

FEASIBILITY OF OPERATING RICKSHAWS IN MASERU, LESOTHO

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DECLARATION

I, Tumane Tefo, declare that this business venture proposal is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the Graduate School of Business Administration, University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.



Tumane Tefo

Signed at Maseru

On the 1st day of November 2024

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SUPPLEMENTARY INFORMATION

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Abstract

Rickshaws continue to flood several countries as a preferred mode of first mile and last mile transportation options, such as India, Kenya, and Nigeria. In Maseru, Lesotho, rickshaws remain a novel mode of transportation. This study aims to assess market demand for rickshaws as a mode of transportation in Maseru Lesotho, with a focus on the socio demographic profiles, travel patterns and current preferred modes of transportation of commuters.

The study used a survey to collected primary data from a sample of 123 respondents, through random and purposive sampling techniques within the main Kingsway and pioneer roads in Maseru. Using quantitative data analysis techniques such as cross tabulations, chi-square tests and logistic regression, relationships between the variables such as demographics, travel patterns and current modes of transportation were uncovered and assessed if they could inform a latent need for rickshaws.

The study revealed that a majority of the commuters within town are males (55%), and the travel pattern of most commuters is daily (84%), who travel mostly for work purposes but also to visit shopping malls and recreational activities. Through testing various hypothesis, the study showed a high correlation between age and consideration of other alternatives. Satisfaction rates among 4+1 users turned out very low, suggesting a potential latent demand for alternatives such as rickshaws. Through logistic regression tests on pricing and convenience, both variables did not show strong statistical significance, however their combined effect significantly influences transportation choices ($p=0.010$).

The findings substantiate the presence of latent demand for a cheaper and convenient mode of transport in Maseru, suggesting that operating rickshaws could meet this demand in the city. This research contributes to bridging research gaps concerning operation of rickshaws within the unique context of Maseru. By presenting the demographics, travel patterns and commuters' preferences, the study yields valuable insights, laying the groundwork for informed decision-making regarding the potential establishment of a rickshaw transportation system in Maseru.

This research contributes to bridging existing research gaps concerning the relevance and sustainability of operating rickshaws in the unique context of Maseru, Lesotho.

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1. INTRODUCTION

1.1 Background

Maseru, the capital city of Lesotho, faces substantial challenges in urban transportation, marked by traffic congestion, inadequate public transportation options, and infrastructure constraints affecting the city's residents and daily commuters. This study examines these challenges and explore potential solutions for the commuters. With a national population of approximately 2.2 million, about half reside in rural areas, though urban migration is steadily rising (Bureau of Statistics, n.d.). Despite a slight reduction in unemployment from 16.7% in 2022 to 16.5% in 2023, Lesotho's economic growth remains hampered by high inflation (AFDB, 2022; Central Bank of Lesotho, 2021). The projected average economic growth rate of 2.4% through 2025 is unlikely to significantly improve living standards, given persistent inflation affecting consumer purchasing power (AFDB, 2022; CBL, 2023).

Similar to many developing urban centers, Maseru's infrastructure lags behind other Southern African Development Community (SADC) cities (Ramolise, 2011). As the country's economic hub, Maseru's urban area spans 138 km² with an estimated population of 530,000 as of 2021, many of whom migrate seeking employment and better living standards (Bureau of Statistics, n.d.). Population growth and urbanization impede the city's transportation infrastructure, which lacks the road capacity to handle growing commuter demands. Maseru city's primary roads—Kingsway, Moshoeshoe, Mpilo Boulevard, and Pioneer—total just 5.65 km combined, serving major business, healthcare, government, and shopping districts. Limited road capacity leads to frequent congestion, which negatively impacts productivity and mobility. Challenges associated with road congestion, such as increased travel times and economic inefficiencies, are not unique to Maseru; similar issues are seen in other African cities like Kampala and Harare (The World Bank, 2022).

Current Transportation Options & Comparisons

Public transport in Maseru relies primarily on taxis and minibuses, colloquially known as the ‘4+1,’ dominating 40% of motorized trips (The World Bank, 2022). However, these vehicles are often overcrowded and limited to stops outside Maseru’s central business district (CBD), leaving commuters with gaps in accessibility and convenience. Research indicates that similar public transportation limitations in cities like Harare, Zimbabwe, and Nairobi, Kenya, have resulted in inefficient service and adverse health outcomes due to pollution from poorly maintained vehicles (Bandauko et al., 2018; Kinney et al., 2011). In contrast, cities such as Johannesburg have implemented rapid bus and rail systems to enhance public transport efficiency (Venter, Jennings, & Hidalgo, 2018). Addressing Maseru’s transportation issues may require innovative, cost-effective solutions tailored to its unique urban environment, as establishing costly rail or large-scale transit systems would be challenging without substantial investment and government support.

1.2 Problem Statement

Efficient transportation is essential for economic growth, yet Maseru’s current system inadequately serves its commuters. With over 48 million annual trips made into the city, transportation issues create significant challenges. The 4+1 taxi system, though commonly used, is increasingly unaffordable as commuting costs rise yearly by about one Loti (10%)—a notable burden in a country where 30% of income is often spent on transport alone (IMF, 2023). Senamolele (2020) holds that, the issue of congestion in narrow roads still prevails rendering the 4+1 unideal for the city, and Obiri-Yeboah et al., (2021) further emphasise that such modes do not fulfil commuters’ needs for short-distance travel within the city and last-mile connectivity. Additionally, the current traditional modes, buses and mini buses, are restricted to routes outside the CBD, leaving commuters reliant on private vehicles or long walks to reach destinations within the city. Limited road infrastructure further worsens congestion and restricts the flow of both passenger and vehicle movement, an issue echoed in several African urban centers facing similar transport crises (Obiri-Yeboah et al., 2021; Alyan et al., 2022).

The reliance on the current costly and inefficient modes of public transport not only burdens commuters but also limits economic productivity and quality of life. As population growth

intensifies, the situation could worsen, leading to increased pollution, extended travel times, and further economic stagnation (Tiwari, 2014; Chalumuri, 2016). Despite these pressing issues, there is a significant gap in research on feasible transport alternatives that could alleviate these constraints.

The feasibility of introducing rickshaws in Maseru is currently a significant gap in research. Therefore, this paper aims to investigate whether rickshaws can effectively address the transportation challenges faced by commuters in Maseru by assessing for market demand, and adapting the results into a feasible business venture proposal.

1.3 Objectives of the Business Research Report

The primary objective of this business research report is to determine the potential demand for rickshaws as a mode of public transportation for commuters in Maseru.

The sub - objectives of the research are detailed below.

1. To investigate the influence of **demographic characteristics** of commuters such as their age, gender, residential area and educational level and their influence on market demand for rickshaws.
2. To investigate the influence of **travel patterns** of commuters on market demand for rickshaws. Travel patterns of commuters include, frequency of travel, purpose of town visit and key places of interest.
3. To investigate the **current commuters' mode of transportation** on market demand for rickshaws. Through an assessment of factors such as commuters' current mode of transport; commuters' satisfaction levels with existing modes of transport; pricing and convenience, and their influence on market demand for rickshaws, the study will inform whether rickshaws can be a feasible mode of transport for commuters in Maseru.

The research study aims to cover the questions below, through collection and analysis of primary data.

Research questions

1. **RQ1** - To what extent the demographics of commuters influence market demand for rickshaws?
2. **RQ2a** - To what extend does the frequency of travel influence the market demand for rickshaws?
3. **RQ2b** - To what extend does the purpose of town visit influence the market demand for rickshaws?
4. **RQ2c** - To what extend does the places of interest influence the market demand for rickshaws?
5. **RQ3a** - What are commuters' current modes of transportation within town in Maseru?
6. **RQ3b** - To what extent does commuter satisfaction levels with current modes of transport influence market demand for rickshaws?
7. **RQ3c** - To what extend does pricing affect market demand for rickshaws?
8. **RQ3d** - To what extend does convenience affect market demand for rickshaws?

1.4 Scope of the research

Key Concepts for the study

- Demand for rickshaw services as dependent variable measuring the likelihood and willingness of commuters to use rickshaws as their preferred mode of transport
- Demographics and travel patterns as independent variables which include age, primary area of residence, frequency of travel, areas of interest and their impact on demand of rickshaws
- Commuter preferences give insight into the commuters' willingness to switch to rickshaws based on perceived convenience and pricing

Theories used

The study anchors on Market Demand Theory to explore if commuters in Maseru can adopt rickshaws as a preferred mode of transportation. Market demand theory helps in understanding key customer segments and their behaviour in adopting certain goods and or services (Varian, 1996). Theories on competitive landscape (Porter's Five forces), Urbanisation, Transportation Mobility theories have been excluded as they assess the factors outside the scope of this study.

Geographical Location

The scope of the study is limited to the Maseru city centre and its immediate suburbs, including Maseru East, Maseru West, and the Katlehong areas. The study will focus on commuting passengers within the city of Maseru. It does not include the out-of-town suburbs or peri-urban villages

Time Frame

The data collection will span a period of six months to allow enough time for collection and increase response rate.

Population

Population includes commuters who use public transport or those who have the potential of using rickshaws as their preferred mode of transport. Only commuters within urban Maseru are considered in the study.

Sample Size and Selection

The sample size for the study is set at 122 commuters, calculated at a 95% confidence level, and a 5% margin of error. The method used for sampling is a combination of non-probability sampling (purposive sampling) and area sampling as this allows for narrowing of the sample to key customer segments for rickshaws.

Other Limitations

The study will include factors likely influence customers to switch to rickshaws over the current prevailing modes of transportation but excluding other factors of feasibility such as regulatory and infrastructural requirements. It is important to note that this study is being conducted in Maseru and may face limitations such as limited data availability and a lack of knowledge about rickshaws, as they are a novelty in the city. Despite this limitations, the study aims to provide valuable insights for the proposed business venture of operating rickshaws in Maseru.

1.5 Operational Definitions

- **Rickshaw** – a three-wheeler or tricycle used as a taxi or mode of delivery in other areas (Obiri-Yeboah, Owusu-Ansah, Abdul-Aziz, Woangbah, & Asamoah, 2022)
- **Auto rickshaw**- a motorised three wheeled rickshaw (Bhat, Seth, & Verma, 2024)
- **Paratransit**- alternative mode of transport that does not follow fixed routes or schedules (Bansal, Gadepalli, & AitBihiOuali, 2023).
- **Intermediate Public Transport (IPT)** – modes of transport that are used to fill a gap that exists between formal modes of transportation such as buses and trains, these modes normally include rickshaws, motorbikes and taxis (Kunhikrishnan & Srinivasan, 2018).
- **First mile, last mile** -the first leg of a trip from home or workplace to the bus stop or public transport station vs final leg to the final destination of a commuter (Bansal, Gadepalli, & AitBihiOuali, 2023).
- **Market Demand**- The potential customer base of a product or service users and the price points they are willing to pay (Carlton).
- **Operational Feasibility**- the practicality of introducing rickshaws operations considering acceptance by market, including the legal and infrastructural requirements (Singh, 2021).
- **Infrastructure** – Includes all the physical facilities and structures needed to operate rickshaws including roads, parking bays, charging stations and maintenance stations (Adhvaryu & Kumar, 2021).
- **Stakeholders**- includes everyone with an interest or that maybe impacted by the introduction of rickshaws including government agencies, commuters, taxi operators and investors (Singh, 2021).
- **Southern Africa Development Community (SADC)**-11 member states in Southern Africa responsible for coordinating and driving for economic growth in the region.
- **The Africa Growth and Opportunity Act (AGOA)** – meant to enhance market access for Sub-Saharan African states to the United States (AGOA, 2005)
- **4+1**- Mini taxi/saloon that is meant to carry 4 passengers plus the driver see Figure 3 (Ramolise, 2011)

2. LITERATURE REVIEW

2.1 Introduction

This literature review aims to assess the demand for rickshaws in Maseru and to evaluate if their operation could be a viable business proposal. While rickshaws are popular in many Asian countries, they are still considered a novelty in Maseru, Lesotho. Therefore, the literature will discuss the background of this mode of transport and present a case for why rickshaws could be a suitable means of transportation in urban Maseru. Additionally, the review will analyse current developments and future trends that may impact the use of rickshaws.

Furthermore, the literature will explore relevant theoretical considerations in the operation of rickshaws. Market demand theory will be used to understand the likely behavioural considerations for customers in opting for rickshaws. The literature review will draw insights from case studies on rickshaws in countries where they are a prominent feature of public transportation. The statistical results will also be assessed alongside the literature to inform whether hypothesis can be accepted or rejected. Finally, the review will conclude by identifying research gaps that could be further explored in this area.

2.2 Background of Rickshaws

2.2.1 Origin of Rickshaws

Popularly known as the tuk-tuk, the rickshaw is said to have been developed in Japan and or Italy just under half a century ago (The Economist, 2014; Steele, 2013). On the other end, the story is, the rickshaw was originally developed in Germany in 1886, even though they have become synonymous with Japanese and Italian manufacturers. Nonetheless, the popularity of the three-wheeler is more prominent in India and is the most common form of public transport given its affordable fee (Harding, 2016). The popularity of the rickshaw went on to spread to neighbouring Asian countries, such as Nepal, Bangladesh, and Cambodia where they have been adopted as public transport and for small business deliveries. The rickshaw has since knocked on the African

doors in 1999, in Lagos, Nigeria and here they are known as the *keke*. (Clive Graham-Ranger, 2020).

Despite growing popularity, some nations have not been so welcoming to this invention. For instance, in Egypt, the rickshaw was banned by authorities as they claimed they were the cause of most road accidents and had the most offenders for traffic violations (Alyan, Ali, & Ramadan, 2022). In the same manner, a ban was imposed on the rickshaw in both Thailand and Kenya, with officials of the countries claiming they are noisy and give their streets a dirty urban feel (The Economist, 2014). The same ban was applied in Dhaka, Bangladesh (Hasan & Dávila, 2018). Perhaps this could be one of the reasons why this mode of transport remains unpopular in the elitist central business hub of Africa-Sandton, Johannesburg?

Despite their unfound stories of origin, the rickshaw continues to increase in popularity across the globe. In Egypt, the sales of the rickshaw grew by 50% to 60 000 a year in 2011. India is said to produce over 530 000 of these three wheelers for the local market with a further 300 000 exported to other countries (The Economist, 2014).

2.2.2 Current Developments & Future Trends – Electric rickshaws

The continued carbon emissions from vehicles have necessitated the need for a more innovative and more environmentally friendly public transport system (Singh, 2021). More countries are adopting electric vehicles as an alternate more acceptable option than fossil powered vehicles (Singh, 2021). In the context of Maseru, the Government of Lesotho ascribes to the United Nations sustainable development goals (SDGs) and related to carbon emissions is SDG 13- climate change. The government has made its commitment to strengthen its resilience and adaptive capacity in reducing any climate related hazards (UNDP, 2016). Therefore, it has become apparent to manufacturers of rickshaws to adopt a more environmentally friendly three-wheeler if this are to be welcomed by governments and policy makers. To this end, the e-rickshaw or electric rickshaw is the latest invention meant to circumvent some of the issues raised by policy makers (Anil, 2002).

