

**CONTRIBUTION OF ADAPTIVE REUSE OF OLD BUILDINGS ON
HERITAGE TOURISM SUSTAINABILITY IN LAMU TOWN, KENYA**

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**A Thesis Submitted to the Graduate School in Partial Fulfillment of the
Requirements of the Award of the Degree of Masters in Tourism Management of
Chuka University**

CHUKA UNIVERSITY

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DECLARATION AND RECOMMENDATION

Declaration

This thesis is my original work and has not been submitted for award of diploma or conferment of a degree in any other University or institution.

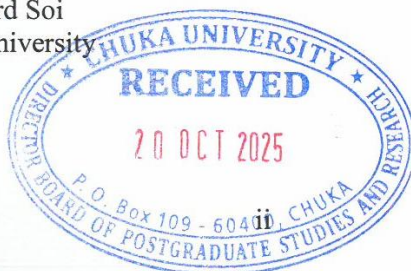
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DEDICATION

I dedicate this academic thesis to myself as a direct affirmation of the endurance and resolve demonstrated throughout this rigorous scholarly process. This work represents a symbol of my sustained commitment to personal and intellectual development. It is my sincere aspiration that this final document will serve as a continuous testament to the results attainable through dedicated enthusiasm, diligent effort, and the deliberate pursuit of superior quality.

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ABSTRACT

The growing recognition of adaptive reuse as a fundamental strategy for the revitalization of historic and cultural properties underscores its crucial role in safeguarding heritage assets. Located in Kenya, the UNESCO World Heritage Site of Lamu faces persistent issues concerning aging infrastructure, limited accessibility, and environmental management. A scarcity of prior scholarly work focusing on the efficacy of adaptive reuse in this unique context prompted the current investigation into its contribution to the long-term viability of heritage tourism in the region. This research was guided by four specific aims: to assess the influence of adaptive reuse on the social-cultural durability of the local population; to evaluate its role in the economic resilience stemming from tourism; to determine its influence on visitor satisfaction and experience as a measure of sustainability; and to examine its function in advancing environmental conservation at these sites. The study employed a concurrent triangulation mixed-methods design, grounded in the Visitor, Investor, Community, Environment (VICE) model and Butler's Theory of Sustainable Development. Data collection systematically involved a population sample from Lamu Old Town, comprising 115 tourists, 375 community members, and 15 heritage site officials, utilizing both structured questionnaires and interviews. Analysis of the quantitative data involved descriptive and inferential statistics, specifically multiple linear regression (MLR), while qualitative insights were analyzed using thematic content analysis. The findings provided definitive evidence, leading to the rejection of all four null hypotheses and establishing a significant, positive correlation between adaptive reuse and heritage tourism sustainability across all assessed areas. The research identified a strong correlation with social-cultural continuity ($\beta=0.557, p<0.001$), primarily achieved through the transformation of old residential structures and the subsequent preservation of cultural identity. Adaptive reuse was further determined to be a robust and statistically potent driver for the local economy ($\beta=0.603, p<0.001$), driven by increased tourist spending and job creation. Furthermore, the initiatives led to a significant improvement in tourist contentment, evidenced by a statistically substantial mean difference in satisfaction scores before and after the interventions ($t(92)=-38.11, p<0.001$). Finally, a strong, direct, and significant association was confirmed between adaptive reuse and environmental resilience ($r=0.951, p<0.01$). Despite the perceived ecological soundness of the reuse principles, the study concurrently revealed notable public concern regarding the inadequacy of existing waste management practices, which poses a critical barrier to sustainable tourism in Lamu. Consequently, the study advocates for formalizing local community participation in reuse projects, enhancing transparency in the distribution of economic gains, improving the quality of visitor amenities and interpretation, and establishing an effective waste management system to mitigate environmental burdens. This research thus offers empirical knowledge and actionable policy recommendations for stakeholders in Lamu County to effectively utilize adaptive reuse for bolstering the long-term quality of heritage tourism.

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LIST OF ABBREVIATIONS AND ACRONYMS

ANOVA	Analysis of Variance
BIM	Building Information Modeling
BROS	Building Replicas of Old Structures
COH	Conversion of Old Houses
GDP	Gross Domestic Product
HIA	Heritage Impact Assessment
HUL	Historic Urban Landscape
IMPLAN	Impact Analysis for Planning
KNBS	Kenya National Bureau of Statistics
KPMG	Klynveld Peat Marwick Goerdeler
KTB	Kenya Tourism Board
LaMCoT	Lamu Marine Conservation Trust
MCDM	Multi-Criteria Decision Model
MLR	Multiple Linear Regression
MOSF	Maintenance of Old Structures and Features
NACOSTI	National Commission for Science, Technology and Innovation (Kenya)
PMM	Preference Measurement Model
PROMETHEE	Preference Ranking Organization Method for Enrichment Evaluations
SD	Standard Deviation
SE	Standard Error
SPSS	Statistical Package for the Social Sciences
SWOT	Strengths, Weaknesses, Opportunities, Threats
TALC	Tourism Area Life Cycle
UNESCO	United Nations Educational, Scientific and Cultural Organization
USD	United States Dollar
VICE Model	Visitor, Investor, Community, Environment Model
VIF	Variance Inflation Factor
WTTC	World Travel and Tourism Council
HSO	Heritage Site Official
α	Cronbach's Alpha

β	Beta Coefficient
r	Pearson Correlation Coefficient
p	Probability Value
t	T-statistic
R	Multiple Correlation Coefficient
R²	Coefficient of Determination
H₀	Null Hypothesis
H₁	Alternative Hypothesis
n	Sample Size
N	Population Size
df	Degrees of Freedom

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Heritage tourism has become a significant part of the tourism sector, focusing on the exploration of the cultural, historical, and natural heritage of notable ethnic groups (Radosavljević and Kuletin Čulafić, 2019) . According to Ragheb (2021) , these destinations are valuable due to their rich historical narratives, unique architectural structures, and the preservation of cultural traditions. Additionally, Ragheb highlights that heritage tourism seeks to attract visitors in a way that promotes responsible and sustainable tourism practices. Heritage tourism has a significant economic impact when considering its economic worth. In fact, 2023, the global market was valued at approximately USD 587.1 billion, underscoring its significant contribution to the global economy (Klynveld Peat Marwick Goerdeler, 2024) . KPMG further reports that the market is projected to reach USD 813.5 billion by 2032, indicating continued growth. In addition to encouraging the preservation and appreciation of cultural and historical treasures, this growth promotes economic development by creating jobs and income.

Adaptive reuse involves the revitalization of existing buildings , especially those with historical or cultural importance (Chapman *et al.*, 2020; C. Liu and Liu, 2020). This process repurposes these historic buildings for new purposes while preserving their architectural and historical significance. It improves the look of old buildings , helps preserve heritage, and supports sustainable tourism (Loulanski and Loulanski, 2011). In fact, Koutsis and Stratigea (2019) report that adaptive reuse plays a key role in preserving cultural and historical heritage through transforming aging but culturally significant buildings into active parts of tourism.

Adaptive reuse has been essential in transforming old buildings into vibrant commercial spaces in developed European countries, including the United Kingdom. A notable example is the Tate Modern in London, which was originally the Bankside Power Station, a large and important industrial building (Chapman *et al.*, 2020). This power station is now a world-class art museum that welcomes millions of visitors each thanks to the application of the adaptive reuse concept. This project faced

challenges due to the size and complexity of the old industrial site. In reference to Chapman *et al.* (2020), there was a need to create suitable exhibition spaces while preserving the building's original style. Therefore, careful architectural planning was necessary to achieve that during the renovation. Additionally, funding was secured through a mix of public and private partnerships, including a significant grant from the Tate Foundation.

In contrast, Romania, a developing country, faces its own challenges with adaptive reuse. The Palace of the Parliament in Bucharest, originally built as a symbol of Romania's communist era, is now one of the world's largest civilian administrative buildings (Fabi *et al.*, 2021). Some parts of this building have been repurposed into conference spaces, museums, and art galleries (Leask, 2016). However, Romania has faced several challenges in this process. These include the political and cultural sensitivity of the building's history, the size of the structure, and limited financial resources (Mısırlısoy and Günçe, 2016). Fabi *et al.* (2021), report that the solutions involved carefully designing the spaces to respect their historical context, attracting international events to generate income, and forming partnerships with cultural organizations to help manage the programs. According to Fabi *et al.* despite these efforts, the site still faces difficulties, especially due to political controversies. Some groups believe the building's communist past makes it an unsuitable location for cultural activities. In addition, the building requires continuous maintenance and restoration, which further strains the budget.

Old buildings in Japan have long been converted for new use, especially in the Gion District of Kyoto. This area is well-known for its geisha culture and traditional wooden homes. However, as per United Nations Educational, Scientific and Cultural Organization (2022), it has faced problems with a declining population and the need for urban renewal. The United Nations Educational, Scientific and Cultural Organization (UNESCO) reported in 2022 that adaptive reuse turned these old homes into restaurants, shops, and guesthouses, bringing new life to the district. According to the report, one major challenge was to keep the traditional appearance of the wooden houses while upgrading them to meet modern safety. In order to remedy this, subsidies as well as incentives were offered to property owners to encourage them

take part in these projects. To add on that, Suebsuk and Nakagawa (2015) report that strict rules were put in place to protect the district's cultural heritage.

In India, the Chowmahalla Palace in Hyderabad is a prime example of adaptively reused old buildings. Referring to Haroon *et al.* (2019), it was originally a royal palace, and it has since been transformed into a museum and event space. The project faced challenges, such as preserving the palace's detailed architectural design and adapting it for public use while maintaining its historical importance. To address these issues, the project involved cooperation between government agencies, heritage conservation groups, and private partners (UNESCO, 2023). According to the 2023 UNESCO report, the funding came from a mix of government grants, private sponsorships, and revenue from events held at the palace. Despite these efforts, keeping the palace structurally sound and suitable for tourism continues to be a challenge. This highlights how crucial it is to strike a balance between adaptive reuse and heritage conservation in order to guarantee heritage tourism's long-term viability.

An excellent illustration of the adaptive reuse of historic structures is the Old Biscuit Mill in Cape Town, South Africa. This industrial site, once abandoned, has been transformed into a lively complex with food markets, shops, and creative businesses (Merwe, 2016). In reference to Jäger *et al.* (2017), this adaptive reuse was crucial in preserving the site's historical character while giving it new life. However, the transformation of the site came with challenges. These included raising funds for restoration, maintaining the old structures, and dealing with complex zoning laws. Jäger *et al.* (2017) reports that solutions involved forming public-private partnerships and securing grants to finance the project.

In Ghana, the Jamestown Café in Accra is an excellent illustration of adaptive reuse in Africa. This community-driven project transformed a historic colonial-era building into a cultural and culinary hub (Jackson, 2019). The project faced several challenges, including limited financial resources, the decay of the old building, and difficulties in getting the community involved. To overcome these issues, local artisans and craftsmen were engaged for the restoration work, the community was involved in the decision-making process, and partnerships were formed with cultural organizations

(UNESCO, 2020). The Jamestown Café serves as an example of how adaptive reuse of historic structures may foster community growth and strengthen the local economy.

Lamu Town, Kenya, is one of the oldest Swahili settlements on the East African coast and holds historical and cultural value. Its unique architecture, narrow alleyways, and rich cultural heritage have earned it UNESCO World Heritage status (UNESCO, 2001). Despite its potential, heritage tourism in Lamu faces challenges, including inadequate infrastructure, limited accessibility, environmental concerns, and the need for sustainable management (UNESCO, 2018b). Sustainability in heritage tourism requires finding a balance between promoting tourism, preserving cultural and historical assets, and protecting the environment (Weiler and Kim, 2011). Reusing historic buildings in an adaptive manner is essential to achieving this balance by ensuring that heritage assets are used responsibly.

While earlier research has highlighted the initial successes of adaptive reuse projects around the world, there is a noticeable lack of in-depth studies on the long-term sustainability of these projects. Many adaptive reuse initiatives face ongoing issues such as maintaining the buildings, keeping the community involved, and preserving cultural heritage, which may not be obvious right away. Understanding how these challenges develop over time is crucial for evaluating how adaptive reuse impacts the sustainability of heritage tourism. Additionally, although there are studies on how adaptive reuse supports the sustainability of heritage tourism in various countries, there is limited research on this topic in Kenya, particularly in Lamu Town. Therefore, this study aimed to explore how the adaptive reuse of old buildings contributes to the sustainability of heritage tourism in Lamu Town, Kenya.

While previous research has given prominence to the early successes of adaptive reuse projects globally, there is an apparent dearth of comprehensive research on the long-term sustainability of such initiatives. Many initiatives deal with recurring issues that might not be immediately apparent, such as upkeep, community involvement, and cultural preservation. Assessing the effect of adaptive reuse of heritage sites on the sustainability of heritage tourism requires an understanding of how these challenges change over time. Furthermore, although research on the benefits of adaptive reuse

for historical tourism sustainability has been conducted in a number of nations across the world, little is known about this topic in the context of Kenya, particularly Lamu town.

1.2 Statement of the Problem

Adaptive reuse of infrastructure has contributed to urban regeneration and revitalization efforts in underutilized areas, decrease in the pollutants produced during the demolition and building of new infrastructure and preservation of time and resources along with social, cultural, and heritage value of these structures. Heritage tourism in Lamu town, Kenya faces significant underutilization of historical infrastructure, including old buildings and cultural sites, for the purpose of tourism. The promotion of cultural heritage tourism in the area and the improvement of the visitor experience is so hampered. Despite the early achievements of adaptive reuse initiatives around the world, little is known about how adaptive reuse of historic buildings supports the sustainability of heritage tourism in Lamu, Kenya. The existing gap in research is further amplified by the absence of dedicated empirical exploration on the role that adaptive reuse of old buildings plays in enhancing heritage tourism sustainability in the region. Previous research has highlighted the challenges faced in the execution of adaptive reuse initiatives, which include cultural heritage preservation, community involvement, and the upkeep of historic buildings. However, these challenges are not immediately evident, thus hindering the ability to comprehend how solutions adopted to address these challenges evolve over time and, consequently impedes the extensive assessment of their lasting influence on the profitability and productivity of heritage tourism destinations. This lack of understanding obstructs the creation of practical answers to these infrastructure problems. Currently, the solutions adopted to address the infrastructural challenges in Lamu town have not been entirely successful in enhancing the long-term viability of historic travel. The underutilization of historical buildings for tourism purposes presents a missed opportunity to improve the tourist experience and promote cultural heritage tourism in Lamu town. Therefore, it is essential to investigate alternate strategies that might be applied to successfully address the infrastructure issues and support the region's heritage tourist industry's survival. In this context, the gap that can be filled by practicing adaptive reuse of old buildings becomes apparent. By giving prominence to the adaptive reuse of old buildings, this study aimed to

investigate how it contributes to addressing infrastructural challenges facing heritage tourism in Lamu town. This will provide insight into developing more effective and sustainable fixes for the tourism sector in the region.

1.3 Objectives of the Study

1.3.1 General Objective

To determine the contribution of adaptive reuse of old buildings on heritage tourism sustainability in Lamu, Kenya.

1.3.2 Specific Objectives of the Study

- i. To evaluate the contribution of adaptive reuse of old buildings to the social-cultural sustainability of the local community in Lamu town, Kenya.
- ii. To assess the contribution of adaptive reuse of old buildings to local economic sustainability generated by heritage tourism in Lamu town, Kenya.
- iii. To determine the contribution of adaptive reuse of old buildings to tourist satisfaction and experience as a measure of heritage tourism sustainability in Lamu town, Kenya.
- iv. To examine the contribution of adaptive reuse of old buildings to environmental conservation and sustainability of heritage tourism sites in Lamu town, Kenya.

1.4 Hypotheses

H0₁: The adaptive reuse of old buildings has no statistically significant contribution on the social-cultural sustainability of the local community in Lamu town, Kenya.

H0₂: The adaptive reuse of old buildings has no statistically significant contribution on the local economic sustainability generated by heritage tourism in Lamu town, Kenya.

H0₃: The adaptive reuse of old buildings has no statistically significant contribution on tourist satisfaction and experience as a measure of heritage tourism sustainability in Lamu town, Kenya.

