vaccines?	Yes <input type="checkbox"/>			No <input type="checkbox"/>	
	If yes, in what ways					
	Do you get any communication pertaining covid 19 Vaccination from your sacco	Yes <input type="checkbox"/>			No <input type="checkbox"/>	

**SECTION E Perceptions**

17.	How would you rate covid vaccine	(5) Very true	(4) true	(3) moderate	(2) False	(1) Extremely false
	1. Effective reasons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2. Accessible reason	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3. Cost Effective reasons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	4. Friendly process reasons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5. Causing infertility reasons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	6. Reducing life span Reasons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7. Vaccine rushed ( not well tested) Reasons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**SECTION F: EXPERIENCES**

18.	Are you personally making any effort towards getting vaccinated	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Give Reasons		
19.	Have you ever been vaccinated before	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Give Reasons		
20.	Are you satisfied with the following as regard covid vaccination:	(5) Very Satisfied	(4) Satisfied	(3) Not sure	(2) Unsatisfied	(1) Very Satisfied
	a. Civic Education Reasons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b. Inclusivity Reasons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	c. Process legitimacy Reasons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	d. Adequate access to information Reasons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	e. Accessibility Reasons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

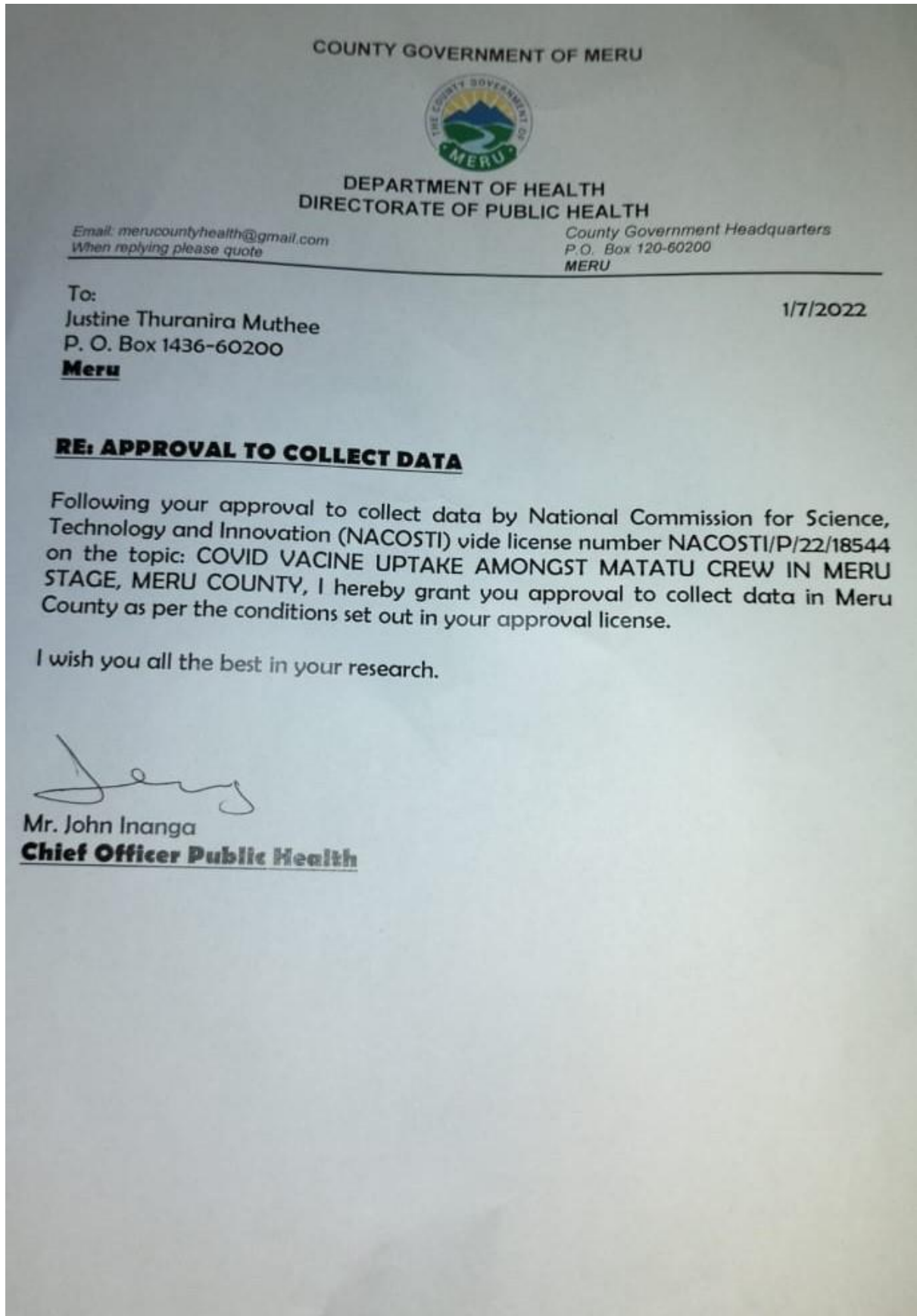
### **Appendix III: Interview Guide**

1. Are Matatu crew eager to get vaccinated? Explain
2. What Individual Factors do you think influence uptake of covid vaccine
3. How do you think the following influence uptake of covid vaccine amongst Matatu crew
  - a. Communication and media environment
  - b. Politics
  - c. Sacco influence
4. How do you think the following Perceptions influence uptake of covid vaccine amongst Matatu crew
  - a. Risk/benefit
  - b. Mode of administration
  - c. Accessibility
5. How do you think the following Experiences influence uptake of covid vaccine amongst Matatu crew
  - a. Vaccinated/unvaccinated
  - b. Distance travelled administration
  - c. Side effects experienced