The e-rickshaw is electric driven with higher power and higher speed limit at 25km per hour whilst being whilst also cheaper (Ravinder, Jilte, & Ahmadi, 2018). This aligns with regulatory speed

limits in Maseru whilst also adding to the viability by requiring less start-up costs. The e-rickshaw has been well accepted by governments due to their perceived lower carbon emissions, so much that state governments are offering incentives and subventions in their countries as well as incentives for scrapping the old manual rickshaw. Such other benefits include open permit systems and loan subsidies. (Bansal, 2023; Singh, 2021). The e-rickshaw remains very popular in India stemming from the environmental benefits alluded to as well as their lower cost, so much that their operation has been enacted in the Delhi Motor vehicle act (Singh, 2021).

Another development in rickshaws is their enhanced GPS tracking system. These have been most welcome as they enhance the driver's ability to navigate unknown areas, to beat traffic congestion whilst also providing some safety comfort to the customer. For operators owning a fleet of rickshaws, the GPS system enables multiple tracking and reduces theft and bogus use of the rickshaw. In the era of e-hailing with the likes of Uber and In-Drive, GPS has enabled commuters using rickshaws the same luxury of booking for rides through a mobile-app enhancing overall user experience (Winter, Cats, Correia, & Arem, 2018)

2.3 Theoretical Considerations – Market Demand Theory

Varian (1996) argues that market demand theory helps determine how the quantity of a particular good or service moves with the price of that product. Kotler, Keller, & Ang (2018) define market demand as the total quantity of a good that consumers are willing to purchase at a given price. The theory assists in quantifying the likely demand for a product based on market condition, consumer preferences, their buying power, and behaviour.

In evaluating the likely uptake of rickshaw services in Maseru, one will need to assess demand determinants. These include price sensitivity, substitute and complementary goods, and customer preferences (Varian, 1996). Price sensitivity helps assess how affordable rickshaws are compared to other modes of transportation, such as taxis and minibuses. In essence, rickshaws are likely to offer a much lower-cost alternative that may spark demand in Maseru. Substitute products and complements, on the other hand, may compete with or complement the operation of rickshaws, respectively, thereby impacting the demand dynamics. Harding and Kandlikar (2017) advocate for rickshaws as complementary services due to their convenience for short first-mile and last-mile

connectivity. Consumer preference, on the other hand, will be shaped by customers' preference for convenience and reliability, which will drive demand. Rickshaws have been proven to offer more convenience due to their ability to navigate and reach congested, hard-to-reach areas (Tiwari, 2014). Both studies cited above used survey based studies to assess likely demand for rickshaws. Primary data was collected on commuters to understand their preference and willingness to opt for rickshaws as their preferred mode of transport. Probability sampling techniques such as stratified random sampling enabled full representation of all demographic segments. In both studies, the finding indicated a strong demand for rickshaws as a mode of public transportation.

Market segmentation is pivotal in assessing demand for rickshaws. Both target segments and geographical segmentation will inform the case for rickshaws (Varian, 1996). Target groups may include low-to-middle-income earners, daily commuters, as well as other segments currently underserved by existing modes of transport. Geographical segmentation will vary within the city, with densely populated areas such as Maseru CBD and Kingsway roads likely to yield higher demand. Minal & Sekhar (2016) used a structured questionnaire to collect data in New Delhi to inform the nature of demographics and factors that drive demand for rickshaws, the analysis yielded a strong demand based on cost and convenience to the commuter.

Overall, it is crucial to fully understand the demand dynamics if rickshaws are to be successfully introduced. Paying particular attention to pricing strategies will be important, especially in a market where demand is highly elastic (Varian, 1996).

2.4 Market Demand for Rickshaws

Market demand refers to the total demand for a good or service that customers are willing to purchase at a given price over a defined period. This literature aims to draw from existing research on the market demand for rickshaws to assess their potential demand in Maseru, Lesotho. In emerging economies like India, increased urbanization has led to a greater demand for paratransit travel due to limited infrastructure and formal public transportation options. Auto rickshaws have been used in these economies to meet the growing demand for passenger transport. In fact, it is projected that over 200 million people in India will move to urban areas, further driving the need

for auto rickshaws (Gadepallia, Tiwari, & Boliab, 2020). Rickshaws are estimated to fulfil at least 50% of public transportation needs in India (Tiwari, 2014). Intermediate public transport (IPT), which includes rickshaws, plays a crucial role in public transportation, especially in developing countries in Asia and Africa. Rickshaws offer flexible manoeuvrability in areas where buses and taxis may not be able to reach (Harding & Kandlikar, 2017). The prevalence of rickshaws in India indicates their growing popularity as a preferred mode of intermediate transport (Priye & Manoj, 2020). Kunhikrishnan & Srinivasan (2018) argue that in cities like Chennai in India, auto rickshaws cater for around 3.4 million passenger daily trips versus only 0.97 million provided by train. The literature is backed by Harding & Kandlikar (2017) who used a review of secondary data and publications supplemented by interviews to assess the need for rickshaws. In another study based in Delhi, India, Singh (2021) used a combination of desk based studies, observations and group discussions to understand acceptance of rickshaws as mode of transportation

2.5 Influence of Demographics of Commuters on Market Demand for Rickshaws

Despite limited research on the demographics of users of paratransit and IPT, some studies mostly conducted in Asian cities have yielded some common characteristics of paratransit passengers. Understanding of these characteristics is important in determining market demand of rickshaws (Kunhikrishnan & Srinivasan, 2018; Bhat, Seth, & Verma, 2024)

2.5.1 Age

The most distinguishing features of the rickshaw compared to other modes of public transportation are the ease of manoeuvring congested areas and providing public transport service at a much lower price. As such this mode of transport is popular to students and daily workers in professional spaces who require quick, flexible affordable means of transport for their daily commute. These age groups constitute the adult population aged 18-55 in most jurisdictions. In addition, given their convenience in door to door deliveries, rickshaws are also popular amongst older adults. Such adults have cited that rickshaws are convenient as they ease the strain of walking or associated with other forms such as trains. The studies conducted to establish empirical evidence used a

comparison of different model structures in understanding commuters' attributes and preferences (Kunhikrishnan & Srinivasan, 2018; Priye & Manoj, 2020).

2.5.2 Gender

In another context, the demographics of rickshaw passengers are shaped by the safety perceptions of commuters. Rickshaws have been cited by some studies as safer than most modes such as trains and buses which are generally crowded and only pick up and drop off passengers at formal routes and bus stops. As such, it has been found that women and children in particular tend to prefer rickshaws as safety is a key concern for them (Priye & Manoj, 2020).

2.5.3 Employment Status

To add on, given the popularity of rickshaws due to affordability, they are popular amongst employed commuters predominantly those on low to middle income earners found in most developing countries. The increasing costs of travel in cities and high costs of urban living in such countries have pushed passengers to opt for a cheaper mode of transport such as rickshaws compared to private vehicles and taxis (Vasudevan, Gore, Zope, Arkatkar, & Joshi, 2021).

2.5.4 Residential Location & Educational Levels

Other factors include residential location and educational levels. Passengers living and travelling within urban areas tend to opt for rickshaws for their commute. Given the dense populations in urban areas, rickshaws are able to navigate congested streets easily (Kunhikrishnan & Srinivasan, 2018). In addition, lack of and inadequate formal public transportation in such areas has added to their popularity as a preferred mode of transportation (Pramanik, Rahman, & Fahim, 2023). Educational levels and their influence on rickshaw demand have also been studied and the correlation between the two has been found to be positive. Such studies hold that, the higher the educational level the higher the passenger will use the rickshaws. This is attributable to two main reasons. The first is that, educated individuals are aware of the diverse public transportation options available and tend to use them vastly with a preference for the most convenient and cheaper means. Secondly, given high student activity who normally require short trips within and round campuses, rickshaws are popular in universities or town with a high presence of colleges making

students an important demographic in rickshaw demand dynamics (Hossain & Susilo, 2011; Das & Mandal, 2021)

In conclusion, demographics of passengers play a very important role in rickshaw demand. These factors include age, gender, income levels, educational levels and residential location. The overarching reason for their popularity among certain demographics is their perceived levels of safety, convenience and lower pricing. Therefore a deep understanding of such demographics is crucial in informing their feasibility as preferred mode of transportation in Maseru.

2.6 Influence of Travel Patterns of Commuters on Market Demand for Rickshaws

An assessment of travel patterns of commuters is imperative in informing the likely market for rickshaws. These include, frequency of travel, purpose of travel and places of interest. The literature below helps in understanding these variables and how they play a role in influence demand for rickshaws.

2.6.1 Frequency of Travel

Frequency of travel relies heavily on other factors such as demographics of commuters and availability of other modes of transport. Commuters known to use rickshaws frequently include professional workers and students who rely on rickshaws for their routine and daily travels. Tiwari (2014) holds that daily commuting is the primary reason for increasing popularity of rickshaws in urban areas. He holds that they provide an inexpensive mode of travel that could be costly as it occurs regularly, whilst also providing convenience due to its ease of accessing congested areas in urban areas. Though not as frequent as daily commute, other travellers such as visitors or tourists will use rickshaws regularly during their visit to a certain area, this is because such rickshaws are able to provide first-last mile connectivity to areas where such an individual may not be particularly familiar with an added layer of safety (Kumar, Thomas, Wadhwa, Mishra, & Dasgupta, 2022; Priye & Manoj, 2020)

2.6.2 Purpose of Travel

Rickshaws can be used for an array of travel reasons, including school, work, shopping, essential services and leisure services. All these factors will influence demand of rickshaws thought not by

an equal magnitude. Commuting to work and school have been found as primary reasons for demand of rickshaws as they provide cheap and convenient travel to both students and workers for their routine and daily travels. For those using rickshaws for shopping and other errands, they have cited door to door convenience as the main reason for using rickshaws. This alleviates the need to carry heavy groceries and other goods for longer distances as they would if they opted for formal modes such as trains and buses. Also the presence of rickshaws in areas such as mall and markets makes them a preferred choice for such errands, as opposed to taxis and buses which can only be found in formal routes and bus stops (Priye & Manoj, 2020; Pramanik, Rahman, & Fahim, 2023). Leisure and social activities have also a bearing on demand of rickshaws. Studies have found that rickshaws are used by people visiting leisure places as seen in Melville Johannesburg where commuters use them to visit the vibrant clubbing scene in the area. In addition, rickshaws are a popular choice for recreational travel in urban areas where formal modes of travel are lacking (Mbara, 2016).

2.6.3 Places of Interest

Key places of interest in cities include schools, office parks, and malls including essential services such as banking and government services and other tourist attractions. An assessment and understanding of the locations is crucial in informing which areas are likely to yield the most demand for rickshaws. Due to high activity for daily commute, both offices and colleges have been known to yield the highest count of rickshaw presence. Both workers and students use rickshaws as they provide a cheap quick mode for short trips within office parks and universities. Malls have also been found to have a density of rickshaws due to convenience and proximity offered to passengers coupled with the lack of parking for larger modes of transport in such areas. For tourist attractions such as hotels and recreational parks, rickshaws have been cited for their unique experience and flexibility they offer to tourists therefore yielding higher demand in areas where tourist activity is high (Priye & Manoj, 2020; S & Ravi Sekhar Chalumuri, 2016)

In conclusion, travel patterns of commuters play an important role in understanding market demand for rickshaws. The linkage between frequency of travel, purpose of travel and places of interest is attributed to rickshaws availability, their convenience and affordable pricing. An understanding of these factors is therefore important in understanding the potential market demand of rickshaws in Maseru.

2.7 Influence of Current Modes of Transport on Market Demand for Rickshaws

The case for rickshaws as a preferred mode of transport has been backed by several benefits to the commuter. This includes commuters' satisfaction levels with existing modes of transportation, their pricing and, convenience.

2.7.1 Commuters' Current Modes of Transport

Public transportation in urban areas is dominated by various modes depending on accessibility, affordability and convenience it provides in those areas. This literature reviews explores the available modes of transportation in Maseru alongside those prevalent in other cities.

Buses

Buses remain a common feature of public transportation in most cities around the world. Their popularity has been cited to their size therefore carrying larger number of passengers at a lower cost than most modes. Buses normally operate along designated, fixed routes with set schedules. This has been the main reason for their limited popularity due to lack of flexibility. In Maseru, buses cater most to inter-city city travels but very few trips are accounted under intra-city travel. They are therefore preferred for long distance travels to and outside of Maseru but they continue to face challenges of overcrowding, lack of access in some areas as well as overcrowding with contributes to their overall lack of efficiency in solving for public transportation needs (Senamolele, 2020).

Mini-Buses/Combi

Minibuses remain a feature in public transportation especially in most African cities. Unlike buses they provide some flexibility in terms of routes and schedules of travel, including an ability to navigate some narrow streets. In Maseru, they remain popular for most intra and inter-city travels given their lower charges and accessibility. Minibuses cater for a majority of commuters in urban areas where buses are not accessible. Unfortunately they have been cited for overloading and poor maintenance which may contribute to their decline in the past decade (The World Bank, 2022; Senamolele, 2020).

Taxis

Taxis have become more popular in the last decades given their personalised options and convenience in short distance travels. In Maseru these taxis, popularly known as 4+1s account for over 50% of intra city travel (The World Bank, 2022). They have been praised for their ability to provide flexible routes and navigating congested areas. Unfortunately, the prices charged by these taxis continue to increase annually making them expensive and inaccessible to most lower income earners (Ramolise, 2011).

Rickshaws

Rickshaws remain a prominent mode in offering IPT in most Indian and African cities. Their popularity is attributed to convenience and ease of navigating even the narrowest of streets. In addition they are normally priced well below most modes of travel that offer short distance trips (Obiri-Yeboah, Ribeiro, & Asante, 2021; Bhat, Seth, & Verma, 2024).

Comparative Analysis

Pricing and Affordability is a key factor in choice mode for public transportation. Buses and mini buses are generally priced lower than taxis, making them a preferred mode for low to middle income earners. Rickshaws have been cited as the most affordable mode especially for short distance trips within a city (Obiri-Yeboah, Owusu-Ansah, Abdul-Aziz, Woangbah, & Asamoah, 2022; Anil, 2002).

Accessibility of public transportation influences the choices of commuters. In Maseru, buses are accessible to designated areas only making them less accessible to most commuters for intra city travels (The World Bank, 2022). Rickshaws continue to close the gap for last mile connectivity in most cities where buses and trains cannot reach (Gadepallia, Tiwaria, & Boliab, 2020)

Convenience is another key determinant in commuters' choice of public transport. Given inflexibility of buses and taxis in providing for last mile connectivity, rickshaws have been cited as the most convenient. Rickshaws also provide door to door services whilst also having the ability to navigate congested and narrow streets (Bansal, Gadepalli, & AitBihiOuali, 2023; Das & Mandal, 2021)

2.7.2 Levels of Satisfaction with Current Modes

Satisfaction levels with existing modes of transportation may influence commuters' decision in using rickshaws as their preferred mode of transportation. Satisfaction is a broad term and it is defined through a mix of other factors already discussed in this paper; which include pricing, convenience, safety and overall user experience. Much of the literature alludes to strong correlation of these factors to market demand of rickshaws (Das & Mandal, 2021; Gadepallia, Tiwaria, & Boliab, 2020). Therefore, lower satisfaction of commuters' with current modes of travel will likely induce demand for a different mode.