H0₄: The adaptive reuse of old buildings has no statistically significant contribution on the environmental conservation and sustainability of heritage tourism sites in Lamu town, Kenya

1.5 Significance of the Study

Adaptive reuse of heritage tourism facilities, such as converting old houses, maintaining historic structures, and replicating traditional architecture, has the potential to have a major effect on Lamu's cultural and economic landscape. This study provides valuable insights investigating how adaptive reuse affects heritage tourism's sustainability over the long run, focusing on how these practices help create jobs and boost the economy, and tourist satisfaction. Unlike previous research that highlighted initial successes, this study delved into the ongoing impacts, offering practical recommendations for heritage conservationists, the private sector, and policymakers including the Ministry of Tourism and Wildlife of the Kenyan government. For the private sector, the findings will demonstrate how new business prospects can be generated through adaptive reuse and attract investment in tourism-related ventures. The researcher will contribute to the field by enhancing the understanding of eco-friendly travel strategies, especially in areas with a significant cultural legacy like Lamu. Ultimately, the study aims to benefit the local community by promoting responsible tourism that preserves Lamu's unique heritage while supporting economic development. Additionally, the insights gained could inform global heritage tourism practices, offering a template for other areas dealing with comparable issues.

1.6 Scope of the Study

The study took place within the geographical boundaries of Lamu, a coastal town in Kenya known for its cultural and historical heritage. The study's main focus will be on the region's usage of adaptive reuse of historic structures and how it affects heritage tourism's sustainability. The study was carried out between June and August of 2025, a two-month span. To gather the necessary data and information, the study will utilize a variety of resources, including academic literature, historical records, interviews with local stakeholders, tourists, and heritage site managers, and surveys. A mixed research design will be used for the study, combining qualitative and quantitative

research methodologies. The results of the study will be presented within the context of Lamu, providing insights into how Lamu's heritage tourism is sustainable through the adaptive reuse of historic structures.

1.7 Limitation and Delimitation

The two-month duration from June to August 2025 assigned for data collection may limit the extent to which data is gathered and examined. This timeframe may not be enough to completely grasp the long-term impacts and seasonal variations in tourism patterns in Lamu. The study's focus on Lamu, Kenya, may restrict the findings' applicability to other areas with distinct historical, cultural, and tourism settings. The unique characteristics of Lamu may not be representative of broader heritage tourism sustainability challenges and the effects of repurposing historic structures in other historic locations.

1.8 Operational Definition of Terms

Adaptive reuse of old buildings	- The practice of altering existing features or structures for modern usage while maintaining their historical importance.
Authenticity	- The extent to which a landmark or structure still has its original historical qualities, reflecting its true identity and cultural significance.
Conversion of Old Houses	- The adaptive reuse strategy involving the transformation of historical residential structures for new functions, emphasizing authenticity and historical value.
Heritage Tourism Sustainability	- The sustainability and prosperity of historic tourism over the long run, taking into account its social, cultural, and economic aspects.
Impact on Local Economy	- The impact of heritage tourist operations on the local economy, taking employment generation into account, business

	opportunities, and economic multiplier effects.
Maintenance of Old Structures	- The ongoing care and preservation efforts applied to existing historical features, including documented monitoring and the use of specific conservation methods.
Replication of Old Houses	- The practice of recreating historical buildings, statues, and pillars, focusing on accurately reproducing the original structures with attention to materials and craftsmanship.
Revenue Generation from Tourism	- The income generated by heritage tourism activities, including entrance fees, guided tours, and related expenditures by visitors.
Tourists' Satisfaction	- The overall contentment and positive experiences reported by tourists during their visit to heritage sites, influenced by factors such as accessibility, amenities, and cultural immersion.

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview of Heritage Tourism and Adaptive Reuse Strategies

2.1.1 Heritage Tourism

Heritage tourism, also known as historical tourism, refers to a form of travel where the primary goal is to explore and experience the history and cultural heritage of a place (UNESCO, 2009). Travelers engage in heritage tourism to become fully immersed in a place's architectural, cultural, and historical features. This form of tourism plays a significant role in preserving and promoting cultural heritage, contributing both economically and socially to the destinations, it encompasses (UNESCO, 2018b). Heritage tourism often combines historical exploration with other tourist activities, providing visitors with a well-rounded experience (Vackier, 2019).

France's rich history draws millions of tourists to landmarks like the Eiffel Tower and the Palace of Versailles (Bendix *et al.*, 2013). However, the high volume of visitors poses challenges in preserving these historic sites (Rosati-Marzetti, 2015). To mitigate this, France has implemented visitor limits, strict conservation practices, and invested in technology for site preservation (UNESCO, 2023). Despite these initiatives, there are still study gaps in assessing the conservation techniques' long-term efficacy, understanding tourist behavior, and assessing the environmental impact of heritage tourism. Further research is essential to develop sustainable preservation strategies.

Romania's heritage tourism, featuring sites like Bran Castle and the medieval towns of Transylvania, offers a unique glimpse into the country's rich history (Boc *et al.*, 2022). However, challenges such as poor road conditions, limited visitor facilities, and underdeveloped interpretive resources hinder its full potential (Săbiescu, 2020). To address these issues, Romania has improved infrastructure, built visitor centers, and enhanced educational materials (Săbiescu, 2020). Despite these efforts, research gaps remain in assessing the impact of these developments, understanding tourist preferences, and evaluating the benefits for local communities.

Heritage tourism in Japan is influenced by the nation's diverse cultural and natural attractions, drawing visitors globally. Japan's dedication to heritage preservation is

evident in its 23 UNESCO World Heritage sites, comprising 19 cultural and four natural sites as of May 2020 (UNESCO, 2020). These sites highlight Japan's deep cultural history and impressive landscapes (UNESCO, 2020). However, managing this tourism presents challenges, particularly in maintaining site integrity while accommodating increasing visitor numbers (Nguyen Quynh Hoa, 2020). Japan has responded by improving infrastructure and adopting technologies like smart ticketing and augmented reality to enhance visitor experiences and reduce environmental impact (Ghimire, 2019). Nevertheless, gaps remain in being aware of sustainability over the long run and socio-cultural impacts of these measures, requiring further research.

Heritage tourism in Nepal draws global visitors to sites like the Kathmandu Valley, Lumbini, and the Himalayan landscapes, displaying its rich cultural and natural heritage (Hilary and World Tourism Organization, 2012). However, challenges include poor transportation infrastructure, such as inadequate roads and airports, which limit access to remote heritage sites (Ghimire, 2019). Additionally, there is a shortage of standardized accommodation and resources for preservation. Nepal has responded by improving infrastructure, including road construction and airport upgrades, and by investing in local training programs for heritage preservation ((Kiran, 2019; Ramkissoon, 2017). Despite these initiatives, there are still gaps in our knowledge of the policies' long-term effects. Further investigation is required to assess the socio-cultural, environmental, and economic effects of infrastructure development on heritage sites and local communities.

Heritage tourism in South Africa displays its cultural and historical diverseness, with notable sites like Robben Island Museum, a UNESCO World Heritage Site that highlights the country's fight for democracy (Samukelisiwe Nkwanyana *et al.*, 2016). Natural heritage sites, such as national parks, also draw international visitors (Merwe, 2016). However, challenges persist, including poor transportation, safety issues, and inconsistent infrastructure, particularly in rural areas (Viljoen and Sonwabile Henama, 2017; Manwa *et al.*, 2016). South Africa has addressed these issues through road and airport upgrades, improved accommodations, and community-based tourism projects (UNESCO, 2018). These measures aim to improve accessibility and safety while

involving local communities in management (UNESCO, 2003). Despite these efforts, gaps remain in evaluating the long-term effectiveness and socio-cultural, environmental, and economic impacts of these solutions. Further research is needed to understand the sustainability of heritage site preservation and tourism's effects on local communities.

Ethiopia's cultural, historical, and natural sites, such as Lalibela with its Rock-Hewn churches and Aksum with its obelisks, are key to its heritage tourism (Tadesse, 2022; Albert *et al.*, 2012). However, challenges persist, including limited transportation in remote areas and inadequate visitor facilities, which affect access and the overall tourist experience Kumar, (2018). Balancing preservation with tourism demands complicates site management (Kumar, 2018). Ethiopia is addressing these issues by improving roads, upgrading accommodations, and supporting community-based tourism (Alok, 2018). Despite these efforts, not enough research has been done on the socio-cultural, environmental, and economic effects of these measures. Additional research is needed to assess the sustainability of heritage site preservation amid growing tourism and evolving visitor needs.

Kenya's heritage tourism significantly contributes to its economy and cultural preservation, attracting global tourists with its traditional music, dance, and art (WTTC, 2020). However, infrastructure challenges, such as poor road access to remote sites and inadequate visitor facilities, affect the growth and sustainability of heritage tourism (Cheluget *et al.*, 2019; Mosima and Yitbarek, 2017). Improving infrastructure, including road upgrades and expanding visitor facilities, is essential for enhancing the tourist experience (Cheluget *et al.*, 2019; Leask *et al.*, 2006). Despite these efforts, there is a gap in research regarding the socio-cultural impacts of heritage tourism and the effectiveness of community engagement strategies (Mwendo, 2016; Okello *et al.*, 2020). Further studies are needed to assess Heritage tourism's advantages for nearby communities and develop strategies for making sure active community participation and fair distribution of tourism benefits. Addressing this gap is crucial for promoting sustainable and culturally sensitive heritage tourism in Kenya.

2.1.2 Adaptive Reuse Strategies

Converting old houses with historical and cultural significance through adaptive reuse aims to support heritage tourism by preserving their authenticity and historical value while ensuring functionality (Günçe and Mısırlısoy, 2019a). This global strategy has seen varied success in maintaining heritage tourism sustainability. The authenticity and historical value of these converted structures are critical to this approach. Property developers play a key role in upgrading old old buildings and leading urban redevelopment (Kiroff and Tan, 2015). When traditional houses are no longer used for residential purposes, assigning them new functions is crucial for preserving these old buildings (Günçe and Mısırlısoy, 2019a). In developed countries, preserving historic areas within modern contexts has successfully attracted tourists and protected buildings from damage (Towoliu *et al.*, 2022). Additionally, adaptive reuse helps avoid demolition, reducing resource waste and high reconstruction costs (Othman and Elsaay, 2018).

The adaptive reuse of historic structures must balance functionality and preservation to achieve sustainability. Repurposing old structures for new uses reduces the need for new materials and lowers environmental impact (Bahauddin and Prihatmanti, 2019). A study in Austria by Harfst *et al.* (2021) found that converting industrial spaces into cultural and tourist attractions supported sustainable development in less industrialized regions. However, it is important to carefully maintain the historical value of these buildings during adaptation, as they serve as tangible connections to the past (Dyson *et al.*, 2016).

The adaptive reuse of old buildings has led to several successful transformations, such as converting salt mines into underground leisure centers, preserving Roman galleries as evidence of ancient mining, and repurposing industrial spaces into cultural and tourist attractions (Dan *et al.*, 2021; Medina and Abella, 2021). This approach is increasingly recognized as a path to sustainable development, particularly in preserving cultural heritage sites (Goryunova and Wei, 2021). However, this process also presents challenges. Maintaining the functionality and historical value of these buildings is crucial (Akasah *et al.*, 2011), and any adaptations must carefully

preserve their authenticity and fit within the local climate and context (Prihatmanti and Susan, 2017).

The construction of replicas of old houses, statues, and pillars is an important method for preserving cultural heritage and enhancing tourism. This approach is increasingly used in preservation projects to address the physical deterioration of tangible heritage over time (Galeazzi, 2018). Successful replication requires careful attention to detail, high-quality materials, and skilled craftsmanship (Shabani *et al.*, 2020, 2021). For example, the replication of heritage structures at Luoyang Silk Road Dingding Gate has contributed to heritage preservation, tourism, and urban renewal, demonstrating the benefits of accurate reconstruction (Su *et al.*, 2020). Similarly, conservation planning in Old Dhaka, Bangladesh, shows that precise replication can effectively safeguard cultural heritage while supporting sustainable development (Huq *et al.*, 2017).

The quality of materials and craftsmanship in replicating old structures is essential for ensuring the longevity and authenticity of these replicas, which enhances their appeal to tourists and supports the sustainability of heritage tourism (Foster and Jones, 2019). The cultural importance of replicas is just as important as their accuracy and quality in fostering the sustainability of historic tourism. For example, the reconstruction of traditional Japanese houses in Kyoto has preserved architectural heritage and become a cultural attraction, offering tourists insights into Japan's history and traditions, thereby fostering sustainable tourism (UNESCO, 2022). Similarly, the replication of ancient Greek pillars in Athens has helped preserve cultural identity, attracting tourists and supporting sustainable tourism initiatives (Andrioti *et al.*, 2021).

The accuracy of replicating old structures is vital for providing tourists with an immersive experience that closely resembles the original historical site. According to Tiberghien *et al.*, (2017) this attention to detail significantly influences the success of fostering heritage tourism sustainability. This is exemplified by the replication of the Terracotta Army in Xi'an, China, which has attracted millions of tourists due to the faithful reproduction of the ancient sculptures, contributing to the preservation of

cultural heritage and therefore sustainable tourism (Jahan and Rahman, 2016; Quinn *et al.*, 2017).

Maintaining old heritage structures is essential to maintaining cultural identity, and ensuring the sustainability of heritage tourism. Various methods are employed in this process. One innovative approach is the use of 3D printing technology, which provides cost-effective solutions for addressing non-structural cracks (Kumar *et al.*, 2022) . Additionally, smart thermoplastics and recycled polyvinylidene-limestone composites have been explored for repairing and maintaining these structures (Kumar *et al.*, 2022c, 2022b) . Non-destructive techniques are also used to detect underlying ancient structures, ensuring minimal damage during maintenance (Gil *et al.*, 2019) . Moreover, documenting and monitoring the condition of heritage structures is essential. This includes the use of building information modeling (BIM) systems, which incorporate conservation data to support effective analysis, planning, and decision-making for conservation and maintenance activities (Hull and Ewart, 2020).

In Semarang, Indonesia, the deterioration of buildings , alongside socio-cultural and environmental issues, underscores the urgent need for the maintenance and revitalization of heritage sites (Hermawan *et al.*, 2020). Similarly, in Kandy, Sri Lanka, sustainable tourism efforts prioritize the conservation of cultural heritage while benefiting the local community (Sivesan, 2019). A UNESCO World Heritage Site in Ethiopia, the Lalibela Rock Churches, face challenges such as coordination problems and budgetary constraints. A SWOT analysis by Nega (2018) highlights these challenges in the context of sustainable tourism development. Effective maintenance of heritage structures is crucial for supporting sustainable tourism, as it enhances visitor experiences, strengthens place attachment, and promotes responsible tourism behaviors (Buonincontri *et al.*, 2017). In China, research on Strategies for sustainable tourism at world heritage sites like Mt. Huangshan focuses on improving governance and protection, contributing to both the theoretical understanding and practical management of these sites (Zhu *et al.*, 2019).

2.2 Contribution of Adaptive reuse of Old buildings on Social Cultural Sustainability

It is crucial to consider the sociocultural effects of converting historic structures for new purposes in heritage tourism. This involves maintaining heritage architecture, engaging with stakeholders, and understanding how these practices affect cultural identity and tourism. Tu (2020) offers a framework for examining how adaptive reuse enhances the attractiveness and value of heritage sites. This framework highlights how preserving heritage architecture through adaptive reuse supports tourism development and maintains cultural significance. Kee (2019a) explores the economic benefits of adaptive reuse, noting that it not only preserves historical value but also supports economic growth. Understanding these economic impacts is essential for evaluating the success and long-term viability of adaptive reuse initiatives.

Research by Pyke *et al.*, (2018), on the role of stakeholder engagement in developing tourism and community resilience, demonstrates the significance of involving local community members and various stakeholders in the adaptive reuse of old buildings . Effective stakeholder engagement contributes to building resilience in both tourism and local communities, (Pyke *et al.*, 2018) , promoting a sense of ownership and responsibility among community members. The involvement of community members in adaptive reuse projects does not just enhance the success and long-term viability of adaptive reuse initiatives but ensures that the socio-cultural structure of the community remains integral to the process.

It is crucial to comprehend the sociocultural facets of historical tourism for preserving cultural integrity while managing tourism demands. Imon (2017) highlights that adaptive reuse, when implemented effectively, can help protect cultural identity by balancing heritage preservation with responsible tourism. Saydam *et al.* (2022) support this, emphasizing the importance of expert guidance in developing tourism practices that respect and uphold local cultures. Additionally, Kuntariningsih (2023) explores how sensory and intellectual engagement with heritage sites can contribute to sustainable tourism. Together, these studies show that combining adaptive reuse with community involvement and expert advice can improve the authenticity and

sustainability of heritage tourism, helping to maintain cultural identity even as tourism expands.