## Appendix VI: Public health data

<span style="font-size: 1.2em;">←</span> <span style="color: green; font-weight: bold; margin-right: 5px;">X</span> CHMT DAILY REPORT 20.03.2022.xlsx					
	A	B	C	D	E
13	8	RBC Discharges	2657		
14	9	Cumulative Discharged	3862		
15	10	Deaths today	0		
16	11	Cummulative Deaths	217		
17	12	Active Cases	3		
18	13	Cases in Isolation	3		
19	14	Home Based Cases	0		
20	16	HCWs Positive today	0		
21	17	Cummulative HCWs Positive	70		
22	18	Number of Burials today	0		
23	19	Cummulative Burials	217		
24	20	Number of Contacts identified	1174		
25	21	Number of contacts finished 14 days	1174		
26	22	Contacts on follow up	0		
27	23	Number of Contacts contacted today	0		
28					
29		<b>DISTRIBUTION OF CASES BY SUB-COUNTIES</b>			
30	1	Imenti North	1965		
31	2	Imenti South	653		
32	6	Igembe Central	308		
33	3	Buuri	399		
34	5	Imenti Central	255		
35	4	Igembe South	142		
36	9	Tigania East	140		
37	8	Tigania West	126		
38	7	Igembe North	88		
39	10	Sub-County Missiing	5		
40	11	Isiolo	1		
41		<b>Total</b>	<b>4082</b>		
42					

**APPENDIX VII: APPROVAL LETTER FROM MERU COUNTY GOVERNMENT**



## APPENDIX VIII: KEMU SERC-NACOSTI



### KENYA METHODIST UNIVERSITY

P. O. BOX 267 MERU - 60200, KENYA  
TEL: 254-064-30301/31229/30367/31171

FAX: 254-64-30162  
EMAIL: [INFO@KEMU.AC.KE](mailto:INFO@KEMU.AC.KE)

June 14, 2022

KeMU/SERC/HSM/19/ 2022

MUTHEE JUSTIN THURANIRA  
HSM-3-4111-3/2009

Dear Justin,

**SUBJECT: COVID VACCINE UPTAKE AMONGST MATATU CREW IN MERU STAGE, MERU COUNTY**

This is to inform you that Kenya Methodist University Scientific Ethics and Review Committee has reviewed and approved your research proposal. Your application approval number is KeMU/SERC/HSM/19/2022. The approval period is 14<sup>th</sup> June, 2022 – 14<sup>th</sup> June, 2023.

This approval is subject to compliance with the following requirements:-

- I. Only approved documents including (informed consents, study instruments, MTA) will be used.
- II. All changes including (amendments, deviations, and violations) are submitted for review and approval by Kenya Methodist University Scientific Ethics and Review committee.
- III. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to KeMU SERC within 72 hours of notification.



- IV. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to KeMU SERC within 72 hours.
- V. Clearance for export of biological specimens must be obtained from relevant institutions.
- VI. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
- VII. Submission of an executive summary report within 90 days upon completion of the study to KeMU SERC.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) <https://oris.nacosti.go.ke> and also obtain other clearances needed.

Yours sincerely,





**KENYA METHODIST UNIVERSITY**

P. O. Box 267, Meru - 60200, Kenya  
Tel: 254-064-30301/31229/30367/31171

Fax: 254-64-30162  
Email: [deanrd@kemu.ac.ke](mailto:deanrd@kemu.ac.ke)

**DIRECTORATE OF POSTGRADUATE STUDIES**

---

June 16, 2022

Commission Secretary,  
National Commission for Science, Technology and Innovations,  
P.O. Box 30623-00100,  
**NAIROBI.**

Dear Sir/Madam,

**RE: MUTHEE JUSTIN THURANIRA – (REG. NO. HSM-3-4111-3/2009)**

This is to confirm that the above named is a bona fide student of Kenya Methodist University, in the School of Medicine and Health Sciences, Department of Health System Management undertaking a Masters' Degree in Health System Management . He is conducting research on; **"Covid Vaccine uptake amongst Matatu Crew in Meru Stage, Meru County"**.

We confirm that his research proposal has been presented and approved by the University.

In this regard, we are requesting your office to issue a research license to enable him collect data.

Any assistance accorded to him will be appreciated.


Thank you.



**Dr. John Muchiri, Ph.D.**  
**Director, Postgraduate Studies**

Cc: Dean SMHS  
CoD, HSM  
Postgraduate Co-ordinator-HSM  
Supervisors


**APPENDIX IX: NACOSTI PERMIT**


  
**NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION**

Date of Issue: 01/July/2022


**RefNo: 655060**

**RESEARCH LICENSE**




**This is to Certify that Mr. Justin Thurairira Muthee of Kenya Methodist University, has been licensed to conduct research in Meru on the topic: COVID VACCINE UPTAKE AMONGST MATATU CREW IN MERU STAGE, MERU COUNTY for the period ending : 01/July/2023.**

**License No: NACOSTI/P/22/18544**

  
**Director General**  
**NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION**

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Mobile: 0713 788 787 / 0735 404 245  
E-mail: [dg@nacosti.go.ke](mailto:dg@nacosti.go.ke) / [registry@nacosti.go.ke](mailto:registry@nacosti.go.ke)  
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