2.7.3 Pricing

Poverty and unemployment are some of the key reasons cited for the success of the rickshaw in the developing world, as these provide affordable means to get from point A to B (Mbara, 2016; Steele, 2013). The rickshaw therefore not only provides convenience to the rider but their continued growth is due the low cost required to own and operate one, with the benefit trickling down to the customer in the form of lower price (Harding & Kandlikar, 2017).

In Maseru, 4+1s are meant to be the most convenient mode of transport for traveling from urban villages and within town, but the continued increases in transport costs driven by high fuel costs and the cost of living have meant that for some who still need to do a daily commute, their only option is to walk. Walking is the primary mode of transport accounting for over 50% of all trips in the city (The World Bank, 2022). The costs of these 4+1s remain unjustified at 12 Maloti for a short trip within the Maseru city (Ramolise, 2011). Rickshaws on the other hand have been proven to charge at lower price points than existing public transport modes (Tiwari, 2014).

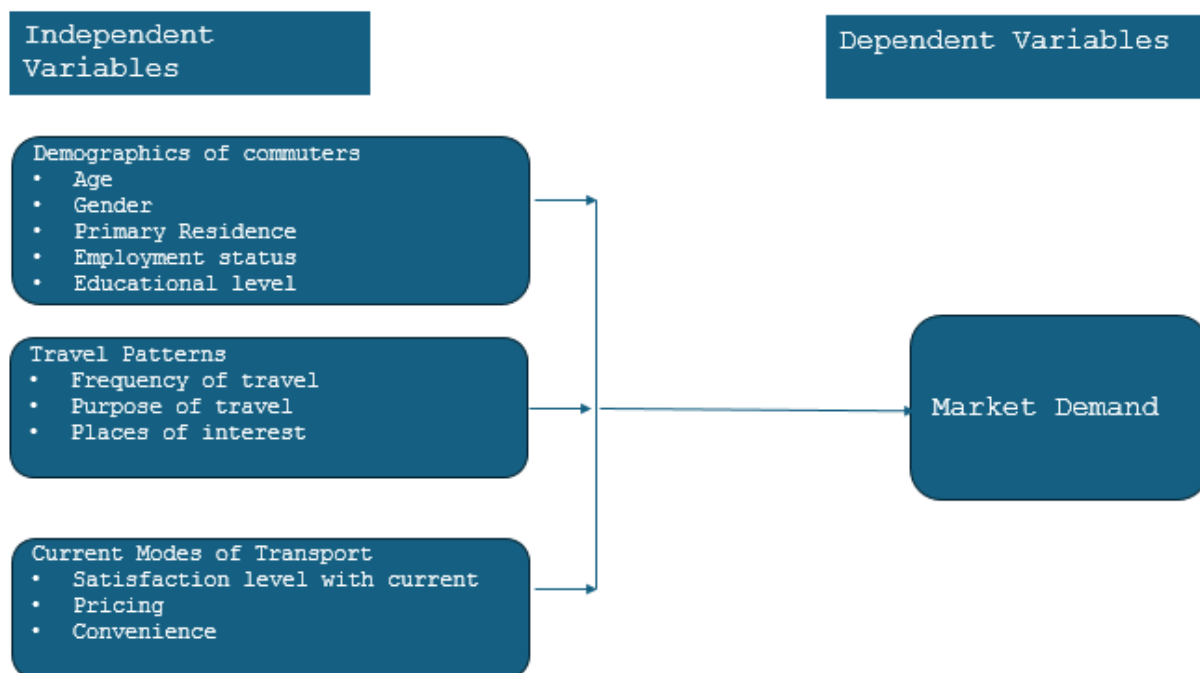
2.7.4 Convenience

The strongest case for the success of these three-wheelers in the developing world is the lack of an adequate public transportation system or one that is poorly regulated, as such rickshaws are predominant in countries such as India and provide for 20% to 50% of public transport needs

(Mbara, 2016). Harding & Kandlikar (2017) cited that the other reason for the need for the rickshaw in the developing world is the scarcity of conventional public transport, and as seen in India where the need for the rickshaw is its ability to reach places where other forms of transport cannot reach. Mbara, (2016) and Harding & Kandlikar, (2017), argue that the rickshaw provides a complementary service to public transport instead of being a competitor. They assert that the rickshaw allows for connectivity between formal public transportation and passengers' destinations that other modes of transport cannot reach. Therefore, they fill a gap in the niche market for first mile-last mile connectivity. Furthermore, the need for rickshaws is enhanced by their flexibility to manoeuvre crowded cities due to their simple construction (Mbara, 2016).

2.8 Hypothesis Development

A depiction of this theoretical framework is depicted below.



Hypotheses

From the above analysis of the variables several hypothetical statements have been deduced. Using primary data collected via a questionnaire, each of the hypothesis statements was tested using quantitative statistical analysis and methods. Logistic regression was used to test the several factors likely to influence market demand for rickshaws. For each hypothesis, the results were evaluated against the results of the logistic regression, and a null hypothesis (H_0) and an alternative hypothesis (H_1) were used to articulate the findings. The discussion below aims to detail each hypothesis based on statistical findings and current literature.

Demographics & Market Demand

Hypothesis 1: Demographics of commuters' influences market demand for rickshaws

- H_0 – Demographics of commuters do not influence market demand for rickshaws
- H_1 – Demographics of commuters influence market demand for rickshaws

The results from logistic regression also indicate a strong correlation between demographics (age only) and likelihood to switch to a different mode of transport (rickshaws) with Demographics of, which this aligns to observations made by (Priye & Manoj, 2020; Gadepallia, Tiwaria, & Boliab, 2020).

As indicated in several studies, key demographic factors such as age, gender, occupation levels and residential areas influence the demand for rickshaws. The younger population has been cited to use rickshaws to travel to due to their experimental nature and willingness to try new forms of transport, whereas the aging population adopts the rickshaws mostly to ease of proximity to their places of interest (Gadepallia, Tiwaria, & Boliab, 2020; Das & Mandal, 2021). Another factor, gender, has been strongly supported by Priye & Manoj (2020), who hold that females tend to opt for rickshaws due to safety attributess

Hypothesis Rejection/Acceptance- Both literature and statistical analysis support the alternative hypothesis (H_1) and rejects the null hypothesis (H_0), corroborating that demographics do influence market demand for rickshaws.

Travel Patterns & Market Demand

Hypothesis 2(a): High frequency of travel positively influences market demand for rickshaws

- H_0 – High travel frequency does not influence market demand for rickshaws

- H_2 – High travel frequency positively influences market demand for rickshaws

Results from statistical analysis suggest a very strong significance correlation between frequency of travel is also high, with market demand.

In urban areas, the relatively high travel frequency forces commuters to find easily accessible and cheap modes of transports. As Gadepallia, Tiwaria, & Boliab (2020) put it, frequent travellers tend to opt for transport choices that offer them flexibility and reliability and these are key features of rickshaws.

Hypothesis Rejection/Acceptance- Both literature and statistacal analysis support the alternative hypothesis (H_2) and rejects the null hypothesis (H_0), corroborating that high frequency of travel influences market demand for rickshaws.

Hypothesis 2(b): Purpose of town visit influences market demand for rickshaws

- H_0 – Commuters’ purpose of town visit does not influence market demand for rickshaws
- H_3 – Commuters’ purpose of town visit influences market demand for rickshaws

The results indicate that there is a strong relationship between frequency of travel, purpose of visit and lower for places of interest. However, the model did not find any correlation between purpose of town visit and market demand despite Minal & Sekhar (2016) and Bansal suggesting that rickshaws are used for frequent activities such as work and shopping.

Literature on the hand suggests that commuters’ purpose of visit such as work, school or shopping heavily impacts the choice mode for the commuter. Studies have corroborated that those commuters seeking reliable, efficient and cheap modes of transport for their daily work or school visits tend to opt for rickshaws over other modes (Priye & Manoj, 2020; Gadepallia, Tiwaria, & Boliab, 2020)

Hypothesis Rejection/Acceptance- Statiscal analyis does not corroborate with the alternative hypothesis (H_3) and accepts the null hypothesis (H_0), therefore purpose of town visit does not influence market demand for rickshaws.

Hypothesis 2(c): places of interest influences market demand for rickshaws

- H_0 – Places of interest does not influence market demand for rickshaws
- H_4 – Places of interest influences market demand for rickshaws

The statistical results indicate that there is a strong relationship between frequency of travel, purpose of visit and lower for places of interest. As Minal & Sekhar (2016) and Bansal, Gadepalli, & AitBihiOuali (2023), rickshaws are used for frequent activities such as work and shopping, therefore, one can conclude that there could be a latent need for rickshaws in Maseru.

Studies indicate that commuters have shown a strong usage of rickshaws especially for short distance travels such as work commute, malls and schools. As such given the proximity of such places in urban areas rickshaws are able to navigate easily and drop off commuters closer to these destinations. (Kumar, Thomas, Wadhwa, Mishra, & Dasgupta, 2022)

Hypothesis Rejection/Acceptance- Both literature and statistacal analysis support the alternative hypothesis (H_4) and rejects the null hypothesis (H_0), corroborating that commuters' places of interest do influence market demand for rickshaws.

Current Modes of Transport vs. Market Demand

Hypothesis 3(a): Lower commuter satisfaction levels with current modes of transport positively influences market demand for rickshaws

- H_0 – Lower commuter satisfaction levels with current modes of transport does not influence market demand for rickshaws
- H_5 – Lower commuter satisfaction levels with current modes of transport influences market demand for rickshaws

Results from the statistical analysis suggest that lower commuter satisfaction levels with current modes of transport positively influences market demand for rickshaws .The results indicate a significant negative impact of the use of 4+1 as preferred mode of transport, and a positive impact of considering another alternative mode of transport.

Lower satisfaction levels with existing and traditional modes have been pinned as one of the reasons for the increased preference of rickshaws. Further to that, unreliability in taxis and buses as well as congestion in areas such as bus-stops have forced commuters to find other alternatives,

and rickshaws have been the preferred mode. More flexibility and shorter lead times are some of the reasons cited for increased demand of rickshaws (Singh, 2021; Minal & Sekhar, 2016).

Hypothesis Rejection/Acceptance- Both literature and statistical analysis support the alternative hypothesis (H_5) and rejects the null hypothesis (H_0), corroborating that lower satisfaction levels with current modes of transport does have an influence market demand for rickshaws.

Hypothesis 3(b): Lower pricing increases market demand for rickshaws

- H_0 – Lower pricing does not increase market demand for rickshaws
- H_6 – Lower pricing increases market demand for rickshaws

Results from statistical analysis suggest that pricing on its own does not strongly influence demand for rickshaws, but may be a factor if coupled with other add-ons such as convenience.

Much of the literature on increased demand for rickshaws especially in Asian cities speaks to their lower prices as compared to existing traditional modes such as taxis and buses. This demand is more evident in price sensitive markets or lower income earners mostly found in developing cities. (Gadepallia, Tiwaria, & Boliab, 2020; Bhat, Seth, & Verma, 2024)

Hypothesis Rejection/Acceptance- Statistical analysis rejects the alternative hypothesis (H_6) and rejects the null hypothesis (H_0), therefore lower pricing does not do influence market demand for rickshaws.

Hypothesis 3(c): Need for convenience will increase market demand for rickshaws.

- H_0 – Need for convenience does not increase market demand for rickshaws
- H_6 – Need for convenience increases market demand for rickshaws

Statistical model results suggest that convenience on its own does not strongly influence demand for rickshaws, unless it is paired with other factors such as pricing.

Beyond pricing convenience also plays a critical roles in choice mode transportation for commuters. Research has pointed that, where exiting public transportation system such as trains and buses fail to meet commuters' needs for convenience, flexibility and door-to-door deliveries, rickshaws have been sought as an alternative mode. Rickshaws add more convenience due to their on demand availability as opposed to scheduled services offered by buses and trains, hence continued demand for them (Gadepallia, Tiwaria, & Boliab, 2020; Minal & Sekhar, 2016)

Hypothesis Rejection/Acceptance- Statistacal analysis rejects the alternative hypothesis (H_1) and accepts the null hypothesis (H_0), suggesting that convenience does influence market demand for rickshaws.

2.9 Conclusion

Rickshaws operation remain a novelty in Maseru, Lesotho. Despite the limited literature in the SADC region, what is evident is the positive socio-economic impact of rickshaws for commuters especially in nations where they are most popular. Rickshaws have been revered for providing cheap and convenient transportation system in cities where infrastructure may not be conducive for other modes of transport (Alyan, Ali, & Ramadan, 2022; Bhat, Seth, & Verma, 2024; Harding , 2016).

To assess if the operation of rickshaws can be fruitful in Maseru, and to asses market deamnd, factors of demographics, travel patterns and features of the current public transportation modes need to be studied. Much of the literature points out that most of those factors to indeed have a strong bearing on market demand for rickshaws. Understanding customer preferences through market demand theory will also enhance credibility of the business proposal.

Despite much of the literature suggesting a strong correlation between demographics, travel patterns and satisfaction level with current levels, the statistical results have provide mixed results. In terms of demographics only age had strong correlation to market demand whereas other factors such as gender did not suggest any correlation. In terms of satisfaction levels with current modes, both pricing and convenience yielded strong correlations when put together but none of the factors showed strong model significance when tested individually.

2.10 Summary-Research Gaps

The need for the rickshaw has been identified through number of articles especially in the context of Asian countries, predominantly India. Establishing a demand side for the rickshaw in SADC cities is an evident research gap. Despite some research conducted in most sub-Saharan Africa regions such as Ghana, Kenya and Nigeria, evidence on those countries may not necessarily emulate the use of rickshaws in SADC countries such as Eswatini, Namibia and Botswana which have much more economic similarities to Lesotho. Mbara (2016) has conducted one study to

identify the demand side of the rickshaw in South Africa and if the rickshaw can be used as an alternative to the metred taxis, but this study was conducted on a very niche market in Melville, Johannesburg. This research study aims to assess demand of rickshaws in Maseru, and currently no such studies on rickshaws exist within this specific context.

There is generally strong literature around the need for rickshaws as preferred modes of transport and how they fill much of the first mile – last mile connectivity in most developing cities (Bansal, Gadepalli, & AitBihiOuali, 2023; Gadepallia, Tiwaria, & Boliab, 2020). However, what lacks is how this rickshaws should be integrated into the existing formal transportation modes with specific laws governing them as those with taxis, buses and passenger trains. Such lack of oversight of the rickshaw raises issues of passenger safety, issues of pricing and conflicts that may arise with other existing modes, despite rickshaws proving the much needed convenience for commuters.