2.2.1 Evaluation of Social Cultural Contribution of Adaptive Reuse of old Heritage buildings

To evaluate the sociocultural effects of adaptive reuse of historic structures on the sustainability of heritage tourism, researchers have used a variety of frameworks. Kaya *et al.*, (2021) use the Historic Urban Landscape (HUL) approach to explore challenges and solutions in cultural heritage adaptive reuse, highlighting the role of multidisciplinary workshops in this evaluation. Li *et al.*, (2021) review various research frameworks and methodologies, including the Multi-Criteria Decision Model (MCDM) and the Preference Measurement Model (PMM), to assess adaptive reuse of architectural heritage. These frameworks have proven effective in evaluating the socio-cultural effects of adaptive reuse on heritage tourism sustainability.

One important aspect of heritage tourism is the adaptive reuse of historic structures by supporting both social and cultural sustainability. This approach helps preserve historical structures while boosting community identity and pride, which is essential for local involvement in tourism (Mısırlısoy and Günçe, 2021). Converting old buildings into functional spaces like hotels or cultural centers generates economic benefits while respecting their cultural value (Elshaer *et al.*, 2022). Additionally, involving local communities in the conservation process ensures that the advantages of heritage tourism are fairly shared; fostering social cohesion and improving the tourist experience (Hassan, 2015). This combination of heritage preservation and tourism development promotes sustainable urban growth and revitalizes local economies, making adaptive reuse a crucial strategy for enhancing heritage tourism (Harfst *et al.*, 2021b).

2.3 Contribution of Adaptive Reuse of Old buildings on Economic sustainability

The economic impact of repurposing old buildings involves several benefits for communities and regions. According to Tan *et al.* (2018a), adaptive reuse can enhance quality of life, revitalize neighborhoods, and stimulate economic growth. It also reduces resource consumption and lessens negative environmental effects while

maintaining cultural and historical significance. Mohamed *et al.* (2017a) further explore these benefits by reviewing the relationship between adaptive reuse and sustainability, offering a detailed look at the economic effects of this approach.

Several studies highlight how Local economies gain from the adaptive reuse of historic structures. Günçe and Mısırlısoy, (2019) assess the impact of repurposing traditional houses in the Walled City of Nicosia, focusing on user experiences. Their findings show that converting old buildings for commercial, cultural, or educational uses often leads to greater success in promoting socio-cultural and economic development. Similarly, Teferra (2016) demonstrates that adaptive reuse positively affects urban development and sustainability. Cherchi (2015) also notes that transforming abandoned structures into functional spaces can stimulate economic revitalization while preserving cultural heritage.

Adaptive reuse is essential to raising the heritage sites' long-term value. Othman and Elsaay, (2018) highlight how this approach can contribute to sustainable development, particularly in developing countries. Hoxha (2019) supports this by showing that adaptive reuse can increase property values and provide a good return on investment for local communities. Farooq and Qureshi, (2020) emphasize that adaptive reuse is viable from environmental, social, and economic perspectives, especially in urban settings. Vardopoulos *et al.* (2021) also stress that adaptive reuse is vital for sustainable urban development. Additionally, studies by Mohamed *et al.*, (2017) and Vardopoulos, (2023) examine how adaptive reuse relates to the three pillars of sustainability: environment, economy, and social equity.

Researchers have developed several frameworks to evaluate how adaptive reuse affects local economies socioeconomically. Bottero *et al.* (2019) proposed a multicriteria decision-making approach to rank different solutions for repurposing abandoned industrial heritage. This method helps evaluate various adaptive reuse options for their effectiveness. Similarly, Ali Shehata *et al.* (2015) created a framework to systematically assess the adaptive reuse of Islamic architectural heritage in Cairo. These frameworks enhance the understanding of how adaptive reuse affects local economies, such as in Lamu County.

2.3.1 Evaluation of Economic Contribution of Adaptive Reuse of old buildings

Studies show that heritage tourism can significantly boost local economies by creating jobs, especially in areas like hospitality and retail. For example, McGrath *et al.* (2016) used the IMPLAN analysis technique to measure the economic impact of heritage tourism in Pennsylvania, finding that it supports many jobs across various industries. Similarly, Zeng and Xiao-Jun (2023) found that World Cultural Heritage sites contribute to economic growth in Chinese cities, providing broader benefits beyond just tourism revenue. These studies highlight the need for strong analytical techniques to precisely quantify the financial impact of heritage tourism.

The perceived authenticity of heritage experiences is important for encouraging tourists to spend more money (Howey, 2020). Community involvement is also crucial, as local support can improve the sustainability and economic success of heritage tourism projects (Khadar *et al.*, 2014). Additionally, the economic benefits of heritage tourism go beyond direct financial gains; they also include the revitalization of local communities and the preservation of cultural heritage (Doganer and Dupont, 2015). Therefore, utilizing a thorough strategy that takes into account economic, social, and cultural factors to accurately measure the impact of heritage tourism.

2.4 Contribution of Adaptive Reuse of Old buildings on Tourist Satisfaction

Tourist happiness and experiences at cultural sites are greatly influenced by the adaptive reuse of historic structures. Hossain Bhuiyan and Darda (2019) emphasize that maintaining high standards for attraction sites, including cleanliness and improved facilities, is essential for enhancing tourist satisfaction. In order to provide a satisfying tourist experience, this emphasizes how crucial proper infrastructure and consistent upkeep are. Chai *et al.* (2022) further support this by showing that the condition and functionality of old buildings directly affect tourist satisfaction.

Bašan *et al.* (2021) find that sustainability factors, such as environmental considerations, also influence tourist satisfaction, suggesting that a focus on sustainability can improve the overall visitor experience. Tian *et al.* (2020) point out that preserving cultural identity in old buildings affects how tourists perceive

authenticity, which in turn affects their satisfaction and loyalty. Additionally, Ariffin *et al.* (2020) argue that adaptive reuse not only helps preserve historical sites but also boosts tourism and generates income for local communities. This underscores that adaptive reuse has a broad impact, benefiting both cultural preservation and economic development.

Successful adaptive reuse of old buildings not only revitalizes these structures but also strengthens the sense of place and community, which is vital for attracting tourists (Ariffin *et al.*, 2020b; Vidyullatha, 2023). By blending modern functionalities with historical contexts, adaptive reuse enhances the overall visitor experience, making heritage sites more accessible and engaging for tourists (Rudan, 2023). This approach ensures that historical buildings remain relevant and useful, contributing to a richer, more interactive experience for visitors while maintaining their cultural significance. The combination of preservation and modernization through adaptive reuse thus plays a crucial role in drawing tourists and improving their satisfaction.

The economic benefits of adaptive reuse significantly boost tourist satisfaction. Old buildings that are adaptively reused often become major attractions, offering visitors both historical and contemporary experiences (Ariffin *et al.*, 2020a; Kee, 2019b). Transforming these buildings into lively spaces can stimulate local economies by creating jobs and promoting cultural tourism, which in turn enhances the visitor experience (Chong and Balasingam, 2018; Kee, 2019b). As a result, adaptive reuse not only preserves historical value but also makes destinations more appealing, leading to increased tourist satisfaction and engagement (Kee, 2019a; Rudan, 2023).

2.4.1 Evaluation of Tourist Satisfaction in Adaptive Reuse of old buildings

Research has shown that perceived authenticity and emotional experiences are key factors in increasing tourist satisfaction. For example, Wu *et al.* (2019) found that when tourists perceive a heritage site as authentic, it positively affects their well-being, largely due to their attachment to the place and the satisfaction they feel. Similarly, (Yang *et al.* (2023) argue that positive emotions, which arise from how tourists think about and evaluate heritage environments, can enhance their overall satisfaction. These results demonstrate how crucial emotional and cognitive factors are in

determining visitors' experiences and levels of satisfaction when it comes to heritage tourism.

Additionally, incorporating cultural identity and involvement in heritage experiences has been shown to boost tourist satisfaction. Xu *et al.* (2022) propose a model that links cultural engagement and personal involvement to the overall tourist experience, suggesting that a deeper connection with cultural heritage leads to higher satisfaction. Furthermore, Chen (2024) emphasizes that government policies promoting service quality and authenticity in heritage tourism contribute significantly to raising visitor satisfaction. Therefore, a thorough understanding of these elements is crucial for stakeholders in heritage tourism who seek to improve visitor experiences and encourage repeat visits.

2.5 Contribution of Adaptive Reuse of Old buildings on Environmental Conservation

Adaptive reuse of old buildings significantly affects the environment by aligning with sustainability goals. For example, Bosone *et al.*, (2021) illustrate how adaptive reuse supports circular economy objectives from a life-cycle perspective, highlighting the environmental advantages of these strategies. Similarly, Ragheb an Naguib, (2021) emphasize the importance of adaptive reuse as a conservation approach, noting its potential contribution to environmental protection. Additionally, Conejos *et al.*, (2012) underscore the role of adaptive reuse in enhancing energy efficiency in existing buildings, further encouraging sustainability in the environment.

The adaptive reuse of architectural heritage, particularly within Islamic contexts, carries significant environmental benefits. Ali Shehata *et al.*, (2015b) emphasize that such practices in Cairo can preserve cultural identity while also addressing sustainability issues. Vythoulka *et al.*, (2021) support this by showing how adaptive reuse can significantly reduce energy consumption and greenhouse gas emissions, underscoring its ecological advantages. This intersection of cultural preservation and environmental sustainability highlights the importance of incorporating adaptive reuse strategies into urban planning to mitigate climate impacts while respecting historical legacies (de Andrade, 2023; Jin *et al.*, 2019).

2.5.1 Evaluation of Environmental Sustainability Contribution of Adaptive Reuse of Old buildings

The evaluation of the preservation of the natural environment within the context of heritage tourism is progressively being reinforced by conceptual structures that focus on the sustainability of initiatives involving the repurposing of existing structures. Balta (2022) created a structured decision-making framework employing the Analytic Hierarchy Process, which furnishes a standardized mechanism for scrutinizing the ecological consequences stemming from such projects. This particular model holds significant importance for guaranteeing that efforts aimed at conservation simultaneously uphold environmental equilibrium while fostering the growth of the tourism sector. In a comparable vein, Bottero *et al.*, (2019) presented the PROMETHEE II technique as a tool for evaluating the adaptive reuse of derelict industrial heritage locations, underscoring the necessity of integrating environmental considerations into the formulation of policies related to the conservation of heritage assets.

2.6 Theoretical Framework

This research is based on the VICE model, which was created by van Niekerk and Coetzee (2011), and which provides a comprehensive framework for assessing tourism sustainability. The model posits that sustainable tourism outcomes emerge from the balanced and synergistic interaction of four critical components: the Visitor, the Investor/Industry, the Community, and the Environment. Rather than viewing these elements in isolation, the VICE model emphasizes their interdependence, suggesting that a tourist destination's sustained prosperity depends on managing the impacts and relationships between these four pillars.

The VICE model was selected as the primary theoretical lens for this research due to its direct and holistic applicability to the investigation of adaptive reuse in heritage tourism. Its significance is found in its capacity to deconstruct the complex phenomenon of heritage tourism sustainability into four distinct, yet interconnected, analytical categories that perfectly align with the study's objectives. This framework moves beyond a monolithic view of sustainability, allowing for a nuanced

investigation of how a single intervention—adaptive reuse—produces a cascade of effects across the entire tourism system.

The model provides a direct conceptual mapping for every one of the particular goals of the study, creating a clear and logical structure for the research. The Community Pillar directly informs Specific Objective i, which focuses on social-cultural sustainability. This pillar compels the investigation to assess how adaptive reuse affects cultural identity, social fabric, community pride, and the preservation of traditional practices among Lamu's residents. The Investor/Industry Pillar is the theoretical foundation for Specific Objective ii, concerning local economic sustainability. It guides the analysis of how adaptive reuse stimulates job creation, generates revenue, fosters local business growth, and influences investment in the local economy. The Visitor Pillar provides the conceptual basis for Specific Objective iii, which examines tourist satisfaction and experience. This component focuses on the quality of the visitor encounter, including their perceived authenticity, cultural enrichment, accessibility, and overall satisfaction with the heritage site. The Environment Pillar underpins Specific Objective iv, dealing with environmental conservation. It necessitates an evaluation of the ecological footprint of adaptive reuse, including its impact on waste management, the protection of the local ecosystem's general health, and its natural riches.

The VICE model will serve as a critical tool for analyzing and interpreting the research findings. It will allow the study to move beyond simply reporting statistical relationships to explaining their systemic implications. The model will help to Identify Synergies: For example, if findings show that adaptive reuse leads to high tourist satisfaction (Visitor) and increased local employment (Investor/Industry), the model provides the framework to present this as a positive reinforcing cycle. It will also highlight Contradictions: The model is particularly valuable for analyzing conflicting outcomes. Contextualize Community Sentiment: The model will help explain why, despite economic gains, there might be community skepticism. If economic benefits (Investor/Industry) are perceived as inequitably distributed or are seen to threaten cultural values (Community), the model highlights this friction between pillars, providing an enhanced comprehension of the "why" behind the data.

In the context of Lamu Old Town, a dense, historic, and culturally sensitive UNESCO World Heritage site, the VICE model implies that adaptive reuse cannot be judged on a single metric. A project that is an architectural and commercial success (benefiting the Visitor and Investor pillars) could be a failure if it alienates the local community or overwhelms the fragile coastal environment. This research will test the applicability of the VICE model in a specific heritage context. It will reveal whether the model's pillars are equally weighted in practice or if, in a place like Lamu, the Community and Environment pillars require paramount consideration to avoid irreversible damage. The findings will demonstrate how the theoretical balance proposed by the VICE model plays out in the real world, showing where the pillars are in agreement (e.g., community pride and tourist satisfaction both rising) and where they are in contradiction (e.g., economic activity and waste management). Ultimately, this study uses the VICE model not just as a theory, but as a diagnostic tool to provide targeted, pillar-specific recommendations for achieving a truly sustainable future for heritage tourism in Lamu.

2.7 Conceptual Framework

The relationship between the independent variable, the adaptive reuse of historic structures, and the dependent variable, the sustainability of heritage tourism, is clarified by the conceptual framework. The process of adaptive reuse entails converting outdated buildings into useful areas, preserving historical authenticity, and constructing replicas of historical elements, such as houses and statues. This process directly affects the long-term viability of historic tourism by influencing the preservation of historical value, the functionality of the buildings, and the quality of replicas. The VICE Model, which focuses on Viability, Integrity, Community, and Experience, is relevant in evaluating these aspects. The model's systematic approach helps assess the balance between preserving authenticity (Integrity) and integrating modern functionalities (Viability). Additionally, it highlights the significance of community involvement (Community) and making sure a high-quality visitor experience (Experience).

Authenticity in adaptive reuse is measured by retaining original architectural features and cultural narratives, which attracts heritage tourists seeking genuine historical experiences. The functionality of reused buildings enhances their practical relevance while maintaining historical integrity, aligning with the VICE Model's focus on Viability. Accurate replication of historical structures, high-quality materials, and skilled craftsmanship contribute to heritage places' visual attractiveness and authenticity, which impact the Experience component of the VICE Model. The preservation and maintenance of old structures through systematic documentation and sustainable conservation methods ensure their long-term appeal and relevance. This corresponds with the model's emphasis on Community and Experience by promoting local cultural practices and enhancing visitor satisfaction. Finally, assessing the environmental impact of adaptive reuse, including resource conservation and waste management, relates to the Viability and Integrity aspects of the VICE Model.