3. METHODOLOGY

This section covers the research methodology to assess for market demand of rickshaws in Maseru. It will cover the research design, the population and how the sample was determined, concluded by data collection and analysis thereon. The research aims to verify if demand does exist for the rickshaw, including the demographics, travel patterns and preferences of those commuters

3.1 Research Design

This research follows a deductive reasoning approach with quantitative analysis to assess for market demand of rickshaws in Maseru. Deductive approach follows a logical approach where conclusions are drawn from a set of premises that are generally accepted as true (Sekaran & Bougie, 2016). The approach starts with a hypothesis or a theory and moves towards specific observations which are then tested to accept or reject the hypothesis (Sekaran & Bougie, 2016). The approach is suitable for this study as it is based on established theories which will then be tested against the specific context of Maseru. This includes the testing of the influence of demographics and travel patterns on the demand for rickshaws, deductive reasoning therefore allows the research to systematically test these hypotheses in the specific context of Maseru. Also, deductive reasoning allows for an objective and focused approach to structure research, by guiding on formulating specific hypotheses that guide data collection and analysis (Yuwono & Rachmawati, 2024). In this study, using deductive approach has allowed the research to test specific hypothesis related to rickshaw demand instead of exploring a broad range of factors without a guiding framework

This is a quantitative research approach that used a cross-sectional design to collect primary data. Quantitative methods were used to analyse data as they allow for rigor and objectivity of the study. Use of statistical analysis such as chi squares and logistic regressions have been used as they allow for measurement of variables, testing hypotheses and validate findings, without subjectivity as would in a qualitative study. In the same manner, use of standardized quantitative methods allows

for replication of findings for other studies thereby enhancing credibility and reliability of findings (Choy, 2014)

The market demand for rickshaws was assessed through questionnaires which were issued out to the target audience, those who walk and those who use other forms of transport to travel within the city. Use of structured questionnaires distributed to a representative sample allows for generalizability of the findings to the wider population of Maseru (Creswell, 2014).

The use of statistical methods and surveys in such studies in transport is backed by Priye & Manoj (2020) who have used such methods to understand commuter demographics and travel patterns and preferences in India.

The research methodology followed a very objective view of the outcomes based on the results of the questionnaires to affirm that indeed Maseru presents an untapped opportunity in the rickshaw market.

3.2 Population and Sampling Strategy

The chosen method for data collection is a combination of purposive convenience sampling and area sampling. Sekaran & Bougie (2016) defines convenience sampling as a non-probability way of selecting participants who are easily accessible to the researcher and readily available at any given place and or time. It allows for ease of data collection using limited resources and within a short span of time, whilst allowing the researcher to collect data without the need for much travel. Given that the demand for rickshaws is determined in the highly congested and populous areas of the city, the target subjects are those pedestrians along the Kingsway and Pioneer roads. However to ensure that the sample aligns to the target market, area sampling is used. Therefore, respondents will be chosen along the Kingsway Road using a systematic yet convenient approach. Highly congested areas, especially those with heavy pedestrian traffic and taxi stops and pick up points were used as the key sampling locations. This method is deemed the most practical whilst providing for a controlled sampling approach, taking in mind the constraints that come with convenience sampling (Sekaran & Bougie, 2016).

The population for the business proposal encompasses the pedestrians within the Maseru city centre, as well as those using other modes of transport such as the 4+1 and private vehicles. Maseru

has a total population of 519, 186 as per the latest 2016 census by the BOS. The urban population for the country is at 34.2%. Ramolise (2011) estimates that 50% of the Maseru population is said to commute to town on a frequent basis. Of the overall population, 37.8% is reported to be below age 15, therefore we can determine the likely economically active population within Maseru at 62.2% (1-.378).

Total Maseru Population x Proportion living in Urban Areas x Commuter Rate x Proportion likely to be economically active

$$519,186 \times 34.2\% \times 50\% \times 62.2\%$$

$$N=55,221$$

Islam (2018) provides a guidance for sample size calculation for large population, using the formula $n = n_o \div (1 + \frac{n_o}{N})$ where n_o is the initial sample size; N is the population. He holds that for big populations the difference between n and n_o is negligible but for small population the difference is appreciable. He prescribes the sample sizes for different population sizes at different levels of precision as per the snippet below

Table 1. Sample size for big population.

Size of Population (N)	Sample Size (n) for Precision (E) of:			
	±3%	±5%	±7%	±10%
500	A	222	145	83
600	A	240	152	86
700	A	255	158	88
800	A	267	163	89
900	A	277	166	90
1,000	A	286	169	91
2,000	714	333	185	95
3,000	811	353	191	97
4,000	870	364	194	98
5,000	909	370	196	98
6,000	938	375	197	98
7,000	959	378	198	99
8,000	976	381	199	99
9,000	989	383	200	99
10,000	1,000	385	200	99
15,000	1,034	390	201	99
20,000	1,053	392	204	100
25,000	1,064	394	204	100
50,000	1,087	397	204	100
100,000	1,099	398	204	100
>100,000	1,111	400	204	100

A = Assumption of normal population is poor (Yamane, 1967). The entire population should be sampled.

Source: Islam (2018), pg 4

The sample size for study was determined as 122, which lies slightly above the recommended 100 for a population slightly above 50 000 (Islam, 2018). The determination is backed by a number of theories to determine its statistical soundness. Anchoring further on the Central Limit Theorem, holds that for sufficiently large sample sizes exceeding 30 ($n > 30$), the sampling distribution of the mean will be approximately distributed regardless of the population distribution, therefore a sample of 122 used in this study is acceptable as it is well above the $s=30$ threshold ensuring that the sampling distribution approximates normality which is beneficial for inferential statistics (Ali, Lulseged, & Medhin, 2018). Also given the explorative nature of the study, a sample size of 122 was deemed large enough to yield some insights in the nature of the commuters' preferred mode of transportation.

In addition, given the likely challenges in data collection Roscoe (1975) holds that for most research sample sizes between 30 and less than 500 are deemed enough. The sample size has been set in consideration of other practical issues such as accessibility of participants, and their willingness to participate in the study (Creswell, 2014). The sample size is also enough to do a further analysis on the different subgroups of the participants, their age, residences, frequency and mode of transportation, aligned to the research objectives by proving insights into the preferences and behaviours of the different segments within the population (Hair, Babin, Black, & Anderson, 2019).

3.3 Research Instrument

Primary data was collected utilizing a questionnaire, which was determined as the best tool to collect data as recommended by Creswell (2014). The purpose of the questionnaires was ascertain and evaluate market demand for rickshaws in urban Maseru as mode of transportation. The questionnaire contained 12 questions, categorised into three; demographics of the travellers (using close ended multiple-choice questions); frequency and mode of travel used by the travellers and factors that might influence the travellers to use a different mode employing a combination of multiple choice and closed-binary yes/no options.. The questionnaire was distributed electronically either through an SMS link or email to the willing respondents. A sample of the questionnaire is attached in Appendix 1. The survey was sent to two pilot respondents to ensure that it is accessible and clearly defined for the recipients.

The survey was sent to over 300 recipients to build a pool large enough sample to meet the 100 minimum sample size, sample as a representative of the population. The data collection was collected in phases, both along the Kingsway Street in Maseru and electronically. 127 responses were received and 5 cases were removed from the analysis as this were duplicates, blanks, and incomplete responses, leaving a final sample size of 122 (n=122).

3.4 Data collection process

The respondents were chosen along the Kingsway road using a systematic yet convenient approach, highly congested areas especially those with heavy traffic were used as key sampling location. The respondents were randomly approached and requested to participate by providing either their email or number on which the survey link was send. The data was collected using email and instant messaging services such as SMS and WhatsApp, The questionnaires were distributed electronically to respondents situated along Kingsway and Pioneer Roads via email and WhatsApp providing for a convenient way for respondents to participate in the study. These respondents received a short message inviting them to participate in the study, supplemented with instructions on how to access and complete the survey.

3.5 Data Analysis techniques

The data analysis techniques used in the study were chosen considering model fit and validity, therefore both logistic regressions and descriptive analysis were used.

Logistic Regression analysis

Logistic regression is used for binary and dichotomous variables, it gives the probability that a given outcome will occur based on one or more predictor variables. For this study, logistic regression was used to understand how various independent variables (demographics, travel patterns of commuters, satisfaction with current modes) influence commuters' choice of mode of transportation. The dependent variable for the study was set as market demand whilst independent variables included factors such as demographics, commuter travel frequency, purpose of travel, places of interest, satisfaction levels with current modes of transportation as well as pricing and

convenience. Given the nature of the data, logistic regression was most suitable due to nature of the dependent variable (market demand) which is binary, and its suitability in predicting the probability of an event occurring (demand for rickshaws) based on several independent variables. Each of the variables was then coded as either continuous or categorical appropriately and the logistic regression model was fit to predict the probability of demand for rickshaws based on these inputs using SPSS software.

The model was analysed using coefficient estimates (β), P values and Wald's Z statistic, to explain the significance and influence of the variables on the outcome (Menard, 2002). The odds ratio (β) was used to interpret change in the odds of demand for a different mode of transportation, with values higher than 1 indicating higher chances of a commuter opting for an alternative mode of transport. P values were used to assess statistical significance of each variable with values below 0.05 considered to be statistically significant as predictors of market demand.

Descriptive Statistics

Descriptive statistics was also considered as the best analysis as all the conditions are met as per the table below (Sekaran & Bougie, 2016). For this reason, the results were analysed using cross tabulations and chi-square

Condition	Description	Met/ Unmet
Normality	The data follows normal distribution	Y
Linearity of variables	There is linear relationship between variables	Y
Equality of variance	Variances are equal across groups	Y

Analysis of the data was performed using statistical software -SPSS™. The software is widely used by researchers, therefore it is easy to use and understand provides quick data analysis. It helps researchers perform a wide range of analysis both comparative and correlational thereby making it the best tool for this study (Ong & Puteh, 2017).

3.6 Ethical considerations

This research was conducted under strong commitment ethical consideration as below

1. **Non harmful data collection:** Of utmost importance, the collection of data was carried out in a manner that does not inflict harm on any of the respondents, human beings, animals or even the environment either directly or indirectly.
2. **Voluntary participation:** In the same manner, the respondents were allowed to respond in manner that they are comfortable with, without any use of coercion of force to get responses, and they were allowed to withdraw at any time during the process if they felt the need to.
3. **No Incentives:** No incentives, financial or otherwise were given to the respondents, that is, they responded voluntarily to the questionnaire. Using this approach, data integrity and authenticity was maintained.
4. **Informed consent:** The participants were informed about the nature of the study. Participants'' acknowledged consent before taking the survey, which ensured they were aware of their rights and the voluntary nature of participation.
5. **Privacy and Confidentiality:** The privacy and confidentiality of the respondents was ensured through anonymous collection of data to protect their identity.
6. **Data Integrity:** All data was stored in a safe and encrypted manner to ensure no other person accesses it and or modifies it with consent. Responses were conducted in anonymous manner, so that each response had an equal chance of being analysed, and that such analysis was carried out in an objective manner and without any manipulation.
7. **Referencing:** This research was also conducted using secondary data and materials. To keep to ethical guidelines of the university, each piece of information from secondary sources is referenced appropriately and such will be disclosed. Use of AI tools such as Chat GPT was not used for the purposes of this paper. If such a need may arise, the referencing rule as alluded to will be applied
8. **Unintended Consequences of the Study-** whilst the study is meant purely to assess the demand for rickshaws in Maseru some intended consequences' may arise:
 - **Spark in competition and taxi strikes-** the introduction of rickshaws may introduce a most welcome cheaper and convenient mode of transportation which might be most welcome by commuters. However, taxi business remains a very highly competitive industry, with a history of conflicts whenever new players come in the industry as that of metred taxis and Uber in Johannesburg.

- **Environmental impact-** Despite introduction of e-rickshaws public perception on rickshaws may still view them in the their traditional form powered by fuel and as harmful to the environment,
- **Regulatory challenges-** rickshaws are a novelty in Maseru Lesotho, this might mean that operation will need some revision and adoption of some existing frameworks.

3.7 Data Limitations & Challenges

The biggest challenge in the data collection can be alluded to collection of such data during the festive season, with people seemingly pre-occupied with festivities but ‘promising’ to fill out the survey. Secondly, the approach on the street was seemingly intimidating and intrusive, with respondents indicting their discomfort with sharing their email or contacts to a stranger. Lastly, the data collection was made during peak hours when there’s enough traffic to give a satisfactory sample, however, it appeared that during these peak times people would rather rush to work or home and claimed lack of time when approached.

4. EMPIRICAL DATA FINDINGS

4.1 Introduction

This sections summarises the empirical results of the data analysis. Both logistic regressions and descriptive analysis were considered in the data analysis, and a detailed analyses is provided for each of objectives, as well as results for each hypothesis.

4.2 Socio-Demographic Profile of Commuters

Among the usable data, (n=120), 55% of the respondents were male, 42.5% female and 2.5% preferred not to disclose their gender. Age distribution of the data suggested that most of the respondents belonged to the 36-50 age group (51%). 36% of the respondents belong to the 25-36 age group, 11% to the 18-24 age group and the reminder to the 65+ age group. In the primary residence category, a vast percentage of the respondents were from the northern parts of the city at 47%, whilst southwest contributed 23%. The reminder was distributed amongst the central and southern parts with a marginal difference of 1% between the two areas. In terms of employment, a good majority of the respondents were employed (78%), and a further 10% self-employed.

Despite Priye & Manoj (2020) suggesting a strong preference of rickshaws' amongst students only 4% was valid. The low respondent rate amongst students is due to purposive sampling, the respondents' among the Kingsway and pioneer roads are heavily saturated with corporate offices as opposed to schools which normally lie on the periphery of the city. The levels of education indicated that a majority of the respondents possessed at least an undergraduate degree at 86%, a sizable 10% possessed some form of vocational training whilst the reminder of 3% only had a high school degree.

4.2.1 RQ1 - To what extent do the demographics of commuters influence market demand for rickshaws?

To understand the effect of demographics on market demand of rickshaws, cross tabulations and chi square tests were run between demographics and consideration of alternatives. Interestingly,

only age showed strong statistical significance with a Pearson chi-square result of 0.000 which is well within the recommended model fit range of -0.05 to 0.05, with an outcome closest to 0.00 indicating strong model fit (Wasserstein & Lazar, 2016). Of the respondents as per *Table 1* below, 72% all age groups indicated they can switch to an alternative mode of transport, with the 36-50 age group showing the highest rate of 77%.

Results on Hypothesis 1- Demographics of commuters' influences market demand for rickshaws. It can therefore be concluded that only age has a strong influence on the likely demand of rickshaws, which this aligns to observations made by (Priye & Manoj, 2020; Gadepallia, Tiwaria, & Boliab, 2020).

TABLE 1: AGE GROUP VERSUS CONSIDERATION OF ALTERNATIVES

Crosstab						
Count		Age				Total
		18-24yrs	25-35yrs	36-50yrs	51-65yrs	
Consideration of alternatives	No	0	0	0	2	2
	Yes	10	29	47	0	86
	Maybe	3	14	14	1	32
Total		13	43	61	3	120

TABLE 2: CHI SQUARE RESULTS- CONSIDERATION OF ALTERNATIVES

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	81.542 ^a	6	0.000
Likelihood Ratio	20.421	6	0.002
Linear-by-Linear Association	1.474	1	0.225
N of Valid Cases	120		

4.3 Travel Patterns of Commuters

Table 3 below articulates the travel patterns of commuters in Maseru. Of the valid 120 respondents, around 80% of the travellers commute to town on a daily basis. 11% indicated that they travel to town on a weekly basis, with a much less proportion of commuters' (5%) seldom visiting town. The data also suggests that, the main purpose of visit is work at 84%, whilst shopping was indicated as the second most common purpose of visit at 53%. As Minal & Sekhar (2016) had indicated, rickshaws are predominantly used for commuters who frequent work on a regular basis. Despite

85% of the respondents indicating they frequent town for work, interestingly, the data also indicates that those commuters are likely to carry out another activity. The observation is backed by strong model significance between the two variables as shown in [Table 5](#) with strong model significance 0.000 (Wasserstein & Lazar, 2016). Other activities such as social accounted for 35%. Study is the least common purpose of visit amongst the commuters at around 10%, which evidently ties back to low number of students on the socio demographics of the commuters. The data also suggests that the most common place of interest within town is shopping malls at 74%, whilst 44% and 40% indicated essential services and recreational places as their places of interest respectively. As expected, based on the low student demographic in the data, libraries only had 10% of valid respondents indicating it as a common place of interest.

4.3.1 RQ2: To what extend does the frequency of travel, purpose of visit and places of interest influence the market demand for rickshaws?

As per Gadepallia, Tiwaria, & Boliab (2020) had concluded, there is a high correlation between frequency of travel and purpose. As per [Table 3](#), 89% of the respondents frequenting town on a daily basis do so work purposes. The results are backed by a strong level of significance in the model with a Pearson Chi Square at 0.000, well within the recommended -0.05 and 0.05 range (Wasserstein & Lazar, 2016). The correlation between the frequency of travel is also high, with significance of 0.02 for both social activities and other. The model suggest a lower significance between frequency and shopping and for study purposes with Pearson’s Chi square of 0.10 and 0.78 respectively. In terms of frequency and place of visit, the model suggest a strong significance between frequency and library with chi square result of 0.03. The model suggest a very less significance of other places on interest to frequency of travel. The results indicate that there is a strong relationship between frequency of travel, purpose of visit and lower for places of interest. As Minal & Sekhar (2016) and Bansal, Gadepalli, & AitBihiOuali (2023), rickshaws are used for frequent activities such as work and shopping, therefore, one can conclude that there could be a latent need for rickshaws in Maseru.

TABLE 3: CROSS TABULATION- FREQUENCY OF TRAVEL VERSUS PURPOSE (WORK)

Crosstab	
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			POV No	Work Yes	Total
Town Travel Frequency	Daily	Count	4	85	89
		% within Town Travel Frequency	4.5%	95.5%	100.0%
	More Than Daily	Count	2	4	6
		% within Town Travel Frequency	33.3%	66.7%	100.0%
	Once a Week	Count	4	9	13
		% within Town Travel Frequency	30.8%	69.2%	100.0%
	Seldom	Count	4	2	6
		% within Town Travel Frequency	66.7%	33.3%	100.0%
	Monthly	Count	5	1	6
		% within Town Travel Frequency	83.3%	16.7%	100.0%
Total	Count	19	101	120	
	% within Town Travel Frequency	15.8%	84.2%	100.0%	

TABLE 4: CHI- SQUARE RESULTS FREQUENCY VERSUS PURPOSE OF VISIT (WORK)

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	44.290 ^a	4	0.000
Likelihood Ratio	35.487	4	0.000
Linear-by-Linear Association	42.030	1	0.000
N of Valid Cases	120		

TABLE 5: CROSS TABULATION PURPOSE OF VISIT VERSUS PLACE OF INTEREST

Crosstab	Purpose of Visit	Place of Interest	Percent Yes	Pearson Chi- Square
Observation 1	Work	Shopping Malls	84%	0.02
Observation 2	Wok	Library	84%	0.04
Observation 3	Shopping	Recreational	53%	0.00
Observation 4	Social	Shopping Malls	35%	0.03
Observation 5	Social	Essential Services	35%	0.00

TABLE 6 CROSS TABULATION TOWN TRAVEL FREQUENCY VS PURPOSE OF VISIT

Town Travel Frequency	Purpose of Visit	Percent Yes	Pearson Chi- Square
	Work	84%	0.00
	Shopping	53%	0.10
	Study	10%	0.78

	Social	35%	0.02
	Other	14%	0.02

TABLE 7 CROSS TABULATION TOWN TRAVEL FREQUENCY VS PLACES OF INTEREST

	Place of Interest	Percent Yes	Pearson Chi-Square
Town Travel Frequency	Shopping Malls	74%	0.31
	Essential Services	44%	0.45
	Recreational	41%	0.15
	Library	6%	0.03
	Other	15%	0.31

4.4 Commuters current modes of Transportation

4.4.1 RQ3a - What are commuters' current preferred modes of transportation within town in Maseru?

Commuters were also asked to indicate their most preferred mode of transportation(s) within town. As expected, based on Ramolise (2011) and The World Bank (2022), the 4+1 is the most popular mode of public transportation within town with valid percentage of 57%. Most respondents however indicated that the most preferred mode as own transport at 66%, whilst a satisfactory 40% still indicated walking as an option. Private cabs had the lowest response at only 8%.

4.4.2 RQ3b - To what extent does commuter satisfaction levels with current modes of transport influence market demand for rickshaws?

To analyse the hypothesis, logistic regression was employed at 95% confidence intervals. The analysis showed a significant model summary; $P = .002$, and the chi square statistic of the overall model is 14.440 with 3 degrees of freedom, suggesting that the predictors in the model collectively influence the likelihood of the outcome as recommended by Wasserstein & Lazar (2016). The analysis shows the level of significance is only strong for extreme levels of satisfaction levels of satisfaction, with coefficient of extremely satisfied ($\beta = -1.915$) and, $P = .003$; the odds ratio is

0.147, therefore for extremely satisfied level of satisfaction the odds of the outcome occurring are reduced by 85.3% compared to the reference category.

TABLE 8: LEVELS OF SATISFACTION WITH 4+1 AS A PREFERRED MODE OF TRANSPORTATION

Variables in the Equation									
Predictor Variable	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)		
Step 1 ^a			14.440	3	0.002				
Level_Of_Satisfaction2									
Extremely Satisfied	-1.915	0.655	8.550	1	0.003	0.147	0.041	0.532	
Somewhat Satisfied	-0.488	0.550	0.787	1	0.375	0.614	0.209	1.803	
Neither Satisfied or Dissatisfied	0.383	0.631	0.369	1	0.544	1.467	0.426	5.049	
Constant	0.762	0.458	2.772	1	0.096	2.143			

To analyse the consideration of alternatives the multiple logistic regression was employed at 95% confidence intervals. The analysis showed no model significance; $P = .080$, and the chi square statistic of the overall model is 5.044 with 2 degrees of freedom, suggesting that the predictors in the model do not collectively influence the likelihood of the outcome.

However, the analysis shows the level of significance is only strong for consideration of alternative-Yes, with coefficient of extremely satisfied ($\beta = 0.953$) and, $P = .025$; the odds ratio is 2.593, therefore the odds of the outcome occurring are approximately 159.3% higher when the alternatives are considered to when they are not.

TABLE 9: CONSIDERATION OF ALTERNATIVES VS 4+1

Variables in the Equation									
	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)		
Step 1 ^a			5.044	2	0.080				
Consideration of alternatives									
No	-20.823	28420.722	0.000	1	0.999	0.000	0.000		
Yes	0.953	0.424	5.044	1	0.025	2.593	1.129	5.956	
Constant	-0.379	0.360	1.112	1	0.292	0.684			

Results on Hypothesis 3(b) - Lower commuter satisfaction levels with current modes of transport positively influences market demand for rickshaws .The results indicate a significant negative impact of the use of 4+1 as preferred mode of transport, and a positive impact of considering

another alternative mode of transport, Hence the hypothesis was accepted for only extreme levels of satisfaction with the 4+1.

4.4.3 RQ3c - To what extent does pricing affect market demand for rickshaws?

Influence of Price and Convenience

To analyse the hypothesis, the multiple logistic regression was employed at 95% confidence intervals. The analysis showed a significant model summary; $P = .010$, and the chi square statistic of the overall model is 11.310 with 3 degrees of freedom, suggesting that the predictors in the model collectively influence the likelihood of the outcome.

The coefficient of price $\beta = -1.386$ and, $P = 0.290$, which is not statistically significant. The odds ratio is 0.250, therefore the odds of the outcome occurring are approximately 25% lower when price is considered but it is also statistically insignificant.

Results on Hypothesis 3 (c): Pricing influences market demand for rickshaws. The results suggest that pricing on its own does not strongly influence demand for rickshaws.

4.4.4 RQ3d - To what extent does convenience affect market demand for rickshaws?

To analyse the hypothesis, the multiple logistic regression was employed at 95% confidence intervals. The analysis showed a significant model summary; $P = .010$, and the chi square statistic of the overall model is 11.310 with 3 degrees of freedom, suggesting that the predictors in the model collectively influence the likelihood of the outcome.

The coefficient of convenience $\beta = 0.302$ and, $P = 0.81$, which is not statistically significant. The odds ratio is 1.353, therefore the odds of the outcome occurring are approximately 35.3% higher when convenience is considered but it is also statistically insignificant.

Results on Hypothesis 3 (d): Convenience influences market demand for rickshaws. The results suggest that convenience on its own does not strongly influence demand for rickshaws.

The coefficient of both price and convenience $\beta = 0.446$ and, $P = 0.729$, which is not statistically significant. The odds ratio is 1.562, therefore the odds of the outcome occurring are approximately 56.2% higher when both price and convenience are considered but it is also statistically insignificant

However, the results of the model indicate a strong significance ($p = 0.010$), however none of the individual predictors has strong statistical significance, that is no single factor has an independent effect on the likelihood. Hence the hypothesis was accepted for only when both price and convenience are considered together.

TABLE 10: INFLUENCE OF PRICE AND CONVENIENCE ON CHOICE MODE

Variables in the Equation									
		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
Step 1 ^a	Deciding factor			11.310	3	0.010		Lower	Upper
	Convenience	0.302	1.257	0.058	1	0.810	1.353	0.115	15.901
	Price	-1.386	1.309	1.121	1	0.290	0.250	0.019	3.254
	Price and Convenience	0.446	1.290	0.120	1	0.729	1.562	0.125	19.596
	Constant	0.693	1.225	0.320	1	0.571	2.000		

5. BUSINESS VENTURE PROPOSAL

This chapter will discuss key findings on the data analysis: demographics, travel patterns and commuters' current modes of transportation. It will explore how these findings link to the literature and the implications they have for the business venture proposal. Additionally, recommendations for future research areas will be provided based on the identified research gaps. The focus will then shift to key aspects of the business venture, including strategic analysis and situational analysis (both external and internal factors). The discussion will emphasise the market analysis, and findings that align to the Market Demand theory. Finally, the chapter will integrate the risk, operational and financial aspects of the business venture and provide recommendation on its viability.

5.1 Discussion of Findings

The detailed data analysis above sheds important demographic characteristics, travel patterns as well as what influences commuters' choice of transportation. The section below discusses the study's findings in relation to literature reviewed.

5.1.1 Demographics

The socio-demographic profile of the respondents provides a strong basis and insights for the potential market for rickshaws in Maseru. The findings reveal that 55% of the respondents are male and fall predominantly within the 36-50 age range. This indicates that a majority of commuters who are likely to consider rickshaws as an alternative mode of transport are working-age males, this finding aligns to the findings by Priye & Manoj (2020), who affirm that most middle aged adults seek reliable and cost effective modes for their transport needs. The gender distribution is slightly skewed towards males at 55% but nonetheless provides a balanced potential user base. They are actively engaged in the workforce and have a high frequency of commuting.

Regarding geographic distribution, a larger proportion of commuters are located in the northern parts of the town. This could suggest either a higher population density or a greater proportion of the working class residing in this area. This finding is crucial for strategically placing rickshaws at bus stops for commuters coming into town from the northern parts.

In terms of employment and educational levels, it is noteworthy that over 80% of the respondents have at least a degree. This aligns well with the higher concentration of large corporate offices along Kingsway and Pioneer roads. Demographics such as these may prioritize time and convenience, which rickshaws can provide to bridge that gap. In addition the higher educated demographic tend to have more awareness of novel modes of transportation as Bhat, Seth, & Verma (2024) allude to and as such may be used as guinea pigs to instil adoption of such modes to other the less informed demographic.

5.1.2 Travel Patterns

A significant number of people commute to urban areas on a daily basis for work, which highlights the need for more reliable and efficient transportation options. In addition, considering the strong correlation between long commutes and work-related purposes, it is reasonable to expect a continued and high demand for cost-effective modes of transportation. Analysing the data indicates that shopping centres (53%) are the most frequently visited points of interest, followed by essential services and recreational facilities. This finding holds well against the market demand theory, which holds that broader and versatile products tend to attract a broader client base (Varian, 1996). Kunhikrishnan & Srinivasan (2018) and Gadepallia, Tiwaria, & Boliab (2020) findings on convenience and accessibility as key considerations of customers in choice mode are also validated by this finding. Therefore, taking a strategic approach by placing rickshaws in areas with heavy traffic would allow them to effectively serve the needs of daily commuters.

5.1.3 Commuters' Preferred Modes of Transportation

Most of the respondents indicated a strong preference for transportation. This demographic may be less sensitive to price but values convenience more. However, the data suggests that the 4+1 mode is preferred over taxis. A significant number of respondents still choose to walk to their preferred destination. The presence of a considerable number of respondents indicating 4+1 and walking as their preferred modes suggests a need for shorter and more convenient modes of transportation, such as rickshaws. This findings aligns to those of Ramolise (2011) and The World

Bank (2022) who posit that the 4+1 remains the most used means of public transport whilst a majority of the population still walk to their preferred destinations.

Given the lower satisfaction rate with 4+1s, there is a strong likelihood that those commuters will choose rickshaws as their preferred mode of transportation. Specifically, those who are extremely satisfied have less need to switch to a different mode, another finding aligned to the market demand theory. Therefore, in order for rickshaws to attract those commuters, they will have to significantly outperform existing modes in terms of convenience. Despite the model suggesting a strong connection between the likelihood to switch and price, literature still suggests that pricing plays an important role in the adoption of rickshaws. As Varian (1996) positions that market demand theory holds that price elasticity plays a role in consumers' choice for transportation services. Therefore understanding pricing points will play a crucial role in yielding a competitive advantage over existing transportation modes, rickshaws should then be priced appropriately to capture markets with lower to middle income. Vasudevan, Gore, Zope, Arkatkar, & Joshi (2021), in their paper on mode shift elasticity corroborate the finding on price elasticity as a strong determinant of choice mode. However, the analysis strongly indicates that both convenience and pricing are selling points for commuters, as Minal & Sekhar (2016) had positioned. Therefore, if rickshaws are to capture that market, they should offer at least comparable or superior service at a lower price.

Therefore, the analysis indicates a latent demand for rickshaws in Maseru, supported by a demographic fit, commuting patterns, and gaps in the current transportation modes.

5.1.4 Business Venture Recommendation

Overall the findings align to the propositions of market demand theory in terms of segmentation, price elasticity and customer satisfaction levels and their impact on choice of a product or service. In addition, aligned to most of the findings by Priye & Manoj (2020) and Gadepallia, Tiwaria, & Boliab (2020) on how commuters choose their preferred mode of transportation. Therefore the finding form a strong basis for adoption of rickshaws as a mode of transportation in Maseru. To ensure the successful adoption of rickshaws in Maseru, it is important to strategically place and introduce them in areas with a high commuter density. Additionally, implementing effective

pricing strategies is crucial. For rickshaw owners, it is imperative to understand the competitive landscape in order to develop targeted and effective marketing strategies. Policymakers should also consider amending existing laws to accommodate rickshaws since they may serve as a new mode of transportation. The findings of this research can be used to create a feasible business venture proposal.