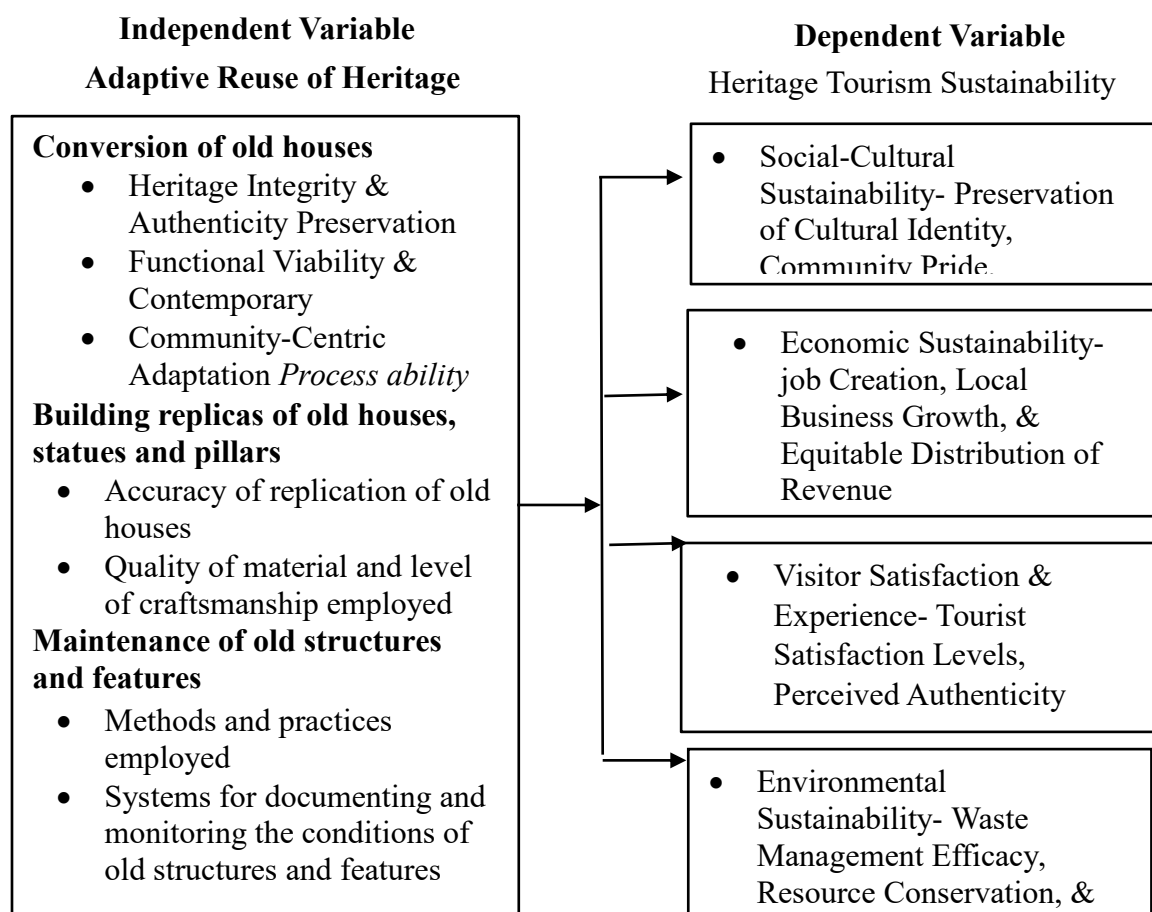


Figure 2.1: Conceptual Framework

Source: Researcher (2024)

CHAPTER THREE

METHODOLOGY

3.1 Study Area

Lamu town is located in Lamu County, Kenya, at latitude 2.2716° S and longitude 40.9020° E along the northern coast, near the Indian Ocean. Its 25,385 inhabitants are made up of 12,900 men and 12,484 women. (Kenya National Bureau of Statistics, 2019).

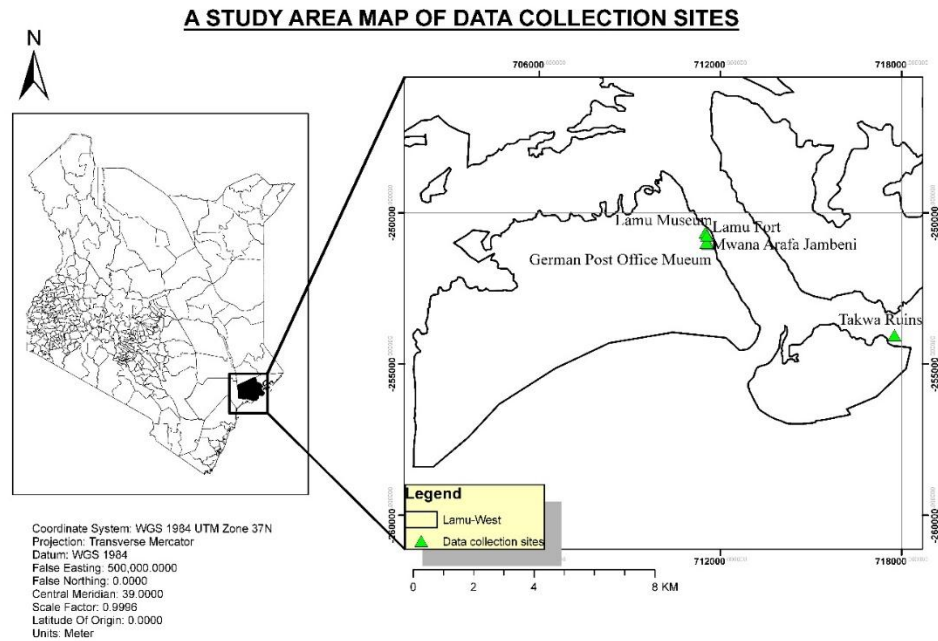


Figure 3.1: Map of Lamu County

Source: Researcher (2024)

The town is predominantly Swahili, with a mix of other ethnic groups. The area experiences a tropical climate with temperatures between 23 degrees Celsius and 36 degrees Celsius. Lamu old town receives an annual rainfall of 800 mm, typically from

April to November. These climatic conditions affect the preservation and maintenance of old buildings. Lamu is renowned for its rich cultural and historical legacy, reflected in its old buildings and traditional architecture. The town's history and architecture make it a significant site for studying how adaptive reuse can affect heritage tourism sustainability. As a popular tourist destination, Lamu attracts visitors with its historical and cultural diversity. The adaptive repurposing of its historic structures is vital for enhancing the tourism experience and is central to this study. Lamu's tourism infrastructure includes various accommodations, such as hotels and guesthouses, as well as restaurants and markets that cater to tourists. The infrastructure supports the local economy by providing essential services to visitors and enhancing their overall experience. The town's environment, characterized by coastal and tropical conditions, has a part in the maintenance and preservation of its historical buildings, making Lamu a relevant place to study the connection between sustainable heritage tourism and adaptive reuse.

3.2 Research Design

The study employed a mixed-methods methodology, specifically utilizing a concurrent triangulation design. This research strategy necessitates the simultaneous gathering and scrutiny of both numerical (quantitative) and descriptive (qualitative) information (Johnson et al., 2007). The selection of the concurrent triangulation design was appropriate for this research because it facilitated a thorough exploration of how the repurposing of historical buildings influences the long-term viability of heritage tourism in Lamu, Kenya. By uniting the statistical evidence with the non-numerical, context-rich insights obtained from discussions and direct observation, this methodology afforded a complete grasp of the research phenomenon. The merging of these distinct forms of data helped to corroborate and elaborate upon the results, thereby furnishing a more holistic perspective on the study's aims. The application of this particular method guaranteed that the investigation encompassed both broad tendencies and specific individual accounts, enabling a comprehensive assessment of the impact of adaptive reuse on heritage tourism.

3.3 Data Collection Instrument

In this research study, a combination of structured questionnaires and interviews were used as tools for collecting data in order to obtain detailed and extensive facts. The instruments were designed to ensure that every section directly contributed to addressing the study's specific objectives. Structured questionnaires were administered to two distinct participant groups: tourists and local community members. Meanwhile, interviews were conducted with the third participant group, heritage site officials of Old Town in Lamu, Kenya. The structured questionnaire was divided into seven sections (A to G), each crafted to capture data relevant to a particular dimension of the research problem. The alignment between the questionnaire sections and the study's objectives was as follows:

Section A - Demographic Information: Collected basic demographic data such as age, gender, nationality, and occupation to provide essential context for the responses. Section B - Adaptive Reuse of Old buildings: This foundational section explored participants' perceptions of the practice of adaptive reuse in Lamu Old Town, including the conversion of old houses, building replicas, and the maintenance of old structures. The data from this section provided the core independent variable measures used in the analysis for all four specific objectives (i, ii, iii, and iv). Section C - Contribution to Social-Cultural Sustainability: This section was designed to directly address Specific Objective i. It assessed participants' opinions on social and cultural issues, such as maintaining customs, fostering cross-cultural interactions, community empowerment, and the fostering of community pride.

Section D - Contribution to Local Economic Sustainability: The items in this section were formulated to specifically target Specific Objective ii. They focused on gathering data related to economic benefits, including job creation, the impact of visitor spending, revenue reinvestment, infrastructure development, and the equitable distribution of economic benefits. Section E - Influence on Tourist Satisfaction: This section was exclusively for tourists and was structured to directly correspond with Specific Objective iii. It explored how adaptive reuse affects visitor satisfaction, featuring sub-sections that captured their experiences both before and after adopting adaptive reuse initiatives to allow for a comparative analysis.

Section F - Effect on the Environment: The questions in this section were aimed at addressing Specific Objective iv. They inquired about the environmental impact of adaptive reuse, such as efforts to preserve local natural resources, waste management practices, and the overall ecological footprint. Section G - Heritage Tourism Sustainability: This final section served as a summative measure, exploring participants' overall perceptions regarding the longevity of Lamu's historic tourism across the four key areas. It provided complementary data for validating the findings related to all four specific objectives.

Interviews with the heritage site officials at Old Town were semi-structured, focusing on their professional experiences and insights. The single section of the interview guide was dedicated to the assessment of adaptive reuse for historic structures in Lamu County, Kenya. This section used open-ended questions in order to enable a comprehensive analysis of their viewpoints on the difficulties, advantages, and function of adaptive reuse in influencing heritage tourism sustainability. The qualitative data from these interviews gave vital background information and depth, confirming the quantitative results for all four specific objectives.

3.3.1 Validity Test

To ensure the validity of the data collection instruments, the interview questions and questionnaires were created after a thorough analysis of relevant literature, expert consultation, and pilot study with just a handful of participants representing the study's target population. Their feedback and comments were used to refine the instruments and ensure that the questions are clear, relevant, and capture the intended data. Construct validity was established by making sure that the questions in each section align directly with the particular goals and research issues of the project. The instruments' content validity was ensured by having them reviewed by subject-matter specialists, including academics in heritage tourism and sustainability.

3.3.2 Reliability Test

Several strategies were used to ensure the data collection tools remained reliable. The structured questionnaires had clearly defined response options and scales, reducing the likelihood of misinterpretation by respondents. A similar set of questions were

posed to each participant or provided with the same interview protocol, ensuring consistency in data collection. Detailed instructions for administering the questionnaires and conducting interviews were provided to the research team, fostering uniformity in data collection procedures. Additionally, data analysis involved cross-checking and verifying the responses to ensure data consistency. The reliability of the instruments was continually monitored throughout the data collection process to identify and rectify any inconsistencies or biases. A pilot test was conducted, and Cronbach's Alpha scores were calculated for all scales, confirming high internal consistency as reported in table 3.1 below.

Table 3.1: Summary of Scale Reliability Statistics

Scale Name	Number of Items	Cronbach's Alpha (α)	Description
Adaptive Reuse of Heritage Buildings	7	0.951	Measures perceptions of the core independent variable: the quality and implementation of conversion, replication, and maintenance practices.
Heritage Tourism Sustainability	5	0.955	Measures the overall dependent variable: the perceived long-term viability of heritage tourism across economic, social, environmental, and visitor dimensions.
Social-Cultural Sustainability	5	0.958	Assesses the impact on community cultural identity, pride, preservation of traditions, and cultural exchange.
Local Economic Sustainability	5	0.916	Evaluates the perceived economic benefits, including job creation, visitor spending, and equitable distribution of revenue.
Tourist Satisfaction	10	0.947	Gauges the level of tourist contentment and experience before and after the implementation of adaptive reuse initiatives.
Environmental Sustainability	5	0.948	Measures perceptions of environmental conservation efforts, including waste management and the mitigation of tourism's ecological footprint.

Source: Researcher 2025

3.4 Target Population

The study focused on a diverse group of participants to provide a comprehensive analysis of adaptive reuse of old buildings and its impact on heritage tourism sustainability in Lamu, Kenya. The total population of Lamu island is 25,385 residents (KNBS, 2019). From this population, the study specifically targeted 15,000 residents living within the old town of Lamu and its surrounding areas (local community members). The selection of this sample size was made to guarantee a broad representation of the local community. In addition, the study included 167 tourists who visit Lamu old town every week, according to the Kenya Annual Tourism Sector Performance Report (2023). Furthermore, the study engaged 50 heritage site officials from the five thematic museums under Lamu Museums. Among them were representatives from the German Post Office Museum, Takwa Ruins, Lamu Museum, Lamu Fort, and Mwana Arafu Jambeni.. Each site contributed 10 officials, totaling 50 heritage site officials. These officials were selected based on their experience of at least five years, providing valuable insights into heritage conservation and tourism practices. Table 3.2 shows the target population.

Table 3.2: Target Population for Each Category of Participant

Category	Number of Participants
Local Community Members	15,000
Tourists	167
Heritage Site Officials	50
Total	15,217

3.5 Sample Size and Sampling Techniques

The heritage site officials' sample size was determined using a procedure suitable for small populations, resulting in 15 participants. The sample sizes for tourists and local community members were determined using a formula by Krejcie and Morgan (1970). For tourists, the sample size was 115, while for community members, it was 375.

The calculation is as follows:

$$nf = \frac{n}{1 + \frac{n}{N}}$$

nf = the adjusted sample size for a finite population.

n = the sample size you desire (22).

N = the size of the population.

$$nf = \frac{22}{1 + \frac{22}{50}} = \frac{22}{1 + 0.44}$$

$$nf = \frac{22}{1.44} = 15.28 \equiv 15 \text{ heritage site officials}$$

The heritage site officials were selected equally from all the five sites in Lamu old town; that is three heritage site officials from each site. To calculate the sample size of the tourists and the local residents, the researcher used the formula for calculating sample size developed by Krejcie and Morgan, (1970). The calculation was as follows: Sample size for tourists:

$$n = \frac{N \times Z^2 \times p \times (1 - p)}{(N - 1) \times E^2 + Z^2 \times p \times (1 - p)}$$

n = the required sample size.

N = the total number of elements in the population.

Z = the Z-score corresponding to the desired level of confidence (in this case at 95% confidence level, Z is 1.96).

p = the estimated proportion of the population with a particular characteristic.

E = the margin of error (assumed to be 0.50. This will provide the maximum sample size).

$$n = \frac{167 \times (1.96)^2 \times 0.5(1 - 0.5)}{(167 - 1) \times (0.05)^2 + (1.96)^2 \times 0.5(1 - 0.5)} = \frac{159.3}{1.3754}$$

$$n = \frac{159.3}{1.3754} = 115 \text{ tourists}$$

Sample size for community members:

$$n = \frac{15000 \times (1.96)^2 \times 0.5(1 - 0.5)}{(15000 - 1) \times (0.05)^2 + (1.96)^2 \times 0.5(1 - 0.5)} = \frac{14,406}{38.4579}$$

$$n = \frac{14,406}{38.4579} = 374.6 \equiv 375 \text{ community members}$$

This study involved a total of 505 participants, comprising 15 heritage site officials, 115 tourists, and 375 local community members. A multi-phase sampling technique was used to ensure both practicality and scientific rigor for each distinct participant group.

i. Heritage Site Officials: Purposive Sampling

The 15 heritage site officials were selected using purposive sampling. This non-probability technique was appropriate because it made it possible to choose people with certain areas of proficiency. Only officials who had worked at the heritage sites for at least five years were chosen, as their extensive experience made them well suited to provide valuable, in-depth insights into heritage conservation and management practices.

ii. 2. Tourists: Convenience Sampling

For the tourist population, convenience sampling was used leading to a sample size of 115 individuals. This approach was necessary due to the transient and fluid nature of the tourist population, making it impractical to obtain a complete sampling frame. During the data collecting period, tourists who were accessible and willing to participate were approached.

iii. Local Community Members: Stratified and Convenience Sampling

To make sure the sample of 375 locals was representative of the various population of Lamu Old Town, a two-step sampling approach was used.

Stage 1: Stratified Random Sampling. The primary sampling frame was the total population of 15,000 residents within Lamu Old Town and its immediate surroundings. In order to guarantee that the sample appropriately reflected the community's social and geographic dispersion, the overall population was stratified into three key residential zones based on their proximity to the core heritage tourism

circuit: Mkomani, Shella, and Langoni. The sample size was allocated to each stratum proportionally to its population.

Mkomani Ward: (Estimated Population: 8,000) $\rightarrow$ Sample = $(8,000/15,000) * 375 = 200$ respondents

Shella Village: (Estimated Population: 5,000) $\rightarrow$ Sample = $(5,000/15,000) * 375 = 125$ respondents

Langoni Area: (Estimated Population: 2,000) $\rightarrow$ Sample = $(2,000/15,000) * 375 = 50$ respondents

Total Community Sample: $200 + 125 + 50 = 375$

Stage 2: Convenience Contacting. This method allowed for choosing people who were accessible and easily available. The research assistant randomly collected data from each stratum adhering to the specific sample sizes. This approach combined the representativeness of probability sampling with the practical fieldwork necessities of convenience contacting. The total number of respondents sampled was 505: 15 heritage site officials, 115 tourists, and 375 community members. This is summarized in Table 3.3.