5.2 Future Research Recommendations

This section recommends future research areas for rickshaws, especially in the context of Lesotho.

Most of the literature on rickshaws is centred on Asian countries, predominantly India. As such, future research will need to be focused on specific studies in the context of Maseru. Such studies will help uncover how factors such as income levels, quality of infrastructure and cultural preferences may impact differently a least developing economy such as Lesotho versus a developing nation such as India which has been the basis for much of the literature for this study. Using both qualitative and quantitative approaches might help to capture nuanced differences in commuters' preferences in Maseru.

Secondly there is lack of research on development of public transport frameworks that can be used to integrate informal modes such as rickshaws into the formal urban mobility planning for least and developing nations. This could be done through understanding and studying how such models have been formally integrated in developed countries, such as exploration of hybrid systems where rickshaws complement existing systems such as railway stations to address issues of last mile connectivity. Addressing this gap would potentially improve urban mobility in least developed nations and provide policy makers with country specific options to address such challenges.

5.3 Executive Summary

The rickshaw business aims to cultivate the latent demand for cheap and convenient, and transportation mode within the Maseru city. The business venture will introduce a fleet of electric rickshaws equipped with modern driving technology to provide reliable transportation within the

city's vicinity. The focus of the venture is convenient, accessible, and cheap first-last-mile transport solutions to the inhabitants of the city.

The business venture will be trading as '*hail-a-tuk*'!

5.4 Strategic Review and Plan

5.4.1 Vision, Mission, and Objectives

5.4.1.1 Vision

Our vision is to be the premier provider of cheap and convenient transport solution in Maseru. We strive to create a city where eco-friendly, convenient, and cheap transportation improves lives and adds to the economic growth of the country.

5.4.1.2 Mission

Our mission is to change and revolutionize transportation in urban Maseru through convenient and cheap rickshaws services. Our commitment is to ensuring customer satisfaction by providing reliability, convenience, and affordability in our solutions.

5.4.1.3 Objectives

Market penetration and strong customer base: grow market share in the first year to achieve break even revenues, through aggressive marketing campaigns and building relationships with key target areas such as shopping malls and recreational areas.

Customer experience through technological innovation: develop user friendly app for booking and GPS tracking to improve customer experience.

Environmental sustainability: lead in environmentally friendly transportation by ensuring that all our fleet consists of electric rickshaws.

5.4.2 Stakeholder analysis

Three main stakeholders with vested interest in the rickshaw business will be discussed below, dissecting both their interests and influence on the business.

Customers

Customers' interests lie in accessing affordable and convenient transportation mode within the city. They will need frequent and reliable service to match their needs. Customer satisfaction surveys and feedback mechanisms via a mobile app will be used to track their needs. The 6Ws model will be used to analyse the customer for the rickshaw business.

1. Who is the typical user of rickshaw for transportation?

Residents: these are individuals who reside in and visit Maseru frequently for work purposes, shopping errands, and other recreational activities.

Visitors: these are individuals who do not reside within the city but will require last mile connectivity to get to their destinations such as malls, hotels, and other attractions

2. What are their needs and preferences?

Convenience: they have a need for convenient on the go transport without the hassle of having to wait and negotiating fares

Affordable transportation: they seek affordable transport solutions for short distances and first-last-mile connectivity.

3. Where do they require the rickshaws?

Population dense areas: in highly dense areas such as shopping malls and business districts

Bus-stop terminals; including taxi ranks where need for last mile connections is needed.

4. When do they need the transportation service?

Daily commuters require it during peak hours such as morning, lunch hour and after close of business in the afternoons.

Other visitors: require it throughout the day for errands that can be performed any other time.

5. Why do they choose rickshaws over other modes?

Convenience: rickshaws provide hassle free transportation with less wait times, predictable arrival times and get to areas where typical taxi may not have access.

Affordable: rickshaws are considerably cheaper than using own transportation and other modes such as 4+1.

6. How do they access and use the rickshaws?

Mobile app: customers use the mobile app to request for rides.

Pre-arranged: advance booking through calls.

Street hailing: through old method of flagging down the rickshaws along the street.

Government & Regulators

The government's interests lie heavily in ensuring availability of transport for its citizens. However, the government will need to verify adherence to laws governing the sector, such as correct pricing and availability of permits whilst also managing negative impacts such as congestion and the environmental impact of rickshaws. Our strategy will ensure that we adhere to such regulations, and other local regulatory stipulations whilst continually engaging the governing bodies on changes in our operating model.

Taxi associations.

The taxi industry in Maseru is riddled with strong rivalry among the existing players. The main mode remains the 4+1 which accounts for more than 58% of passenger travel within the city (The World Bank, 2022). The 4+1 industry continues to be overly concentrated, with most players fighting for a fair share of the market driven by low barriers to this mode of travel. As such, the existing players have been known to be very protective of the market and run numerous associations to ensure that all players' needs are met. These taxi associations drive much of the change and resistance to some government policies and can easily deter entry of rickshaws within town if not engaged accordingly.

5.4.3 Situational Analysis

5.4.3.1 Macro Environmental Analysis – PESTEL

Key macro environmental issues are considered below. The PESTEL framework will be used to analyse issues that can either provide opportunities or threats to the venture. Overall, the market presents a strong mix of opportunities that can be cultivated to make the business venture successful, such as a growing economy with good GDP growth trajectory as well as a young population. Key threats include lower disposable incomes in the country, but this can be turned to opportunities by providing cheap alternative transportation modes for the low to middle income bracket population. The PESTEL model findings are discussed in detail under Appendix 2 PESTEL Analysis

5.4.3.1 Industry Analysis – Porter’s five forces

Competitor Rivalry	Threat of Substitute Products	Threat of new entrants	Bargaining Power of Buyers	Bargaining Power of Suppliers	Digitization
High	High	Moderate	Moderate	High	High Opportunity
Existing 4+1 taxis continue to flood the city to fight for a low customer base with limited routes. Homogenous local fares for taxis means that customers cannot distinguish between taxi cabs. Numerous taxi associations meant to protect routes and prevent entry of non-registered taxis	Customers can easily switch between 4+1 and rickshaws. Walking may be the preferred option along identified routes.	Low barriers of entry as cost of imported taxi cabs remains low; cost of new rickshaw may also be comparatively low. Quotas set by transport authority may deter new players and control number of taxis operating within the city	Can easily switch to other forms of transport. Price points between rickshaw and 4+1 may not be differentiated enough to deter switching. Customer is a price taker in either form of transport therefore limiting their power to some extent	Few established suppliers and most concentrated in Asia and Europe Price negotiation may not be an option given smaller size of player in the market	Digitization provides live GPS tracking and mobile app. Data analytics capabilities once the client is registered to app to allow for personalized travel options

5.4.4 Internal Analysis

5.4.4.1 SWOT Analysis

Strengths First mover advantage Convenient and reliable transportation Transportation with technology integration (app) Eco-friendly transportation	Weaknesses New player in the market-no experience High initial investment layouts
Opportunities Market penetration-Expand to other major towns. Partnerships with Malls and hotels Food and parcel deliveries	Threats Strong rivalry in the taxi industry Regulatory regimes Economic downturns (low GDP growth)
Overall Implications The rickshaw venture is the first of its kind in Maseru and provides the ability to play in the market much cheaply than current competitors. Rickshaws provide both convenience and cheap transportation, at a price point of R10, much lower than the 4+1 at R13.00. Customers will also use the mobile app for hailing as opposed to traditional street hailing method. The biggest weakness maybe having to enter a highly competitive homogenous market without any prior experience. In terms of opportunities, hail-a-tuk can use a market penetration strategy and expand to other major towns in other districts. There is also an opportunity to partner with malls and hotels as preferred providers of transportation to their patrons. The venture can also play in new markets such as parcel and food deliveries.	

5.5 Market Analysis

5.5.1 Market and Strategic Analysis

5.5.1.1 Target Market

Maseru Residents- Daily Commuters

These target market comprises of residents of Maseru who frequent the town frequently. It includes different age demographics, mostly workers who visit town daily. They seek convenient and affordable daily travel to allow them to get to town for work, errands as well as social activities. They are likely to be very sensitive to the pricing of the rickshaws and will require strong reliability to get them to their destinations on time. For this demographic, commuting patterns are important, likely to travel only during peak hours and convenient routes that are closer to their destinations.

Visitors and Tourists

These present a more varied target market who don't frequent Maseru but are likely to request rides for varied activities and destinations not like daily commuters. They also seek convenient transportation to their destination but with the likely added benefit of security for foreign visitors. They are more likely to request rides to malls, restaurants, hotels, and other landmarks in the city. They are likely to be less price sensitive but require higher convenience and safety. Seasonal variations will play an important part to determine peak travel times.

5.5.2 Marketing Strategy

Our strategy is to promote and position '*hail-a-tuk*' as the premium, convenient and reliable transportation mode in the Maseru urban, whilst also emphasising rickshaws as the most environmentally viable option.

Our marketing campaign will place strong emphasis on rickshaws as the most convenient and cheap mode of transportation for both daily commuters and visitors to the city. We will drive segmented marketing campaigns tailored for daily commuters and visitors, through insights from the mobile app to target specific demographics and or preferences.

5.5.3 Marketing Mix

1. Product

Modern and eco-friendly rickshaws. The rickshaws are well maintained and guarantee safety and reliability for the traveller. We use high tech mobile app with high uptime and GPS tracking.

2. Price

Our price is competitive and is affordable to both the daily commuter and visitors, at a standard R10.00 within 3km radius of the city. Pricing will also be tailored for out-of-range destinations to cater for tourist and special requests based on distances out of range.

3. Place

The rickshaws will be operating on highly congested areas along the Kingsway Road and Pioneer Road routes. The areas include main CBD downtown, Pioneer Mall, and main traffic circle.

4. Promotion

Promotional strategy will be mostly digital using social media as articulated in the digital marketing strategy below.

5.5.4 Digital Marketing Strategy

Hail-a-tuk will use several digital marketing strategies to position the rickshaw as the go to mode of transportation within Maseru.

Mobile App- the mobile app will be used to collect data and run analytics to understand customer behaviours and preferences.

Social media- social media advertising through Twitter X, Facebook and Instagram will be the main platform used to promote use of the rickshaw. Influencers will also be used occasionally to spike the ‘cool factor’ in using the rickshaw.

Search engine optimization (SEO) will also be used to optimise local keywords for rickshaw and other cab services in Maseru.

5.6 Operational Plan

5.6.1 Geographical and Location Analysis

Hail-a-tuk will operate for 7 days in a week, for a 12-hour day starting 6am until 9pm. The operating times will be adjusted for seasonal fluctuations as and when required. For instance, operating time in the winter season will be adjusted to start the day at 7am but also end earlier at

8pm. The operation will only cover major routes within the city including Kingsway Road, pioneer road and Moshoeshoe roads. A map of Maseru depicting these major routes is depicted in Figure 1 Arial View of Maseru. The operating schedule is depicted in Appendix 4 Hail A Tuk Operating Schedule

5.6.2 Personnel and Operating Equipment

Hail-a-tuk will operate a fleet of 5 electric rickshaws in its first year of operation, the fleet will be increased based on increased demand in the second year of operation. The rickshaws will be operated by licenced drivers with prior experience in the taxi industry. The 5 drivers will be supplemented by a manager who will also be responsible to ensure proper scheduling through the mobile app.

The rickshaws will be parked in a gated yard when not in operation to ensure their safety. Drivers will be expected to have the rickshaws parked at the agreed times to reduce risks associated with theft.

5.7 Financial Analysis

A comprehensive analysis of the financial viability of operating rickshaws in Maseru is conducted below. The analysis will be performed for a series of future cash flows over a five-year period. The analysis will also include the Net Present Value (NPV), Return on Investment (ROI) and Break-even analysis. Hail-a-tuk turns profits from its first year of operation. The cost of sales for the business is very low as electric rickshaws will be operated with lithium-ion batteries and not combustion engines, proving for savings on the high costs of fuel. Gross margin is 89% with net margins also healthy at over 30% annually. The return to shareholders (ROE) is also at 20% well above the 10% cost of equity.

The assumptions underlying the financial analysis are built on a base case, that is, the most likely event to occur. This includes assumptions underlying, the customer numbers and demand for the rickshaw services, operating costs, and initial investments costs. Given volatility of customers in

most markets, such assumptions may need to be challenged thoroughly before launch of the service. The detailed financial statements and analysis are depicted in Appendix 5 Detailed Financial Statements & Analysis

5.8 Legal & Regulatory Framework

The legal and regulatory framework is a key consideration for the operation of the rickshaws in Maseru. The issues of licencing and quotas will highly impact the successful implementation of the business venture. Main issues are discussed below, with the legal acts that pertain to them.

The National Road traffic regulations describes a light motor vehicle as a i) motor car ii) motor vehicle with a gross vehicle mass not exceeding 3500 kilograms or iii) any other motor vehicle with a tare not exceeding 3500 kilograms but does not include bus, minibus, or goods vehicle.

Issuing of licences and permits

The Road Traffic Act of 1981 Section 9 (5) prescribes a D Permit as authorization to operate a motor car subject to conditions to carry passengers in taxi service. The driver will also have to obtain a minimum Code B1 SADC Licences required for tricycles and quadricycles.

Vehicle Standards

The rickshaws will have to adhere to minimum quality standards required for public transportation. The table below articulates key requirements for which a rickshaw will have to meet to operate on the roads of Lesotho. Key legal requirements are borrowed mainly from the Road Traffic regulations of 2000. The detailed standards are articulated in Appendix 6 Regulatory Vehicle Standards

Insurance Requirements

The Motor Vehicle Insurance order 1989 provides cover for third parties in case of an accident and body injury caused to third parties and passengers. The vehicle owner may also wish to take out other comprehensive insurance with any insurance house to cover for any liability beyond that covered by the Motor Vehicle Insurance order of 1989.

Labour Laws

The Labour Code Amendment Act 3 of 2000 of will be the applicable in minimum working conditions and remunerations of the drivers. Section G of the Vol. 68 Gazette published 24 February 2024 prescribes at least 2,734lsl for a driver with code B/EB/CI licence for employees with less than 12 months of service in a transport business.

5.9 Risk Analysis

The risk analysis for the venture will be conducted through a methodical two-dimensional risk matrix, with the probability of occurrence plotted along the horizontal axis and the consequence of the occurrence plotted along the vertical axis. The risks will be ranked on a scale of low risk (green) to high risks (red). Risks plotted on the amber to red quadrants will need to be closely monitored and managed continuously for the business venture to succeed. The risks will be grouped into comprehensive categories; operational, financial, people, legal, and environmental risks. The risk matrix for the venture is articulated in Appendix 7 Risk Analysis Matrix

5.10 Conclusion

The feasibility of operating rickshaws in Maseru has been carried out using three main criteria- firstly determining if there’s demand for the service, secondly, what pertinent risks might impede operation of rickshaws in Maseru and finally what is the legal context in Lesotho required and if rickshaws meet such requirements. The outcomes of the feasibility are outlined in a summary table below. The last criteria, viability, has been considered using financial analysis to check if the business can then be run profitably in Maseru.

Variable	Hypothesis	Key Metrics	Outcomes	Feasible?	Continue?
Operational Feasibility	Determine if there is a need for the rickshaw	Need and demand for the service	Convenient & Cheap transport	YES	YES
Risk Analysis	What risks may impede the operation	Operational; Legal; financial; market; environmental	Overall Moderate risk	YES	YES
Legal Context	What legal and	Licensing & Permits; vehicles	Compliant	YES	YES

Financial Viability

regulatory framework	standards; Insurance; labor			
If the business plan yields profitable bottom line	NPV; ROI; Cash Flows; Break even analysis	Positive Outcomes	YES	YES

FIGURE 1 ARIAL VIEW OF MASERU

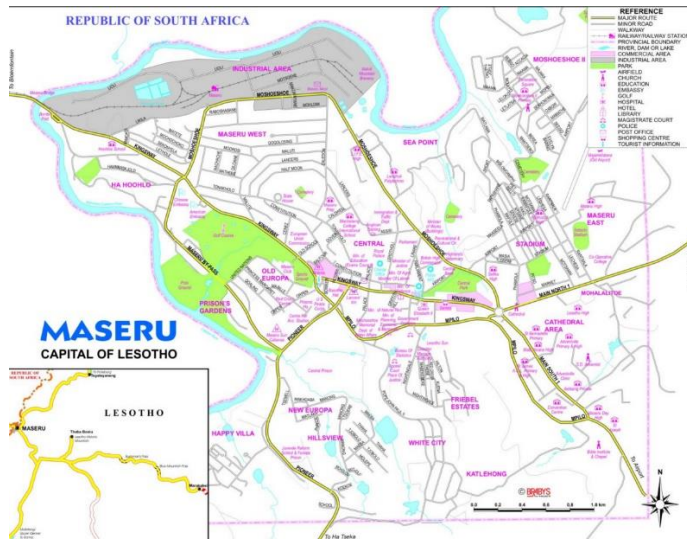


FIGURE 2 RICKSHAW



FIGURE 3 4+1 TAXIS IN MASERU



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Feasibility of Operating Rickshaws in Maseru, Lesotho

Start of Block: Participant Information Sheet

Information Sheet. Dear Prospective Participant My name is Tumane Tefo, and I am doing a business venture proposal supervised by Dr. Renee Horne, a Senior Lecturer at the Wits Business School, University of Witwatersrand. We are inviting you to participate in a feasibility study entitled Operating Rickshaws in Maseru, Lesotho. **PURPOSE OF THE STUDY** I am conducting this research to find out if there is a viable and big enough market to operate rickshaws in Maseru, Lesotho. **WHY BEING AM I INVITED TO PARTICIPATE?** The participants in this research have been chosen randomly by convenience to the proximity to city Centre. A total of 300 participants will be selected to participate in this research. No personal information, such as your contact details have been furnished from elsewhere, to comply with the PoPI Act, nr 4 of 2013. **WHAT IS THE NATURE OF MY PARTICIPATION IN THIS STUDY?** The study will be carried out through a questionnaire submitted to each participant. There are 12 questions grouped into three variables: demographics, travel patterns and likeliness to switch to a different mode of transport. The questionnaire should not take more than 10 minutes to fill. **CAN I WITHDRAW FROM THIS STUDY EVEN AFTER HAVING AGREED TO PARTICIPATE?** Participating in this study is voluntary and you are under no obligation to consent to participation. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a written consent form. You are free to withdraw at any time and without giving a reason. However, once you have submitted the questionnaire it will not be possible to withdraw, the data submitted is anonymized for each participant. **WHAT ARE THE POTENTIAL BENEFITS OF TAKING PART IN THIS STUDY?** This is a voluntary study, and you will not be receiving any benefits, monetary or otherwise by participating. **ARE THERE ANY NEGATIVE CONSEQUENCES FOR ME IF I PARTICIPATE IN THE RESEARCH PROJECT?** There are no foreseen risks or harm or side effects to you participating in this study. **WILL THE INFORMATION THAT I CONVEY TO THE RESEARCHER AND MY IDENTITY BE KEPT CONFIDENTIAL?** You have the right to insist that your name will not be recorded anywhere and that no one, apart from the researcher and identified members of the research team, will know about your involvement in this research OR your name will not be recorded anywhere, and no one will be able to connect you to the answers you give. Your answers will be given a code number, and you will be referred to in this way in the data, or other research reporting. Your answers may be reviewed by people responsible for making sure that research is done properly, including the external coder, and members of the Wits Research Ethics Committee. Otherwise, records that identify you will be available only to people working on the study, unless you give permission for other people to see the records. **HOW WILL THE RESEARCHER(S) PROTECT THE SECURITY OF DATA?** Hard copies of your answers will be stored by the researcher for a minimum period of five years in a locked cupboard for future research or academic purposes; electronic information will be stored on a

password protected computer. Future use of the stored data will be subject to further Wits Research Ethics Committee and approval if applicable. Once the need for the data is done, all hard copies will be shredded, and electronic sets of data will be permanently deleted from the computer. WILL I RECEIVE PAYMENT OR ANY INCENTIVES FOR PARTICIPATING IN THIS STUDY? No incentives, monetary or otherwise will be offered for participating in this study. HAS THE STUDY RECEIVED ETHICS APPROVAL This study has received written approval from the Wits Research Ethics Committee of the Wits Business School. A copy of the approval letter can be obtained from the researcher if you so wish. FUTHER INFORMATION Should you require any further information or want to contact the researcher about any aspect of this study, please contact myself Tumane Tefo, 1559886@students.wits.ac.za, +266 58142214 and or my supervisor Dr. Renee Horne, Renee.Horne@wits.ac.za, +27 11 717 3612 Should you have concerns about the way in which the research has been conducted, you may contact Dr. Renee Horne, Renee.Horne@wits.ac.za, +27 11 717 3612. Contact the research ethics chairperson of the Wits Research Ethics Committee if you have any ethical concerns. Thank you for taking time to read this information sheet and for participating in this study. Thank you.

End of Block: Participant Information Sheet

Start of Block: Consent Form



Consent Form I confirm that the person asking my consent to take part in this research has told me about the nature, procedure, potential benefits and anticipated inconvenience of participation. I have read (or had explained to me) and understood the study as explained in the information sheet. I have had sufficient opportunity to ask questions and am prepared to participate in the study. I understand that my participation is voluntary and that I am free to withdraw at any time without penalty (if applicable). I am aware that the findings of this study will be processed into a research report, but that my participation will be kept confidential unless otherwise specified. I agree to the recording of the questionnaire. Do you consent to these terms? Please tick appropriate box.

☐ YES (1)

☐ No (2)

End of Block: Consent Form

Start of Block: Section 1: Personal Information

Q1 What is your age group

- ☐ 18-24 (1)
 - ☐ 25-35 (2)
 - ☐ 36-50 (3)
 - ☐ 51-65 (4)
 - ☐ 65+ (5)
-

Q2 What is your gender?

- ☐ Male (1)
 - ☐ Female (2)
 - ☐ Prefer not to say (3)
-

Q3 Where is your primary residence?

- ☐ North (Khubetsoana, Naledi, Tsosane, Motimposo) (1)
 - ☐ South (Matala, Nelese, Masianokeng, Lithabaneng, Leqele) (2)
 - ☐ Central (Maseru East, Maseru West, Katlehong, Hillsvieiw, Hoohlo) (3)
 - ☐ Southwest (Masowe, Tsolo, Thetsane) (4)
-

Q4 What is your employment status

- ☐ Employed (1)
 - ☐ Self-employed (2)
 - ☐ Temporarily out of job (3)
 - ☐ Unemployed (4)
 - ☐ Student (5)
-

Q5 What is your educational level

- ☐ Primary School (1)
- ☐ Some High School (2)
- ☐ Vocational (3)
- ☐ Undergraduate/Honours (4)
- ☐ Masters and above (5)

End of Block: Section 1: Personal Information

Start of Block: Section 2: Travel Patterns

Q6 How frequently do you come to town

- ☐ Daily (1)
 - ☐ More than daily (2)
 - ☐ Once a week (3)
 - ☐ Monthly (4)
 - ☐ Seldom (5)
-

Q7 What is your main purpose of town visits (tick all that apply)

- ☐ Work (1)
 - ☐ Shopping (2)
 - ☐ Study (3)
 - ☐ Social (4)
 - ☐ Other (5)
-

Q8 What are your places of interest other than work (tick the most applicable)

☐

Shopping Malls (1)

☐

Recreational (2)

☐

Essential services (Government services, banking, etc) (3)

☐

Libraries (4)

☐

Other (5)

End of Block: Section 2: Travel Patterns

Start of Block: Section 3: Modes of Transportation

Q9 What mode of transport do you use within town (tick TWO most applicable)

☐

Walk (1)

☐

4+1/ Taxi (2)

☐

Cab/Special (3)

☐

Own vehicle (4)

☐

Other (5)

Q10 how satisfied are you with your current mode of transportation?

- ☐ Extremely dissatisfied (1)
 - ☐ Neither satisfied nor dissatisfied (2)
 - ☐ Somewhat satisfied (3)
 - ☐ Extremely satisfied (4)
-

Q11 If other alternatives were to be availed, would you consider them?

- ☐ YES (1)
 - ☐ Maybe (2)
 - ☐ No (3)
-

Q12 If yes or maybe, what would be the main deciding factor?

- ☐ Price (1)
- ☐ Convenience (2)
- ☐ Other (please elaborate) (3) _____

End of Block: Section 3: Modes of Transportation

Appendix 2 PESTEL Analysis

OPPORTUNITIES		THREATS
Government support for start-ups (LNDC Guarantee Scheme)	P	Government/Political instability Changes in transport and licencing requirements
GDP growth Infrastructural developments (number of shopping malls is increasing)	E	Low disposable incomes Currency fluctuations (costs of operating and acquiring rickshaws) High interest rates High unemployment levels
Urbanisation Young population	S	Small population
Rapid technological improvements (GPS tracking) High mobile penetration in the city	T	Slow Technological adoption
Demand for ecofriendly transportation	E	Erratic weathers
Cheaper labour in the sector (guided by Labour Code). Accident Liability Insurance	L	Compliance with strict regulations in the sector
OVERALL IMPLICATIONS		
Political The government of Lesotho through the Lesotho National Development Corporation (LNDC) and Basotho Enterprises Development Corporation (BEDCO) have numerous schemes that aim to support start-ups and small business through skills development and financing (LNDC, 2019). This remains a big opportunity, as the rate of start-up remains sluggish in the country. On the other hand, Lesotho's political climate has been very shaky in the past decade. The current and outgoing governments have been a string of coalitions between numerous conflicting parties which have only ended up being dissolved well before the defined 5-year term (EIU, 2024; WorldBank, 2021).		

This has meant lack of direction and stable political environment with regular changes in key government officials. In the same manner due to the changes, government regulations tend to change just as frequently (WorldBank, 2021), and the taxi industry is not immune to such changes.

Economic

On the economic front, Lesotho has been showing some good GDP growth in the past periods post the Covid_19 invasion. The GDP growth rate for the country is projected at 2.3% in 2024 (Central Bank of Lesotho, 2021), 100 basis points above the neighbouring and dominant South Africa. This growth is driven by infrastructural developments such as roads outside urban areas as well malls within the city (WorldBank, n.d.).

Despite the growth in GDP, some challenges prevail. The country remains crippled by high unemployment levels at 23% and high interest rates (Bureau of Statistics, n.d.). The level of low employment is driven mainly by closure of some of the biggest textile firms in the country (AGOA, 2005), in an industry that contributes more than 20% to overall employment levels and 30% in GDP (CBL, Economic Review January 2010, 2010). The high interest rates have limited the population's access to finance especially for SMMEs and resulted in high default rates amongst borrowers (CentralBankofLesotho, 2020).

The country's currency Loti is pegged to the South African Rand (IMF, Kingdom of Lesotho: Selected Issues, 2022). Given the high volatility of the rand to major currencies such as the US Dollar and British Pound, the costs of importing key materials continues to increase and this will influence the cost of production for the rickshaws, whilst also making planning in the future tricky.

Social

The rate of urbanisation continues to increase especially in the main city Maseru. This presents huge opportunities for a bigger client base along anticipated routes for the rickshaws. In the same manner the Basotho population remains young with over 50% of the nation under the age of 45, pointing to prolonged business sustainability (Bureau of Statistics, n.d.).

However, the biggest social threat remains the very small population of Basotho people at 2.2 million, according to the 2020 census (Bureau of Statistics, n.d.). This might present challenges in terms of having a large customer base sustainable enough to break even the rickshaw business.

Technological

Rapid technological improvements globally continue to drive much innovation in most industries. In the transport business this includes live GPS navigation systems which remain the biggest drivers for businesses such as Uber. In the same tone, Lesotho has shown amenability to technological changes, and it is the first country in Africa to launch the 5G connectivity (Reuters, 2018). This technological savviness will be a driving force behind the rickshaws mobile app take up rate.

Environmental/Ethical

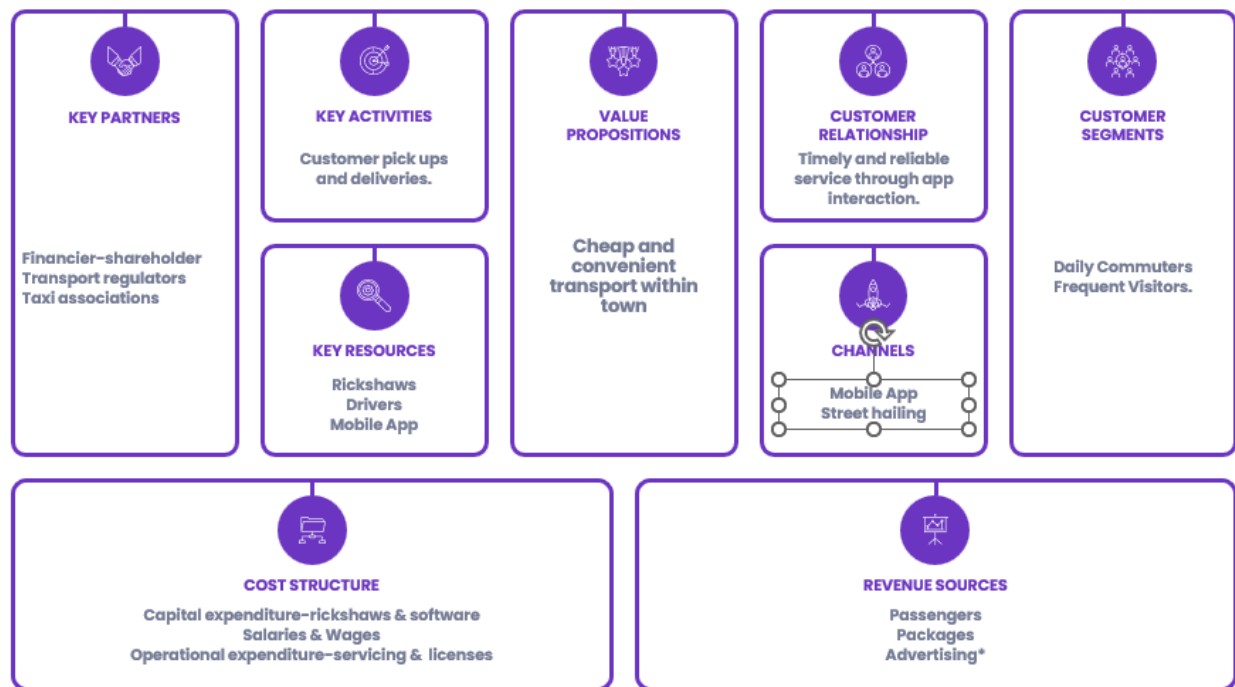
With the drive for UN SDGs (and SDGs 13 and 16 specifically), there is a demand for nations to be environmentally savvy to preserve it for the future and limit the impact of emissions on the environment. The development of electric rickshaws ties in neatly with the demand for environmentally friendly modes of transportation.