Table 3.3: Target Population, Sample Size

Participant Group	Target Population	Sample Size	Sampling Technique
Tourists	167	115	Convenience Sampling
Local Community Members	15,000	375	Stratified Random Sampling and Convenience Contacting
Heritage Site Managers	50	15	Purposive Sampling
Total	15,217	505	

Source: Researcher 2024

3.6 Data Collection Procedure

The data collection process for this research was systematic and well-organized to ensure the efficient gathering of information from the study's three participant groups: tourists, local community members, and heritage site officials in Old Town, Lamu. To collect data from tourists and local community members, structured questionnaires were administered. The process commenced by first identifying the locations within

Old Town, Lamu where these participants are most likely to be found. These locations included popular tourist sites, public spaces, and community centers. Trained research assistants were stationed at these locations. These assistants approached those who were interested in taking part in the study. Participants were briefed on the purpose of the study and given structured questions to fill out after giving their informed consent. The research assistants were available to answer any questions or offer clarifications as needed. Once completed, participants returned the questionnaires to the assistants, who then reviewed them for any missing or unclear information.

Interviews were conducted with heritage site officials, which required prior arrangements and appointments. Heritage site officials were contacted in advance to schedule interviews at their convenience. These interviews took place at the heritage sites themselves, allowing for a contextual understanding of their work environment and its relationship to adaptive reuse of old buildings. Semi-structured interview guides were used to facilitate the conversation. With the participants' permission, the interviews were audio recorded in order to guarantee correct data collection. During the interviews, interviewers actively engaged with the heritage site managers, asking open-ended questions and using probes to delve into the complexities of their experiences.

Data collected through structured questionnaires were recorded electronically and securely stored on password-protected devices. All data were anonymized, with participants being referred to by unique identifiers rather than personal information to maintain their confidentiality. Audio recordings of interviews were also stored securely and separately from any identifying information. The captured data was saved on a device that was only accessible by the researcher, encrypted and backed up to secure servers. Once the data had been transcribed and coded, the audio recordings were removed in order to further protect the anonymity of the respondents and confidentiality.

3.7 Data Analysis

In analyzing the quantitative data, the study used structured questionnaires. Prior to being imported into SPSS version 27 for analysis, the data was first sorted and

cleaned in Microsoft Excel 2021. The data was compiled using descriptive statistics, such as means and frequency distributions, to give a broad picture of trends and patterns. To test the study's hypotheses and address its specific objectives, a set of inferential statistical procedures was employed. Each procedure was carefully selected to align with the characteristics of the variables and the query put out by each objective, as detailed below. To address Specific Objective i and test the corresponding Hypothesis H01, Multiple Linear Regression (MLR) was used. This method was chosen to determine if and how much the dimensions of adaptive reuse (conversion of old houses, building replicas, maintenance of structures) could significantly predict the level of social-cultural sustainability in Lamu Town. To address Specific Objective ii and test Hypothesis H02, Multiple Linear Regression (MLR) was also employed. This analysis assessed the power of the adaptive reuse dimensions to predict the outcome of local economic sustainability.

To address Specific Objective iii and test Hypothesis H03, a Paired-Samples T-Test was used. This test was the most appropriate for comparing the mean tourist satisfaction scores from the same group of respondents before and after the implementation of adaptive reuse initiatives, thereby directly measuring the change in satisfaction. To address Specific Objective iv and test Hypothesis H04, Pearson Correlation analysis was run. This process was utilized to gauge the degree and direction of the linear association between perceptions of environmental conservation sustainability and the general adaptive reuse practice. The significance for all inferential tests was set at a p-value of less than 0.05. The findings were presented using tables and charts for quantitative data. Excerpts from the interviews with heritage site officials were used help contextualize the data results and offer qualitative perspectives. In order to guarantee uniformity and a clear correspondence between the goals of the study and the published results, a clear framework was established linking each specific objective to its corresponding data sources and analytical procedures.

Table 3.4: Alignment of Objectives, Data Sources, and Analytical Methods

Specific Objective	Data Collection Instrument and Source	Quantitative Analytical Method	Qualitative Analytical Method	Corresponding Results Section
a.) Social-Cultural Sustainability	Questionnaire (Sections B, C, G) from Tourists and Community Members. Interviews with Heritage Officials. Observation Checklist (Social-Cultural items).	Descriptive Statistics (Mean, Frequencies). Multiple Linear Regression.	Thematic Analysis of interview transcripts on community engagement, pride, and cultural preservation.	Section 4.3.2
b.) Local Economic Sustainability	Questionnaire (Sections B, D, G) from Tourists and Community Members. Interviews with Heritage Officials. Observation Checklist (Economic Impact items).	Descriptive Statistics (Mean, Frequencies). Multiple Linear Regression.	Thematic Analysis of interview transcripts on job creation, revenue, and business growth.	Section 4.3.3
c.) Tourist Satisfaction	Questionnaire (Section E) from Tourists ONLY. Interviews with Heritage Officials. Observation Checklist (Tourist Satisfaction items).	Descriptive Statistics (Mean, Frequencies). Paired-Samples T-Test.	Thematic Analysis of interview transcripts on visitor experience, amenities, and interpretation.	Section 4.3.4
d.) Environmental Sustainability	Questionnaire (Sections B, F, G) from Tourists and Community Members. Interviews with Heritage Officials. Observation Checklist (Environmental Impact items).	Descriptive Statistics (Mean, Frequencies). Pearson Correlation.	Thematic Analysis of interview transcripts on waste management, sustainable practices, and challenges.	Section 4.3.5

3.8 Ethical Consideration

The methodology of this investigation was governed by a strict adherence to ethical standards. A meticulous process was followed to obtain informed consent from each individual prior to their engagement in the study. Prospective participants were furnished with extensive details regarding the research objectives, the nature of their involvement, and the procedures involved. The consent form explicitly stated that participation was entirely voluntary and that individuals retained the right to withdraw at any stage without incurring any penalty. Furthermore, they were fully briefed on the methods of data collection, any potential risks or benefits, and the intended application of the research findings. Written consent was formally documented through the signing of the permission form by each participant as a confirmation of their willing involvement.

Safeguarding the confidentiality of participant information was a paramount concern throughout the research process. All collected data were systematically anonymized and maintained in secure storage. To ensure complete anonymity, personally identifiable information such as names, contact details, and addresses was permanently removed from the dataset. In its place, a unique identifier code was assigned to each participant. Access to the key linking these codes to individual identities was strictly limited to the core research team. Digital data repositories were protected with passwords, and physical documents, including signed consent forms and interview transcripts, were stored in locked filing cabinets or secure digital archives.

This research project was subject to a rigorous, multi-stage ethical approval protocol. The initial requirement was to secure a researcher certificate from the National Commission for Science, Technology and Innovation (NACOSTI) in Kenya (Appendix VI). Subsequent to obtaining the NACOSTI certificate, the complete research proposal was submitted to the University's Research Approval Board for a comprehensive review. This board meticulously evaluated all aspects of the study, with a particular focus on its ethical considerations, to verify its alignment with established institutional and national guidelines. Final approval for the research was

granted only after all required modifications and clarifications were satisfactorily addressed.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Response Rate

This study successfully gathered data from its target populations in Lamu town. For the survey, 93 of the 115 sampled tourists and 304 of the 375 sampled local community members participated, yielding high response rates of 80.9% and 81.1%, respectively. Additionally, interviews were conducted with 11 of the 15 targeted heritage site officials, representing a 73.3% participation rate. As these figures are all well above the 50% threshold considered adequate for social research (Babbie and Muoton, 2011), the dataset was deemed highly reliable for analysis. Table 4.1 summarizes the response rate distribution.

Table 4.1: Response Rate

Category	Research Instrument	Sample Size (N)	Completed Responses (n)	Response Rate (%)
Tourists	Questionnaire	115	93	80.9
Local Community Members	Questionnaire	375	304	81.1
Heritage Site Officials	Interview	15	11	73.3
Overall		505	408	80.8

4.2 Demographic Characteristics of Respondents

Tourists and members of the local community were among the respondents, and their profiles provide the background information required to evaluate the study's conclusions. An overview of the data, including key factors comprising age, gender, and occupation, is provided in Table 4.2. The analysis of demographic data revealed distinct profiles for the tourist and local community respondent groups. The age distribution of participants varied between the two samples. The largest cohort among tourists was the 26–35 age group, which constituted 34.4% (n = 32) of the tourist sample. Similarly, the 26–35 age group was the most represented among local community members, accounting for 27.0% (n = 82) of those respondents. The gender distribution was relatively balanced across both groups. Among tourists, 51.6% (n = 48) were female and 48.4% (n = 45) were male. A similar distribution was observed

among local community members, where 50.3% (n = 153) were male and 49.7% (n = 151) were female, suggesting that the study captured perspectives from both genders without significant bias.

Table 4.2: Demographic Characteristics of Tourists and Local Community Members

Characteristics	Category	Tourists		Locals	
		n	%	n	%
Age Group	18–25 years	9	9.7%	53	17.4%
	26–35 years	32	34.4%	82	27.0%
	36–45 years	28	30.1%	78	25.7%
	46–55 years	16	17.2%	52	17.1%
	56 years and above	8	8.6%	39	12.8%
Gender	Male	45	48.4%	153	50.3%
	Female	48	51.6%	151	49.7%
Last Visit to Site	First time	72	77.4%	—	—
	<1 year ago,	10	10.8%	—	—
	1–2 years ago	6	6.5%	—	—
	3–5 years ago	3	3.2%	—	—
	>5 years ago,	2	2.2%	—	—
Employment Status	Employed	—	—	99	32.6%
	Self-employed	—	—	139	45.7%
	Unemployed	—	—	38	12.5%
	Retired	—	—	28	9.2%

An examination of tourist visitation history indicated that the heritage sites primarily attract new visitors. A substantial majority of tourist respondents (77.4%, n = 72) reported that this was their first visit to Lamu. This finding suggests that the tourism experience in Lamu is largely driven by novelty and initial attraction rather than a high rate of repeat visitation, which has implications for marketing and visitor management strategies aimed at fostering loyalty. The local community residents' occupational profile highlighted a strong reliance on individual enterprise. The largest group of local respondents was self-employed, comprising 45.7% (n = 139) of the sample. This was followed by those in formal employment (32.6%, n = 99). A smaller proportion of the local sample was unemployed (12.5%, n = 38) or retired (9.2%, n = 28). The prevalence of self-employment underscores the entrepreneurial nature of the local economy.

4.3 Adaptive Reuse of Old buildings and Heritage Tourism Sustainability

4.3.1 Heritage Tourism Sustainability

4.3.1.1 Reliability of the Heritage Tourism Sustainability Scale

This scale serves as the primary dependent variable for the study, and this procedure was therefore critical to ensure its items form a reliable and cohesive measure. The analysis confirmed that the 'Heritage Tourism Sustainability' scale possesses excellent internal consistency. The overall Cronbach's Alpha coefficient for the scale was .950, a value that significantly surpasses the .70 benchmark for acceptable reliability. This high coefficient indicates that the items are strongly related and reliably measure the overarching construct of heritage tourism sustainability. The item-level statistics provide additional evidence of the scale's strength. High-adjusted item-total correlations (ranging from .832 to .919) were shown by all five items, indicating that each one successfully adds to the overall scale score. Additionally, the 'Cronbach's Alpha if Item deleted' values showed that the scale's already high reliability would not be enhanced by the removal of a single item. Consequently, all items were retained, and the scale was validated as a highly reliable instrument for the main analysis. The results of the analysis are summarized in Table 4.3.

Table 4.3: Reliability Statistics for the Heritage Tourism Sustainability Scale (N = 49)

Statement	M	SD	Item-Total Correlation	α if Item Deleted
Heritage tourism in Lamu contributes significantly to the sustainability of the local economy.	4.44	0.62	0.919	0.930
The environmental sustainability practices in heritage tourism in Lamu are noticeable and effective.	3.29	0.71	0.847	0.941
Overall, the level of tourist satisfaction with heritage tourism in Lamu Town is indicative of its sustainability.	4.28	0.69	0.850	0.940
Heritage tourism in Lamu effectively promotes and contributes to the social and cultural sustainability of the local community.	4.51	0.62	0.887	0.935
The balance between heritage tourism and the preservation of local culture and traditions is well-maintained in Lamu Town.	3.94	0.75	0.832	0.945

Cronbach's alpha for the full scale = 0.955

Table 4.4 presents the item-level response distributions for the 'Heritage Tourism Sustainability' scale. The findings indicate a strong consensus among respondents that heritage tourism favorably influences Lamu's social-cultural and economic fabric. A vast majority of participants either agreed (42.8%) or strongly agreed (50.4%) that heritage tourism significantly supports the sustainability of the local economy. Similarly, there was overwhelming agreement that heritage tourism promotes social and cultural sustainability, with 35.8% agreeing and 57.4% strongly agreeing. The perception of tourist satisfaction as an indicator of sustainability was also very high, with a combined agreement of 86.4%.

However, perceptions were more varied regarding environmental sustainability and the balance with local traditions. The statement that environmental practices are noticeable and effective received the most mixed reviews; while 41.1% agreed a substantial portion of respondents remained neutral (44.3%) or disagreed (13.9%). Likewise, while a majority (68.3%) agreed that the balance between tourism and the preservation of local traditions is well maintained, a significant percentage (31.7%) remained neutral on this issue, suggesting this is an area of less certainty or consensus among the participants.

Table 4.4: Perceptions on the Contribution of Heritage Tourism to Sustainability in Lamu Town (N = 397)

Statement	SD	D	N	A	SA	Total
Heritage tourism in Lamu contributes significantly to the sustainability of the local economy	–	–	6.8	42.8	50.4	100
The environmental sustainability practices in heritage tourism in Lamu are noticeable and effective	–	13.9	44.3	41.1	0.8	100
Overall, the level of tourist satisfaction with heritage tourism in Lamu is indicative of its sustainability	–	–	13.6	44.6	41.8	100
Heritage tourism in Lamu promotes and contributes to the social and cultural sustainability	–	–	6.8	35.8	57.4	100
The balance between heritage tourism and preservation of local traditions is well-maintained	–	–	31.7	42.6	25.7	100

Key: SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree. Percentages are based on valid responses.

4.3.1.2 Adaptive Reuse of Old Buildings Scale

The reliability analysis for the 'Adaptive Reuse of Old buildings ' scale demonstrated excellent internal consistency. The overall Cronbach's Alpha for the seven-item scale was .95, a value that is substantially higher than the .70 benchmark considered acceptable for research instruments. This indicates that the items collectively form a highly reliable scale for measuring the construct. Further examination of the item-level statistics, as presented in Table 4.8, supports this conclusion. The corrected item-total correlations for all seven items were strong, ranging from .775 to .916. This suggests that each item correlates well with the overall scale score. Furthermore, the 'Cronbach's Alpha if Item Deleted' values indicate that removing any single item would not result in a significant improvement to the scale's reliability. Therefore, all seven items were retained, and the scale was deemed highly reliable for subsequent data analysis. The results of this reliability test are presented in Table 4.5.

Table 4.5: Reliability Statistics for the Adaptive Reuse of Old buildings Scale (N = 49)

Statement	M	SD	Item-Total Correlation	α if Item Deleted
Old houses in Lamu Old Town are converted to preserve their authenticity and historical value.	4.33	0.66	0.916	0.936
Old converted buildings in Lamu Old Town have a well-preserved functionality and usability.	4.04	0.73	0.786	0.947
Accurately replicating historical structures is common practice in Lamu Old Town.	3.45	0.61	0.775	0.948
Old heritage structures in Lamu Old Town are replicated using high quality materials.	4.16	0.69	0.810	0.945
Old buildings in Lamu Old Town are replicated using a high level of artisanship.	4.04	0.76	0.856	0.941
Old buildings in Lamu Old Town are maintained using effective maintenance methods and practices.	4.27	0.73	0.864	0.940
Lamu Old Town has well-established systems for monitoring the conditions of old heritage structures.	3.57	0.65	0.837	0.943
Cronbach's alpha for the full scale = 0.951				

Respondents indicated strong approval for the way old houses are converted in Lamu. An overwhelming majority (93.2%) agreed or strongly agreed that conversions are undertaken to preserve authenticity and historical value. Similarly, 78.6% of participants agreed or strongly agreed that these converted buildings maintain a high degree of functionality and usability. These findings suggest that the primary goal of preserving heritage while ensuring modern relevance is being successfully communicated and perceived.