On the other hand, the weather in Lesotho remains very harsh especially during the winter season which limits economic activity given heavy rains, snow, and icy weather.

Legal

The labour code prescribes minimum wages for both formal and informal sectors, the various amounts described remains very low across sectors and in comparison, with the neighbouring south Africa. This makes labour very cheap in Lesotho (WorkMotion, 2024), therefore lower costs of running the rickshaw business. The government also runs the vehicle insurance order of 1989 which covers passengers and third parties in the case of road accidents.

Appendix 3 Business Model Canvas



Appendix 4 Hail A Tuk Operating Schedule

Hail-a-tuk : Operating Schedule

Lead server		Job 1	Job 2	Job 3
		Sefika Area	City Centre/kingsway	Pioneer Road/Road
Summer Shift	Shift name	Morning shift	Midday	Evening Shift
	Code S	MS	M	ES
	Time of shift	6:00 AM to 10:00 AM	12 AM to 3 PM	4:00 PM to 8:00 PM
Winter Shifts	Winter	Morning shift	Midday	Evening Shift
	Code W	MS	M	ES
	Time of shift	7:00 AM to 11:00 AM	12 AM to 3 PM	4:00 PM to 7:00 PM
Festive Shifts	Shift name	Morning shift	Midday	Evening Shift
	Code F	MS	M	ES
	Time of shift	6:00 AM to 12:00 AM	12 AM to 3 PM	4:00 PM to 9:00 PM
Operating Days		Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday		
Rickshaw Codes		A xxx xxx; A xxx www, etc		

Appendix 5 Detailed Financial Statements & Analysis

Sales and Cash Flow Forecasts

Assumptions

1. Sales Assumptions

Pricing

R10 per ride

Client Numbers

Average 3 riders per trip

Number of Trips

18 return trips daily for 25 days in a month

2. Cost of Sales Assumptions

Battery Maintenance; lubricants

10% of Revenue

Average Distance per Trip

3km

3. Capital Expenditure

Vehicles	5 Electric Rickshaws
Cost	R70,000each excluding VAT & Shipping costs
Laptop	MacBook at R25,000
Mobile App Software	R35,000
Depreciation Rates	
Rickshaw	72 Months
Laptops	36 months
Software	60 months

4. Operating Expenditure

Salary & Benefits	5 drivers &1 Manager 15,000 per annum for each
Licensing	Rickshaw
Advertising & Marketing	2% of Revenue
Sundry Expenses	2 % of Revenue

5. Funding Assumptions

Own funds	
1000 shares @500per share	R500, 000.00
Cost of Capital Interest foregone on Government of Lesotho Bonds @10%	
Dividends will be paid to shareholder when profits are made at 2.5dpo	

Financial Statements

Income Statement						
	Jun 24	Jun 25	Jun 26	Jun 27	Jun 28	Jun 29
Revenue	-	810,000	810,000	810,000	810,000	810,000
COGS	-	(89,100)	(89,100)	(89,100)	(89,100)	(89,100)
Gross profit	-	720,900	720,900	720,900	720,900	720,900
Operating expenses	-	(394,336)	(411,992)	(422,809)	(437,223)	(449,426)
Depreciation	-	(80,896)	(88,250)	(88,250)	(91,306)	(91,583)
Other	-	(313,440)	(323,742)	(334,559)	(345,917)	(357,843)
Operating profit	-	326,564	308,908	298,091	283,677	271,474
Interest expense	-	-	-	-	-	-
Profit before tax (PBT)	-	326,564	308,908	298,091	283,677	271,474
Tax	-	(73,152)	(77,227)	(74,523)	(70,919)	(67,868)
Profit after tax (PAT)	-	253,412	231,681	223,568	212,758	203,605

Ratios						
	Jun 24	Jun 25	Jun 26	Jun 27	Jun 28	Jun 29
EBIT	-	326,564	308,908	298,091	283,677	271,474
EBITDA	-	407,460	397,158	386,341	374,983	363,057
Profitability						
Gross Margin		89.0%	89.0%	89.0%	89.0%	89.0%
EBIT Margin		40.3%	38.1%	36.8%	35.0%	33.5%
EBITDA Margin		50.3%	49.0%	47.7%	46.3%	44.8%
Net Margin		31.3%	28.6%	27.6%	26.3%	25.1%
Asset turnover		2.0	2.5	3.5	4.6	9.6
ROE		79.5%	32.8%	26.5%	21.9%	18.6%
ROA		77.7%	32.5%	26.5%	21.9%	18.6%

Commentary

Hail-a-tuk turns profits from its first year of operation. The cost of sales for the business is very low as electric rickshaws will be operated with lithium-ion batteries and not combustion engines, proving for savings on the high costs of fuel. Gross margin is 89% with net margins also healthy at over 30% annually. The return to shareholders (ROE) is also at 20% well above the 10% cost of equity.

Financial Analysis

Net Present Value & Return on Investment

	Jun 25	Jun 26	Jun 27	Jun 28	Jun 29	Jun 30
Initial Investment	497,500.00					
FCF (PBT+ Dep)		451,500	443,400	434,895	425,965	416,588
Formula	$\$C5/(1+\$B13)^{\wedge}$					
PV	1	410,455	366,446	326,743	290,940	258,668
Sum of PVs	1,653,251.90					
Less: Initial Outlay	497,500.00					
NPV 5 years	1,155,751.90					
ROI	232%					

Assumptions

Cost of Capital=Cost of Equity + Cost of Debt

CE=Risk Free Rate-Government of
Lesotho Bonds

10%

Investment Period 5 years

The business case for Hail-a-tuk presents a positive NPV calculation. The cash flows have been assumed on a five-year investment period as per the calculations above, with a Cost of Capital at 10%. The ROI is also high at 232%. The investment is therefore financially viable.

Break-Even Analysis

Costs	Amount
Fixed Costs	80,896
Other Costs	269,400
Variable Costs	3
Selling Price	30

Units Required	13,120
Total Costs	393,591
Sales Value	393,591
BEP	-

The business case breaks even at 13 thousand trips. This result further confirms viability of the investment given the base trips used for the cash flow assumptions is 27 thousand trips. The business would therefore need to drop its volumes by half before it yields a loss.

Income Statement						
	Jun 24	Jun 25	Jun 26	Jun 27	Jun 28	Jun 29
Revenue	-	810,000	810,000	810,000	810,000	810,000
COGS	-	(89,100)	(89,100)	(89,100)	(89,100)	(89,100)
Gross profit	-	720,900	720,900	720,900	720,900	720,900
Operating expenses	-	(394,336)	(411,992)	(422,809)	(437,223)	(449,426)
Depreciation	-	(80,896)	(88,250)	(88,250)	(91,306)	(91,583)
Other	-	(313,440)	(323,742)	(334,559)	(345,917)	(357,843)
Operating profit	-	326,564	308,908	298,091	283,677	271,474
Interest expense	-	-	-	-	-	-
Profit before tax (PBT)	-	326,564	308,908	298,091	283,677	271,474
Tax	-	(73,152)	(77,227)	(74,523)	(70,919)	(67,868)
Profit after tax (PAT)	-	253,412	231,681	223,568	212,758	203,605
Dividends paid	-	(101,365)	(92,672)	(89,427)	(85,103)	(81,442)
Retained income movement		118,092	139,009	134,141	127,655	122,163

Balance Sheet						
	Jun 24	Jun 25	Jun 26	Jun 27	Jun 28	Jun 29
ASSETS						
Property, plant & equipment	-	409,250	321,000	232,750	176,167	84,583
Inventory	-	-	-	-	-	-
Debtors	-	-	-	-	-	-
Cash and cash equivalents	-	242,797	454,731	676,412	859,697	1,073,443
TOTAL ASSETS	-	652,047	775,731	909,162	1,035,864	1,158,027
Equity						
Share capital	-	500,000	500,000	500,000	500,000	500,000
Retained income	-	137,399	275,731	409,162	535,864	658,027
Total equity	-	637,399	775,731	909,162	1,035,864	1,158,027
Liabilities						
Creditors	-	-	-	-	-	-
Long term debt (non-current)	-	-	-	-	-	-
Short term debt (current)	-	-	-	-	-	-
Overdraft	-	-	-	-	-	-
Tax	-	-	-	-	-	-
Total liabilities	-	-	-	-	-	-
TOTAL EQUITY AND LIABILITIES	-	637,399	775,731	909,162	1,035,864	1,158,027

Cashflow statement						
	Jun 24	Jun 25	Jun 26	Jun 27	Jun 28	Jun 29
Cashflow from operations						
PBT		326,564	308,908	298,091	283,677	271,474
Add back depreciation		80,896	88,250	88,250	91,306	91,583
Change in debtors		-	-	-	-	-
Change in creditors		-	-	-	-	-
Change in inventory		-	-	-	-	-
Change in Tax liability		(73,152)	(77,227)	(74,523)	(70,919)	(67,868)
Cash from operations		334,308	319,931	311,818	304,064	295,189
Cashflow from investing						
Capex		(490,146)	0	0	(34,722)	-
Cash from investing		(490,146)	0	0	(34,722)	-
Cashflow from financing						
Change in share capital		500,000	-	-	-	-
Dividends paid		(101,365)	(92,672)	(89,427)	(85,103)	(81,442)
Change in long term debt (non-current)		-	-	-	-	-
Change in short term debt (current)		-	-	-	-	-
Change in overdraft		-	-	-	-	-
Cash from financing		398,635	(92,672)	(89,427)	(85,103)	(81,442)
Cash generated in period		242,797	227,259	222,391	184,238	213,747
Opening balance		-	242,797	470,056	692,447	876,685
Closing cash balance	-	242,797	470,056	692,447	876,685	1,090,431

Ratios						
	Jun 24	Jun 25	Jun 26	Jun 27	Jun 28	Jun 29
EBIT	-	326,564	308,908	298,091	283,677	271,474
EBITDA	-	407,460	397,158	386,341	374,983	363,057
Profitability						
Gross Margin		89.0%	89.0%	89.0%	89.0%	89.0%
EBIT Margin		40.3%	38.1%	36.8%	35.0%	33.5%
EBITDA Margin		50.3%	49.0%	47.7%	46.3%	44.8%
Net Margin		31.3%	28.6%	27.6%	26.3%	25.1%
Asset turnover		2.0	2.5	3.5	4.6	9.6
ROE		79.5%	32.8%	26.5%	21.9%	18.6%
ROA		77.7%	32.5%	26.5%	21.9%	18.6%

Appendix 6 Regulatory Vehicle Standards

Specifications	Rickshaw Specification (Electric)	Legal Requirement	Governing act/Regulation	Compliant Y/N
Size-Length	2.5-3 meters	Max 12.5 meters	Road Traffic Regulations 221 (f)	YES
Size-Width	1.5 meters	Max 2.5 Meters	Road Traffic Regulations 223 (c)	YES
Height	1.5-2 meters	Max 4.3 Meters	Road Traffic Regulations 224 (1) (b)	YES
Mass	80-120kg	Max 3000kg	Road Traffic Regulations	YES
Seating capacity	4 passengers	As provided by vehicle at 380 millimetres/person	Road Traffic Regulations 233 (1) (a)	YES
Seatbelts	All passengers	As provided by vehicle	Road Traffic Regulations 213 (1) (c); (4); (5)	YES
Speed	24-45km/hr	Max 60km/hr within urban area	Road Traffic Regulations 292 (a)	YES
Braking system	Hydraulic brakes/Regenerative braking system	Both front and rear brakes-equivalent to an emergency break	Road Traffic Regulations 150	YES

Appendix 7 Risk Analysis Matrix

3X3 Risk Analysis Matrix		Probability of Occurrence		
		Low	Medium	High
Potential Impact	High	- Vehicle theft (Operational) - All vehicles will be parked in a gated yard. - All vehicles will be insured.	- Road Accidents (Operational) - Rickshaw breakdown (Operational) - Regular maintenance of vehicles - Keep to road safety rules. - Take comprehensive insurance.	Strikes/standoff by other taxi operators (Operational) - Engagement with taxi associations and regulators - Adhere to regulations.
	Medium	Licensing issues (legal) - Changes in regulatory frameworks(legal) - Regular engagement with regulators and traffic personnel	- Harsh weather conditions (Operational) Theft/dishonesty by drivers (People) - All rickshaws will have side covers installed for rainy days. - Vet employees	- Low customer numbers/demand (Market) - Lack of funding (Financial) - Increase in cost of fuel (Financial) - Increase marketing efforts. - Take up temporary fluctuating facility.
	Low		- Air pollution (Environmental) - Traffic congestion - opt for electric rickshaws only.	
	- Risk description and category. - Mitigating means			

Appendix 8 Project Implementation Plan

Project Implementation Plan

Hail-a-tuk

Tumane Tefo

Project start:

Sun, 2/25/2024

Display week:

1

TASK	ASSIGNED TO	Detail	PROGRESS	START	END	26	4	11	18	25	1	8	15	22	29	6	13	20	27	3	10	17	24	1	8	15	22	29	5	12	19	26	2	9	16	
						M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Initiation (Plan & Funding)																																				
Finalise Business Plan	Tumane Tefo	Submission to WBS	90%	2/25/24	2/28/24																															
Start Funding Plan	Tumane Tefo	Drawdown own savings	70%	2/28/24	3/1/24																															
Funding Disbursement	Tumane Tefo		50%	3/1/24	3/5/24																															
Procuremnt & Logistics																																				
Place order for Rickshaws	Tumane Tefo	Suppliers in India	50%	3/6/24	3/13/24																															
Shipping	Tumane Tefo		50%	3/8/24	6/6/24																															
Customs Clearance	Tumane Tefo	Customs Agent		6/6/24	6/20/24																															
Licencing (roadworthy, traders, Tax cle	Tumane Tefo	Traffic Office; Revenue Services		6/6/24	6/9/24																															
Execution & Staffing																																				
Interview candidates	Tumane Tefo		50%	6/7/24	6/12/24																															
Review licensing for drivers	Tumane Tefo	Verify validity with Traffic Office	60%	6/13/24	6/16/24																															
Training of drivers	Tumane Tefo	Online training with supplier	50%	6/13/24	6/16/24																															
Launch Rickshaws	Tumane Tefo		25%	6/17/24	6/21/24																															
Evaluation																																				
Monitor progress	Tumane Tefo & Manager		25%	6/17/24	9/15/24																															
Track revenues & expenses	Tumane Tefo & Manager		25%	6/17/24	9/15/24																															
Evaluate demand and customer prefer	Tumane Tefo & Manager		50%	6/17/24	9/15/24																															
Address risks	Tumane Tefo		60%	6/22/24	6/25/24																															
Gather feedback and refine	Tumane Tefo		50%	6/17/24	9/15/24																															