The findings related to building replicas were more nuanced. While there was strong agreement that replicas are built with high-quality materials (85.6%) and a high level of craftsmanship (77.0%), there was less consensus on whether this is a common practice, with 37.8% of respondents remaining neutral. This suggests that when replication occurs, it is done well, but it may not be the primary conservation strategy.

Respondents expressed high confidence in the maintenance of old buildings, with 86.1% agreeing or strongly agreeing that effective methods are used. However, a significant degree of uncertainty was evident regarding the systems for monitoring these structures, as nearly half of the respondents (48.1%) remained neutral on this topic. This suggests that while the visible outcomes of maintenance are appreciated, the underlying management and monitoring processes are less apparent to the public. Table 4.6 presents the item-level response distributions for the 'Adaptive Reuse of Old buildings' scale.

Table 4.6: Perceptions on Adaptive Reuse of Old buildings in Lamu Old Town (N = 397)

Statement	SD	D	N	A	SA	Total
Old houses in Lamu Old Town are converted to preserve their authenticity and historical value	–	–	6.8	47.9	45.3	100
Old converted buildings in Lamu Old Town have a well-preserved functionality and usability	–	–	21.4	50.4	28.2	100
Accurately replicating historical structures is common practice in Lamu Old Town	–	6.8	37.8	53.4	2.0	100
Old heritage structures in Lamu Old Town are replicated using high-quality materials	–	–	14.4	52.1	33.5	100
Old old buildings in Lamu Old Town are replicated using a high level of craftsmanship	–	–	22.9	45.8	31.2	100
Old buildings in Lamu Old Town are	–	–	13.9	40.8	45.3	100

maintained using effective maintenance methods and practices						
Lamu Old Town has well-established systems for monitoring the conditions of old heritage structures	–	–	48.1	40.8	11.1	100

4.3.2 Contribution of Adaptive Reuse of old buildings and Socio-Cultural Sustainability in Lamu Town

This section presents the analysis of data pertaining to Specific Objective i, which was to evaluate the contribution of adaptive reuse to the social-cultural sustainability of the local community.

4.3.2.1 Reliability of Social-Cultural Sustainability Scale

The 'Social-Cultural Sustainability' scale demonstrated excellent internal consistency. As shown in Table 4.6, the Cronbach's Alpha coefficient for the five-item scale was .958, a value that significantly exceeds the .70 threshold commonly accepted for establishing reliability in social science research. This high coefficient indicates that the items consistently and cohesively measure the same underlying construct. An examination of the item-level statistics further confirms the scale's robustness. All items displayed strong corrected item-total correlations, ranging from .763 to .932, which signifies that each individual item contributes effectively to the total scale score. Moreover, the 'Cronbach's Alpha if Item Deleted' column showed that removing any of the five items would not increase the overall alpha value. Consequently, all items were retained, and the scale was deemed highly reliable for use in subsequent hypothesis testing. The detailed results of this analysis are presented in Table 4.7.

Table 4.7: Reliability Statistics for the Social-Cultural Sustainability Scale (N = 49)

Statement	M	SD	Item-Total Correlation	α if Item Deleted
Heritage tourism, through adaptive reuse, significantly contributes to the preservation of traditional practices in Lamu Old Town.	4.41	0.61	0.913	0.943
Adaptive reuse effectively promotes cultural exchange in Lamu Old Town.	4.42	0.60	0.909	0.944
Adaptive reuse empowers local communities in Lamu Old Town by providing economic opportunities and support.	4.00	0.72	0.763	0.971
Adaptive reuse of old buildings in Lamu Old Town preserves the cultural identity of the local community.	4.51	0.62	0.932	0.939

Adaptive reuse of old buildings in Lamu Old Town positively influences the social fabric of the community, fostering a sense of pride and belonging among community members.	4.53	0.62	0.917	0.942
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Cronbach's alpha for the full scale = 0.932

4.3.2.2 Descriptive, Qualitative, and Observational Findings

To assess the perceived impact of adaptive reuse on the social-cultural sustainability of Lamu Town, the study employed a five-item 'Social-Cultural Sustainability' scale rated on a five-point Likert scale (SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree). Each item was designed to capture a distinct facet of social-cultural well-being, including the preservation of traditional practices, the promotion of cultural exchange, community empowerment, the preservation of cultural identity, and the fostering of community pride. The quantitative data collected from tourists and local residents were subjected to descriptive statistical analysis. This data was then complemented by qualitative data from interviews with heritage site officials and observational data from the five heritage sites to provide triangulation. Table 4.8 presents the item-level descriptive statistics for the 397 respondents.

Table 4.8: Perceived Contribution of Adaptive Reuse of Old buildings to Social-Cultural Sustainability in Lamu Old Town (N = 397)

Statement	SD	D	N	A	SA	Total
Heritage tourism, through adaptive reuse, significantly contributes to the preservation of traditional practices	–	–	6.8	45.8	47.4	100
Adaptive reuse effectively promotes cultural exchange in Lamu Old Town	–	–	6.0	45.6	48.4	100
Adaptive reuse empowers local communities by providing economic opportunities and support	–	–	25.4	48.9	25.7	100
Adaptive reuse of old buildings preserves the cultural identity of the local community	–	–	6.8	35.8	57.4	100
Adaptive reuse positively influences the social fabric, fostering pride and belonging among community members	–	–	6.8	33.5	59.7	100

The descriptive statistics for the 'Social-Cultural Sustainability' scale indicate that respondents perceive adaptive reuse as having a profoundly positive impact on the community's cultural fabric. As detailed in the table above, there was overwhelming agreement on nearly all items. For instance, 93.2% of participants agreed or strongly

agreed that adaptive reuse contributes to the preservation of traditional practices, and 94.0% felt it effectively promotes cultural exchange. The strongest consensus was on its role in fostering community pride, with a combined agreement of 93.2%. The only item with a notable number of neutral responses (25.4%) concerned the empowerment of local communities through economic opportunities, suggesting that while the cultural benefits are clear, the direct economic empowerment aspect is perceived with slightly less certainty.

The qualitative data obtained from heritage site officials provides context for these high levels of agreement, revealing the deliberate strategies employed to ensure cultural integrity. Officials emphasized that community involvement is not an afterthought but a central component of the process, which in turn fosters a sense of ownership and pride.

HSO 002: *Local artisans, elders, and youth are often consulted and employed in reuse projects. This ensures cultural relevance and fosters a sense of ownership among residents.*

HSO 010: *Consulted during planning public participation and this ensures authenticity and acceptance of reuse efforts.*

HSO 004: *All reuse proposals must undergo a Heritage Impact Assessment (HIA), and we refer to detailed architectural conservation guidelines aligned with UNESCO standards.*

These expert accounts were substantiated by direct, on-the-ground observations. Evidence of cultural promotion was visible at Lamu Fort, where a poster advertised an upcoming "Swahili Poetry Night," demonstrating the use of a heritage site for living cultural expression. At Lamu Museum, the observation that the institution "hosts workshops for local schools" confirms a direct mechanism for engaging youth and preserving traditional knowledge. Furthermore, the observation that the Mwana Arafa Jambeni tomb is "clearly maintained by the local community as a place of reverence" provides a powerful, tangible example of community pride and ownership in action. This triangulation of data confirms that the strong positive perceptions of social-

cultural sustainability are rooted in intentional management practices and their visible outcomes within the community.

4.3.2.3 Hypothesis Testing

To test the first hypothesis of the study, a multiple linear regression analysis was performed. This statistical procedure was used to determine whether the dimensions of adaptive reuse including, the conversion of old houses (COH), the building of replicas of old structures (BROS), and the maintenance of old structures and features (MOSF), could significantly predict the social-cultural sustainability of Lamu Town. The analysis therefore tested the null hypothesis which states, the adaptive reuse of old buildings has no statistically significant impact on the social-cultural sustainability of residents in Lamu town, Kenya. The results of this regression analysis are presented in the subsequent Tables 4.9, 4.10, 4.11, and 4.12.

Before conducting the regression analysis, a Pearson correlation was run to examine the relationships between the independent variables (Conversion of Old Houses, Building Replicas, and Maintenance of Structures) and the dependent variable (Social-Cultural Sustainability). This analysis also served as a preliminary check for multicollinearity among the predictor variables. The results of the correlation analysis are presented in Table 4.9.

Table 4.9: Correlations in the Social-Cultural Sustainability Model (N = 397)

Variable	1	2	3	4
1. Social-Cultural Sustainability	—			
2. Conversion of Old Houses	0.934***	—		
3. Building Replicas of Old Structures	0.912***	0.826***	—	
4. Maintenance of Old Structures and Features	0.894***	0.923***	0.829***	—

Pearson correlation coefficients reported. *** $p < 0.001$ (1-tailed)

The results indicate that all three dimensions of adaptive reuse have a very strong, positive, and statistically significant correlation with social-cultural sustainability. The strongest relationship was observed between the conversion of old houses and social-cultural sustainability ($r = .934, p < .001$). The building of replicas ($r = .912, p < .001$) and the maintenance of structures ($r = .894, p < .001$) also demonstrated very strong positive correlations. These findings suggest that higher respondent agreement with

the positive implementation of each adaptive reuse dimension is associated with higher perceived social-cultural sustainability.

The analysis also revealed very strong, positive, and significant correlations among the independent variables themselves. The correlation between the conversion of old houses and the maintenance of structures was particularly high ($r = .923, p < .001$). The correlations between conversion and replicas ($r = .826, p < .001$) and between maintenance and replicas ($r = .829, p < .001$) were also very strong. While these strong inter-correlations are expected, as the dimensions all measure the broader construct of adaptive reuse, the high coefficients (particularly those $> .90$) indicate a potential for multicollinearity in the subsequent regression model. This was monitored by examining the Variance Inflation Factor (VIF) statistics in the regression output.

The results of the multiple linear regression are presented in Table 4.9. The model summary reveals that the three dimensions of adaptive reuse; conversion of old houses, building of replicas, and maintenance of structures, collectively serve as a very strong predictor of social-cultural sustainability. The multiple correlation coefficient ($R = .967$) indicates a very strong positive linear relationship between the predictor variables and the dependent variable.

Table 4.10: Model Summary for Multiple Linear Regression Predicting Social-Cultural Sustainability

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate	R ² Change	F Change	df ₁	df ₂	Sig. F Change
1	0.967	0.934	0.934	0.15144	0.934	1867.76	3	393	<0.001

Predictors: Conversion of Old Houses, Building Replicas of Old Structures, and Maintenance of Old Structures and Features. Dependent variable: Social-Cultural Sustainability.

The coefficient of determination ($R^2 = .934$) indicates that the model, including all three independent variables, explains 93.4% of the variance in social-cultural sustainability. The adjusted R^2 value, which accounts for the number of predictors in the model, is also .934, confirming the model's strong explanatory power. The overall regression model was found to be statistically significant, $F(3, 393) = 1867.76, p$

$< .001$. This result indicates that the combination of the three adaptive reuse dimensions significantly predicts the social-cultural sustainability of Lamu Old Town.

The analysis of variance (ANOVA) was conducted to assess the overall statistical significance of the regression model. The results, presented in Table 4.11, confirm that the model is a significant predictor of social-cultural sustainability.

Table 4.11: ANOVA Summary for the Regression Model Predicting Social-Cultural Sustainability

Source	SS	df	MS	F	p
Regression	128.504	3	42.835	1867.76	< 0.001
Residual	9.013	393	0.023		
Total	137.517	396			

Predictors: Conversion of Old Houses, Building Replicas of Old Structures, Maintenance of Old Structures and Features. Dependent variable: Social-Cultural Sustainability.

The F-statistic was found to be significant, $F(3, 393) = 1867.76, p < .001$. This result indicates that the combination of the three independent variables; conversion of old houses, building of replicas, and maintenance of structures, accounts for a statistically significant amount of the variation in the dependent variable. The model therefore provides a significantly better fit to the data than a model containing no predictors.

The individual contributions of each predictor variable to the model were examined, with the results detailed in Table 4.12. The analysis indicates that two of the three dimensions of adaptive reuse were statistically significant predictors of social-cultural sustainability.

Table 4.12: Regression Coefficients for the Prediction of Social-Cultural Sustainability

Predictor	B	SE B	β	t	p
(Constant)	0.366	0.055	—	6.62	< 0.001
Conversion of Old Houses	0.543	0.034	0.557	15.95	< 0.001
Building Replicas of Old Structures	0.421	0.023	0.438	18.21	< 0.001
Maintenance of Old Structures and Features	0.015	0.032	0.017	0.48	0.633

The results show that the 'Conversion of Old Houses' was a strong, positive, and statistically significant predictor of social-cultural sustainability ($B = 0.543, p < .001$). This indicates that for each one-unit increase in positive perception of how old houses are converted, there is a corresponding 0.543-unit increase in perceived social-cultural sustainability, holding other variables constant. Similarly, the 'Building Replicas of Old Structures' was also found to be a significant positive predictor ($B = 0.421, p < .001$). In contrast, the 'Maintenance of Old Structures and Features' was not a statistically significant predictor in the model ($B = 0.015, p = .633$). Although the descriptive statistics showed that respondents view maintenance positively, its unique contribution to predicting social-cultural sustainability was not significant when considered alongside the other two, more powerful predictors. This is likely due to the high multicollinearity observed between the maintenance and conversion variables ($r = .923$), suggesting they capture a large degree of shared variance. An examination of the standardized beta coefficients (β) reveals the relative importance of the significant predictors. The 'Conversion of Old Houses' ($\beta = .557$) had the strongest unique contribution to explaining the variance in social-cultural sustainability, followed closely by the 'Building Replicas of Old Structures' ($\beta = .438$).

In sum, the multiple linear regression analysis revealed that the dimensions of adaptive reuse collectively have a very strong and statistically significant impact on social-cultural sustainability, $F(3, 393) = 1867.76, p < .001$. The model accounted for 93.4% of the variance in the dependent variable. An examination of the individual predictors showed that the 'Conversion of Old Houses' and the 'Building Replicas of Old Structures' were both highly significant positive predictors of social-cultural sustainability. Given that the overall model and two of its three components were found to be statistically significant, the null hypothesis (H_0), which stated that the adaptive reuse of old buildings has no statistically significant impact on the social-cultural sustainability of residents in Lamu town, is rejected. The evidence strongly suggests that adaptive reuse practices are a significant positive determinant of social-cultural sustainability in this context.

4.3.2.4 Discussion of Results of Contribution of Adaptive Reuse of old buildings and Socio-Cultural Sustainability in Lamu Town

The first objective of this study was to evaluate the impact of adaptive reuse of old buildings on the social-cultural sustainability of residents in Lamu Town. The findings from the mixed-methods analysis provide compelling evidence to reject the null hypothesis (H01), demonstrating that adaptive reuse has a strong, positive, and statistically significant impact on the community's social-cultural well-being. This conclusion is consistent with the body of literature that identifies adaptive reuse as a vital strategy for reinforcing community identity and preserving the intangible values embedded within historical structures (Mısırlısoy and Günçe, 2021). The study's results, however, move beyond this general assertion to illuminate the specific mechanisms through which this positive impact is achieved in the unique context of Lamu.

The descriptive statistics revealed an overwhelmingly positive perception among respondents, with over 93% agreeing that adaptive reuse contributes to preserving traditional practices and promoting cultural exchange. This widespread public approval suggests that the outcomes of these projects are not only successful but also highly visible and deeply resonant with both residents and tourists. The qualitative data from heritage site officials explains that this success is not accidental but is the result of a deliberate and inclusive management philosophy. The emphasis on deep community involvement, as articulated by one official who stated, "Local artisans, elders, and youth are often consulted and employed in reuse projects... [to ensure] cultural relevance and a sense of ownership" (HSO 002), is a practical application of the principles advocated by Pyke *et al.* (2018). They argue that such stakeholder engagement is fundamental to building community resilience. In Lamu, this engagement appears to be particularly effective because it is culturally specific, prioritizing the knowledge of elders and the skills of local artisans, thereby reinforcing the very traditions it seeks to preserve. This was substantiated by on-the-ground observations, such as the advertisement for a "Swahili Poetry Night" at Lamu Fort, which shows that these heritage sites are not merely preserved artifacts but are actively programmed as dynamic centers for living culture.

The multiple linear regression analysis provided a more granular understanding of this relationship by identifying which specific adaptive reuse practices have the most significant impact on social-cultural sustainability. The analysis revealed that the 'Conversion of Old Houses' was the most powerful predictor ($\beta = .557$). This finding strongly supports the framework proposed by Tu (2020), which suggests that the tangible act of preserving and thoughtfully repurposing the core architectural fabric of a place is what most powerfully enhances its cultural value and attractiveness. The 'Building Replicas of Old Structures' was also a significant predictor ($\beta = .438$). When triangulated with the observational data showing that replicas are rare but of high quality (e.g., the Swahili dhow at Lamu Museum), this suggests that even limited, well-executed replications can significantly contribute to the cultural narrative and perceived authenticity of the heritage experience, a point supported by Hassan (2015).

Perhaps the most insightful finding from the regression was the non-significance of 'Maintenance of Old Structures and Features' as a unique predictor, despite its strong positive correlation with the dependent variable. This does not diminish the importance of maintenance; rather, its statistical influence was likely absorbed by the more powerful 'Conversion' variable due to high multicollinearity ($r = .923$). This suggests a psychological dimension to public perception: the transformative and visible act of converting a decaying building into a vibrant new space (a hotel, a museum) tells a powerful story of renewal that captures the public imagination. Maintenance, while critical, is perceived as an expected, background activity—a necessary condition for success, but not the primary driver of the perceived cultural revitalization.

These findings strongly validate the study's theoretical underpinnings. The central role of community engagement and the resulting positive social outcomes align perfectly with the VICE model's emphasis on the "Community" as a fundamental pillar of sustainable heritage tourism (van Niekerk and Coetzee, 2011). The evidence from Lamu demonstrates a successful application of this pillar, where the community is positioned as an active participant and custodian of heritage, not merely a passive host. Furthermore, the findings provide a compelling case study for Butler's (1980) Theory of Sustainable Development, illustrating how a heritage destination can navigate its

life cycle towards a stage of renewal and rejuvenation by actively managing the social dimension of tourism. By balancing conservation with community needs, as highlighted by Imon (2017), Lamu avoids the potential pitfalls of stagnation and decline. In conclusion, the convergence of quantitative, qualitative, and observational data provides robust evidence that adaptive reuse in Lamu is a powerful socio-cultural process. Its success is attributable to an approach that treats heritage not just as a collection of buildings to be technically preserved, but also as a living entity to be sustained through a collaborative, inclusive, and culturally sensitive partnership with its community.

When compared with Lamu old town, these findings align with reality of the site. Adaptive reuse of old old buildings aligns with the management context of UNESCO, World Heritage management plan under which it is conserved. This drive towards well converted and replicated old buildings which portray the perceived authenticity. Lamu, being the oldest and best-preserved Swahili settlement, makes the conversions of old old buildings legible and valued by both locals and residents. The tourism policy and the new tourism strategy push for product diversification and heritage as pillars post-covid, aligning with community engagement. (Tourism. Go.ke, 2022).

4.3.3 Contribution of Adaptive Reuse of Old Buildings on Local Economic Sustainability in Lamu Town

This section presents the analysis of data pertaining to Specific Objective ii, which was to assess the contribution of adaptive reuse of old buildings to local economic sustainability generated by heritage tourism in Lamu town, Kenya.

4.3.3.1 Reliability of the Local Economic Sustainability Scale

The 'Local Economic Sustainability' scale demonstrated high internal consistency. The overall Cronbach's Alpha coefficient for the scale was .916, a value that substantially exceeds the .70 threshold recommended for establishing scale reliability. This indicates that the five items cohesively measure the same underlying economic construct. The item-level statistics further support the scale's reliability. The corrected item-total correlations were all strong, ranging from .755 to .868, which confirms that each item contributes significantly to the overall scale score. Furthermore, the

'Cronbach's Alpha if Item Deleted' values showed that removing any single item would not improve the scale's high reliability. Therefore, all items were retained, and the scale was confirmed to be a reliable instrument for assessing the economic dimension of heritage tourism sustainability. The results of the reliability test are presented in Table 4.13 below.

Table 4.13: Reliability Statistics for the Local Economic Sustainability Scale (N = 49)

Statement	M	SD	Item-Total Correlation	α if Item Deleted
The adaptive reuse of old buildings in Lamu significantly contributes to job creation in Lamu.	4.37	0.64	0.801	0.897
Visitor spending as a result of heritage tourism has a positive impact on the local economy of Lamu Town.	4.59	0.54	0.755	0.910
The revenue generated from heritage tourism is appropriately invested in the conservation of heritage sites in Lamu, which stimulates economic development in the town.	3.53	0.94	0.868	0.883
The adaptive reuse of old buildings in Lamu Old Town promotes the development of infrastructure and services that benefit the local economy.	4.22	0.71	0.825	0.889
Economic benefits from the adaptive reuse of old buildings are equitably distributed among various segments of the local community in Lamu.	3.20	0.89	0.785	0.901

Cronbach's alpha for the full scale = 0.916

4.3.3.2 Descriptive, Qualitative, and Observational Findings

To assess the perceived impact of adaptive reuse on the local economy of Lamu Town, the study employed a five-item 'Local Economic Sustainability' scale rated on a five-point Likert scale (SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree). Each item was designed to capture a distinct facet of economic impact, including job creation, the effect of visitor spending, investment in conservation, infrastructure development, and the equitable distribution of economic benefits. The quantitative data collected from the survey respondents were subjected to descriptive statistical analysis. This data was then triangulated with qualitative

findings from interviews with heritage site officials and with observational data from the five heritage sites to provide a comprehensive analysis. Table 4.14 presents the item-level descriptive statistics for the 397 respondents.

Table 4.14: Perceptions of Economic Sustainability through Adaptive Reuse of Old buildings in Lamu Old Town (N = 397)

Statement	SD	D	N	A	SA	Total
The adaptive reuse of old buildings in Lamu significantly contributes to job creation.	–	–	6.0	45.3	48.6	100.0
Visitor spending from heritage tourism has a positive impact on the local economy.	–	–	–	33.5	66.5	100.0
Revenue from heritage tourism is appropriately invested in conservation and stimulates development.	–	13.6	33.8	36.8	15.9	100.0
Adaptive reuse promotes infrastructure and services that benefit the local economy.	–	–	13.6	46.1	40.3	100.0
Economic benefits from adaptive reuse are equitably distributed across local community segments.	–	21.4	43.6	28.0	7.1	100.0

The descriptive statistics for the 'Local Economic Sustainability' scale revealed a generally positive perception of the economic impacts of adaptive reuse, though with notable areas of uncertainty. As detailed in Table 4.14, respondents overwhelmingly agreed that adaptive reuse contributes to job creation (93.9%) and that visitor spending has a positive impact on the local economy (100%). A strong majority (86.4%) also agreed that these projects promote beneficial infrastructure and services. However, perceptions were significantly more divided regarding the management and distribution of these economic benefits. A substantial portion of respondents remained neutral (33.8%) or disagreed (13.6%) that tourism revenue is appropriately reinvested. Most notably, the issue of equitable distribution of benefits was met with the most skepticism, with 43.6% remaining neutral and 21.4% disagreeing that benefits are shared fairly across the community.

The qualitative data from heritage site officials provides important context for these findings, highlighting both the successes in job creation and the underlying challenges in financial management and equity.

HSO 007: *"Increased tourism brought about by adaptive reuse is creating jobs for the local communities..."*

HSO 004: *"Yes, we've seen: Increased employment, especially for local artisans and construction workers. Growth in cultural tourism and local hospitality ventures."*

HSO 008: *"Funding and lack of proper government support and corruption"*

These expert accounts, which confirm the creation of jobs while alluding to systemic financial challenges, were substantiated through direct observation. At Lamu Fort and Lamu Museum, a vibrant economic ecosystem was evident, with numerous local businesses like cafes and curio shops catering to a steady stream of tourists. The employment of local residents was also directly observed in roles ranging from tour guides to ticket agents. At Takwa Ruins, the primary economic beneficiaries were clearly the local boat operators providing transport to the site. This on-the-ground evidence confirms the strong positive perceptions regarding job creation and visitor spending. However, the observational data could not verify the more complex, behind-the-scenes issues of revenue reinvestment or equitable distribution, aligning with the uncertainty and skepticism reflected in the quantitative survey data on these specific points.

4.3.3.3 Hypothesis Testing

To test the second hypothesis of the study, a multiple linear regression analysis was conducted. This statistical procedure was employed to determine if the dimensions of adaptive reuse, namely the conversion of old houses (COH), the building of replicas of old structures (BROS), and the maintenance of old structures and features (MOSF), are significant predictors of local economic sustainability in Lamu Town. The analysis was therefore designed to test the following null hypothesis: H02: The

adaptive reuse of old buildings has no statistically significant impact on the local economy of Lamu town, Kenya. The results of this regression analysis are detailed in the tables that follow.

A preliminary Pearson correlation analysis was conducted to assess the relationships between the three dimensions of adaptive reuse and local economic sustainability, and to check for potential multicollinearity among the predictors. The results of this analysis are presented in Table 4.15.

Table 4.15: Correlations Among Predictors and Dependent Variable (N = 397)

Variable	1	2	3	4
1. Local Economy Sustainability	—			
2. Conversion of Old Houses	0.890**	—		
3. Building Replicas of Old Structures	0.935**	0.826**	—	
4. Maintenance of Old Structures and Features	0.880**	0.923**	0.829**	—

Note: All correlations are significant at the 0.01 level (1-tailed). $p < 0.01$.

The results indicate that all three independent variables have a very strong, positive, and statistically significant correlation with local economic sustainability ($p < .01$). The strongest relationship was observed with the 'Building Replicas of Old Structures' dimension ($r = .935$). The analysis also revealed very strong, significant correlations among the predictor variables themselves, particularly between 'Conversion of Old Houses' and 'Maintenance of Old Structures and Features' ($r = .923$), indicating a high potential for multicollinearity in the regression model.

The model summary for the multiple linear regression is presented in Table 4.16. The results show that the adaptive reuse dimensions are a very strong predictor of local economic sustainability.

Table 4.16: Model Summary for Predicting Local Economy Sustainability (N = 397)

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate	R ² Change	F Change	df ₁	df ₂	Sig.
1	0.959	0.921	0.920	0.179	0.921	1516.90	3	393	< 0.001

Note: Predictors: Conversion of Old Houses, Building Replicas of Old Structures, Maintenance of Old Structures and Features.

The multiple correlation coefficient ($R = .959$) indicates a very strong positive relationship between the set of predictor variables and the dependent variable. The coefficient of determination ($R^2 = .921$) reveals that the model explains 92.1% of the variance in local economic sustainability. The adjusted R^2 value of .920 confirms the model's substantial explanatory power. The overall model was found to be statistically significant ($p < .001$), indicating that the combination of the three adaptive reuse dimensions significantly predicts local economic sustainability.

The analysis of variance (ANOVA) was performed to test the overall significance of the regression model. The results, detailed in Table 4.17, confirm that the model provides a statistically significant prediction of local economic sustainability.

Table 4.17: ANOVA Summary for the Regression Model

Source	SS	df	MS	F	p
Regression	144.99	3	48.33	1516.90	< 0.001
Residual	12.52	393	0.32		
Total	157.51	396			

Note: Dependent variable: Local Economy Sustainability.

Predictors: Conversion of Old Houses, Building Replicas of Old Structures, Maintenance of Old Structures and Features.

The F-statistic for the model was significant, $F(3, 393) = 1516.90$, $p < .001$. This result indicates that using the adaptive reuse predictors provides a significantly better estimation of local economic sustainability than using the mean as a prediction. Therefore, the overall regression model is statistically significant and provides a good fit for the data. The individual contributions of each predictor variable to the model were examined to determine their unique impact on local economic sustainability. The regression coefficients, presented in Table 4.18, show that all three dimensions of adaptive reuse were statistically significant predictors.

Table 4.18: Regression Coefficients for Predicting Local Economy Sustainability

Predictor	B	SE	β	t	p
(Constant)	-0.116	0.065	—	-1.783	0.075
Conversion of Old Houses	0.290	0.040	0.278	7.240	< 0.001
Building Replicas of Old Structures	0.619	0.027	0.603	22.736	< 0.001
Maintenance of Old Structures and Features	0.120	0.124	0.124	3.197	0.002

Note. Dependent variable: Local Economy Sustainability.

The results show that 'Building Replicas of Old Structures' was the most significant predictor ($B = 0.619$, $p < .001$), followed by 'Conversion of Old Houses' ($B = 0.290$, $p < .001$). The 'Maintenance of Old Structures and Features' was also a statistically significant positive predictor, though its contribution was smaller ($B = 0.120$, $p = .002$). An examination of the standardized beta coefficients confirms that 'Building Replicas' ($\beta = .603$) had the largest unique contribution to explaining the variance in local economic sustainability.

According to the results of the multiple linear regression analysis, the local economy is significantly impacted by the adaptive reuse dimensions ($F(3, 393) = 1516.90$, $p < .001$). It was discovered that the model could explain 92.1% of the variation in local economic sustainability. Individual predictors analysis revealed that all three dimensions—'Building Replicas of Old Structures', 'Conversion of Old Houses', and 'Maintenance of Old Structures and Features'—were statistically significant positive predictors. The null hypothesis (H02), according to which the adaptive reuse of historic buildings has no statistically significant impact on the local economy of Lamu town, is rejected because the entire model and all of its predictor variables were found to be significant. The conclusion that adaptive reuse methods are a substantial positive factor of local economic sustainability is strongly supported by the research.

4.3.3.4 Discussion of Results of Contribution of Adaptive Reuse of Old Buildings on Local Economic Sustainability in Lamu Town

This study's second goal was to evaluate the impact of adaptive reuse of old buildings on the local economy of Lamu Town. With a strong, positive, and statistically significant correlation between adaptive reuse techniques and local economic sustainability, the study offers a solid foundation for rejecting the null hypothesis (H02). Regression analysis which explained 92.1% of the variation in economic result, underscores centrality of adaptive reuse as an engine for economic growth in this heritage context. This finding is broadly consistent with the literature, which identifies adaptive reuse as a key driver for revitalizing neighborhoods and stimulating local economies (Tan *et al.*, 2018a). However, the triangulated data from this study offers a more textured understanding, distinguishing between the highly visible, direct

economic benefits and the more complex, less transparent issues of financial management and equity.

The descriptive statistics revealed a near-unanimous consensus on the most direct economic impacts. An overwhelming majority of respondents agreed that adaptive reuse contributes to job creation (93.9%) and that visitor spending has a positive impact (100%). These findings align perfectly with studies by McGrath *et al.* (2016) and Zeng and Xiao-jun (2023), who found that heritage tourism is a significant source of employment and economic growth. The qualitative data from heritage officials in Lamu provided a clear narrative for these statistics, explaining that the benefits are multi-layered, encompassing not just direct jobs but also the growth of ancillary businesses. As one official stated, there has been "Increased employment, especially for local artisans and construction workers. Growth in cultural tourism and local hospitality ventures" (HSO 004). This was not just an expert opinion but a visible reality, as confirmed by the observational data. The ecosystem of cafes, shops, and tour guide offices surrounding Lamu Fort and the reliance of boat operators on tourist traffic to Takwa Ruins are tangible manifestations of this economic vitality.

However, the study also uncovered significant public skepticism regarding the less visible aspects of economic sustainability. Substantial portions of respondents were neutral or disagreed that tourism revenue is appropriately reinvested (47.4%) and that economic benefits are equitably distributed (65.0%). This finding is critical, as it highlights a potential disconnect between the generation of wealth and its management and distribution. This doubt originates from the concerns raised by heritage officials regarding systemic issues such as "Funding and lack of proper government support and corruption" (HSO 008). It suggests that while the "front-stage" economic activities are thriving, the "back-stage" financial flows are perceived as opaque or inequitable. This aligns with the critique of Butler's (1980) TALC model by Maguigad *et al.* (2015), who argued that the theory can overlook the crucial political and governance aspects of tourism development that are essential for ensuring fair benefits for local communities.

The multiple linear regression analysis provided further insight by identifying which adaptive reuse practices are the most potent economic drivers. All three dimensions were found to be significant predictors by the research, but the 'Building Replicas of Old Structures' ($\beta = .603$) had the strongest unique impact. This is a particularly insightful finding. While observations confirmed that replicas are rare, their strong predictive power suggests that high-quality, culturally significant additions (like the dhow in Lamu Museum) may act as powerful attractions that enhance the perceived value and authenticity of the heritage experience, thereby encouraging greater tourist spending, a phenomenon noted by Howey (2020). The 'Conversion of Old Houses' ($\beta = .278$) was also a strong predictor, supporting the work of Günçe and Mısırlısoy (2019), who found that converting old buildings for commercial and cultural uses is a highly successful economic strategy.

The findings for this objective strongly validate the study's theoretical frameworks while also highlighting their limitations. The results affirm the VICE model's emphasis on the 'Investor/Industry' and 'Community' as pillars of sustainability (van Niekerk and Coetzee, 2011). The clear economic growth and return on investment speak to the success of the industry, while the employment of locals supports the community pillar. However, the concerns over equity also reflect the potential for conflicting interests among stakeholders, a complexity that Mair and Weber (2019) noted the model might oversimplify. Similarly, the findings support Butler's (1980) Theory of Sustainable Development by positioning Lamu in a successful 'renewal' or 'rejuvenation' phase, where heritage is leveraged for positive economic outcomes. Yet, the skepticism around benefit distribution serves as a critical reminder that sustainable development must encompass social equity to be truly successful.

Adaptive reuse is a strong driver of local economic sustainability in Lamu, according to the research. It successfully generates employment, stimulates local businesses, and enhances the town's economic vitality. However, the results indicate that more focus has to be placed on the fair distribution of benefits and the transparency of income reinvestment if this economic success is to be genuinely sustainable over the long run. Addressing the public's skepticism in these areas is crucial for ensuring that the economic prosperity generated by heritage tourism is inclusive and contributes to the

well-being of the entire community, not just a select few. The Lamu tourism association packages cultural experiences, tourism adaptive reuse products in to community anchored products which the community sell to earn income. (Lamu tourism brochure,2019) the Kenya tourism board and Lamu county tourism boards collaborate towards destination management, a useful strategy that markets Lamu festivals, house museums and crafts attracting more revenues. Equitable sharing of funds is a main challenge; the Kenya's 2021-2025 strategy involves building of domestic market pipelines and digital storytelling so that global shocks do not fully absorb community benefits.

4.3.4 Contribution of Adaptive Reuse of Old Buildings on Tourist Satisfaction in Lamu Town

This section presents the analysis of data pertaining to Specific Objective iii, which was to determine the contribution of adaptive reuse of old buildings to tourist satisfaction and experience as a measure of heritage tourism sustainability in Lamu town, Kenya.

4.3.4.1 Reliability of the Tourist Satisfaction Scale

The analysis of the ten-item scale yielded a Cronbach's Alpha of 0.947, which is considered acceptable. The results are summarized in Table 4.19.

Table 4.19: Reliability Statistics for the Tourist Satisfaction Scale (N = 49)

Statement	M	SD	Item-Total Correlation	α if Item Deleted
My experiences as a tourist in Lamu Old Town before the adaptive reuse of old buildings was culturally enriching.	3.54	0.51	0.840	0.939
The accessibility of heritage sites before the adaptive reuse influenced my overall satisfaction as a visitor.	3.60	0.49	0.788	0.941
Overall, my satisfaction with the heritage tourism experience in Lamu Old Town was influenced by the state of old buildings before adaptive reuse.	3.76	0.70	0.738	0.947
The integration of local culture into the heritage tourism experience was noticeable before the adaptive reuse of old buildings .	3.18	0.47	0.596	0.949
My expectations as a heritage tourist in Lamu Old Town were met/exceeded before the adaptive reuse of old buildings .	3.53	0.62	0.808	0.941

The adaptive reuse of old buildings in Lamu Old Town contributed to my cultural enrichment as a tourist.	4.60	0.49	0.857	0.939
The accessibility of heritage sites after adaptive reuse positively influenced my overall satisfaction as a visitor.	4.77	0.42	0.727	0.944
The adaptive reuse of old old buildings enhanced my overall satisfaction with the heritage tourism experience in Lamu.	4.59	0.49	0.866	0.938
The integration of local culture into the adaptive reuse of old buildings positively influenced my heritage tourism experience.	4.68	0.40	0.813	0.940
The adaptive reuse of old buildings in Lamu Old Town met/exceeded my expectations as a heritage tourist.	4.50	0.47	0.866	0.938

Cronbach's alpha for the full scale = 0.947

4.3.4.2 Descriptive, Qualitative, and Observational Findings

The descriptive statistics for the 'Tourist Satisfaction' scale revealed a marked difference in perceptions when comparing experiences before and after the implementation of adaptive reuse. As detailed in Table 4.20, the findings from the 93 tourist respondents show a positive shift in satisfaction, cultural enrichment, and the overall quality of the visitor experience. The data related to the period before adaptive reuse is characterized by a high degree of neutrality. For instance, a majority of respondents were neutral on whether their expectations were met (53.8%) and whether the experience was culturally enriching (46.2%). Most notably, 75.3% of tourists were neutral regarding the integration of local culture into the tourism experience before the changes, suggesting that the experience, while perhaps pleasant, may have lacked depth and distinctiveness.

In contrast, the responses concerning the experience after adaptive reuse show overwhelming agreement. All respondents (100%) agreed or strongly agreed that adaptive reuse contributed to their cultural enrichment, enhanced their overall satisfaction, and positively influenced their experience through better integration of local culture. Furthermore, 100% of tourists agreed that the accessibility of heritage sites after adaptive reuse positively influenced their satisfaction, and 100% felt that the new experience met or exceeded their expectations. This dramatic shift from neutrality to strong agreement indicates that the adaptive reuse initiatives have been

perceived as a transformative improvement to the tourist experience in Lamu. Table 4.20 presents the item-level descriptive statistics for the 93 tourist respondents.

Table 4.20: Tourist Satisfaction with Heritage Sites in Lamu Old Town Before and After Adaptive Reuse (N = 93)

Statement	SD	D	N	A	SA	Total
1. My experiences as a tourist in Lamu Old Town before the adaptive reuse of old buildings was culturally enriching.	–	–	46.2	53.8	–	100.0
2. The accessibility of heritage sites before the adaptive reuse influenced my overall satisfaction as a visitor.	–	–	40.9	59.1	–	100.0
3. My satisfaction with the heritage tourism experience was influenced by the state of buildings before reuse.	–	–	38.7	46.2	15.1	100.0
4. The integration of local culture into the experience was noticeable before adaptive reuse.	–	3.2	75.3	21.5	–	100.0
5. My expectations were met/exceeded before the adaptive reuse of buildings .	–	–	53.8	39.8	6.5	100.0
6. Adaptive reuse of buildings contributed to my cultural enrichment as a tourist.	–	–	–	39.8	60.2	100.0
7. Accessibility of heritage sites after adaptive reuse positively influenced my satisfaction.	–	–	–	22.6	77.4	100.0
8. Adaptive reuse enhanced my overall satisfaction with the heritage tourism experience.	–	–	–	32.3	67.7	100.0
9. Integration of local culture into adaptive reuse influenced my experience positively.	–	–	–	40.9	59.1	100.0
10. Adaptive reuse met/exceeded my expectations as a heritage tourist.	–	–	–	32.3	67.7	100.0

Note: SD = Strongly Disagree; D = Disagree; N = Neutral; A = Agree; SA = Strongly Agree. Missing data = 76.6% (n = 304); valid responses = 23.4% (n = 93).

The qualitative data from heritage site officials provides a clear rationale for this significant increase in tourist satisfaction, linking it directly to improvements in amenities, accessibility, and the quality of interpretation.

HSO 008: *"...the old lamu town most of the town buildings has been adapted and it creating better living conditions for the local people as well as better accommodations for the tourists."*

HSO 010: *"Lamu Fort's adaptive reuse into a museum and cultural center is a key example. it gives both educational and Aesthetic benefit."*

HSO 009: *"New signage in Swahili and English educate tourists without distorting the heritage."*

These expert accounts were directly substantiated by on-the-ground observations. The high level of tourist satisfaction was reflected in the "High and steady flow of both international and local tourists" noted at Lamu Fort. Improvements to amenities were confirmed by the presence of "Clean restrooms and an information desk" at the Fort and "Well-maintained restrooms" at the Lamu Museum. The enhanced educational experience mentioned by officials was evidenced by the "Excellent signage at the entrance and within key areas" of the Fort. Finally, the deeper cultural integration was observed through the "Local guides...actively engaging with tourists, explaining cultural nuances," providing a richer, more satisfying visitor experience.

4.3.4.3 Hypothesis Testing

The mean satisfaction score for the tourist experience after the implementation of adaptive reuse ($M = 4.66$, $SD = 0.429$) was substantially higher than the mean score for the experience before adaptive reuse ($M = 3.52$, $SD = 0.472$). This initial comparison suggests a considerable positive change in tourist satisfaction following the adaptive reuse initiatives. The descriptive statistics for the tourist experience scale, presented in Table 4.21, show a clear difference in the mean satisfaction scores between the two conditions.

Table 4.21: Descriptive Statistics for Tourist Experience Before and After Adaptive Reuse of Old buildings (N = 93)

Experience Condition	M	SD	SE
Before Adaptive Reuse of Old buildings	3.52	0.472	0.049
After Adaptive Reuse of Old buildings	4.66	0.429	0.044

Note: M = Mean; SD = Standard Deviation; SE = Standard Error of the Mean.

A paired-samples correlation was conducted to determine the relationship between tourist satisfaction scores before and after adaptive reuse. The results are presented in Table 4.22.

Table 4.22: Paired Samples Correlation Between Tourist Experience Before and After Adaptive Reuse (N = 93)

Pair	r	p
Before and After Adaptive Reuse Experience Scores	0.797	< 0.001

Note: Pearson correlation (r) is significant at $p < 0.001$.

The analysis revealed a strong, positive, and statistically significant correlation between the two sets of scores, $r(91) = 0.797$, $p < 0.001$. This indicates that respondents who reported higher levels of satisfaction before adaptive reuse also tended to report higher levels of satisfaction after, confirming that the two measures are strongly related as expected.

The paired-samples t-test was conducted to formally test for a significant difference between the mean satisfaction scores. The results of this test are detailed in Table 4.23.

Table 4.23: Paired Samples t-Test Comparing Tourist Experience Before and After Adaptive Reuse (N = 93)

Measure	M	SD	SE	95% CI	95% CI	t	df	p
	Difference			(Lower)	(Upper)			
Before – After Experience Scores	-5.72	1.45	0.15	-6.02	-5.42	-38.11	92	< 0.001

Note: The mean difference is significant at the $p < .001$ level.

The results indicate that there was a statistically significant mean difference of -5.72 between the before and after conditions, $t(92) = -38.11$, $p < .001$. The 95% confidence interval for the mean difference did not contain zero, ranging from -6.02

to -5.42, which further confirms the significance of the finding. This result shows that the increase in tourist satisfaction scores from before adaptive reuse to after adaptive reuse was statistically significant. In summary, the paired-samples t-test revealed a statistically significant increase in tourist satisfaction scores from the period before adaptive reuse ($M = 17.60$, $SD = 2.36$) to the period after adaptive reuse ($M = 23.32$, $SD = 2.14$). The analysis confirmed that this improvement was not due to chance, $t(92) = -38.11$, $p < .001$. This result provides strong evidence against the null hypothesis. Therefore, the null hypothesis (H03), which stated that the adaptive reuse of old buildings has no statistically significant impact on tourist satisfaction in Lamu town, is rejected. The findings strongly support the conclusion that the adaptive reuse initiatives have had a significant and positive impact on enhancing the tourist experience in Lamu Old Town.

4.3.4.4 Discussion of Results of Adaptive Reuse of Old Buildings on Tourist Satisfaction in Lamu Town

The third objective of this study was to determine the impact of adaptive reuse of old buildings on the satisfaction of tourists visiting Lamu Town. The analysis provides a definitive basis for the rejection of the null hypothesis (H03), with the paired-samples t-test revealing a statistically significant and substantial increase in tourist satisfaction following the implementation of adaptive reuse initiatives. This finding is not merely a statistical artifact; it represents a fundamental transformation of the visitor experience, a conclusion strongly supported by the triangulation of descriptive, qualitative, and observational data. The results align closely with the literature that identifies the quality of heritage sites as a primary driver of tourist satisfaction, but this study provides specific insights into the multifaceted nature of this improvement in the context of Lamu.

The descriptive statistics paint a vivid picture of this transformation. The data for the period before adaptive reuse is characterized by widespread neutrality, particularly on crucial aspects like cultural integration (75.3% neutral) and the fulfillment of expectations (53.8% neutral). This suggests an experience that, while perhaps not negative, was largely passive and failed to make a strong, positive impression. In stark contrast, the data for the period after adaptive reuse shows a complete shift to

overwhelming agreement, with 100% of respondents confirming that the initiatives enhanced their cultural enrichment, overall satisfaction, and met or exceeded their expectations. This dramatic shift from a neutral or unremarkable experience to one that is highly satisfactory indicates that adaptive reuse in Lamu has been a resounding success from the visitor's perspective.

The qualitative data from heritage site officials provides a clear rationale for this success by deconstructing it into its core components: improved functionality, enhanced interpretation, and a better overall visitor environment. This aligns directly with the findings of Hossain Bhuiyan and Darda (2019) and Chai *et al.* (2022), who emphasize that improved facilities and functionality are essential for enhancing tourist satisfaction. The statement from one official that adapted buildings are "creating better living conditions for the local people as well as better accommodations for the tourists" (HSO 008) speaks to this fundamental improvement in the quality of the tourism product. Beyond physical comfort, the officials highlighted the intellectual and aesthetic benefits, noting that the reuse of Lamu Fort provides "both educational and Aesthetic benefit" (HSO 010) and that "New signage in Swahili and English educate tourists without distorting the heritage" (HSO 009). This focus on interpretation and engagement is critical, as the literature suggests that satisfaction in heritage tourism is deeply linked to the perceived authenticity and the emotional connection a visitor feels with a place (Wu *et al.*, 2019; Yang *et al.*, 2023).

The on-the-ground observations provided tangible proof of these improvements. The "High and steady flow of...tourists" at Lamu Fort is a direct indicator of its appeal. The presence of "Clean restrooms and an information desk" confirms the improvement in amenities, while the "Excellent signage" validates the officials' claims about enhanced interpretation. Most importantly, the observation of "Local guides...actively engaging with tourists, explaining cultural nuances" demonstrates a shift from a static to a dynamic experience. This aligns with the work of Rudan (2023), who argues that adaptive reuse is most successful when it makes heritage sites more accessible and engaging. The findings suggest that in Lamu, adaptive reuse has facilitated a more interactive and culturally immersive experience, which is a key driver of the observed increase in satisfaction.

The results of this objective strongly validate the study's theoretical frameworks. The dramatic improvement in the visitor experience is a clear affirmation of the VICE model's focus on the "Visitor" as a critical component of sustainability (van Niekerk and Coetzee, 2011). The findings demonstrate that by investing in the quality of the visitor experience through adaptive reuse, Lamu has strengthened this pillar, which is essential for the long-term viability of its tourism industry. Furthermore, the transformative impact on satisfaction provides a compelling case study for Butler's (1980) Theory of Sustainable Development. The shift from a neutral, potentially stagnant experience to one that is highly satisfactory and exceeds expectations is a hallmark of a destination successfully entering a "rejuvenation" or "renewal" phase of its life cycle. Adaptive reuse has served as the catalyst for this renewal, upgrading the tourism product and enhancing the destination's appeal. In summary, the evidence from all data sources converges to demonstrate that adaptive reuse has had a profound and statistically significant positive impact on tourist satisfaction in Lamu. This success is not attributable to a single factor but to a holistic enhancement of the visitor experience. By blending modern functionalities with historical contexts, improving amenities and accessibility, and fostering a more engaging and culturally rich environment, the adaptive reuse initiatives have transformed the heritage sites from passive points of interest into dynamic and highly satisfying cultural destinations. This comprehensive improvement is the clear and undeniable driver behind the dramatic increase in visitor satisfaction.

Lamu old town's architecture of coral-stone houses carved wooden doors and open verandas speak to centuries of Swahili culture. Old buildings , which might have abandoned and crumbled, have been converted cafes, guesthouses, boutiques and culture centers and seen in the observers check list. Many tourists agreed that adaptive reuse enhanced authenticity of lamu town. This shows that adaptive reuse of old old buildings amplifies the culture authenticity of lamu old town. Visitors are able to actively enjoy the culture of lamu old town and connect emotionally with the culture, while living in converted old houses. The uniqueness of Lamu town, being a highland full of culture and heritage, and surrounded by marine ecosystem provides a great destination for tourists to enjoy heritage and marine tourism. The collaboration of the Kenya tourism board, the Lamu tourism board and the local tourism Association to

develop a co packaged reuse outputs, in to a year-round short bookable trail to smooth demand.

4.3.5 Contribution of Adaptive Reuse of Buildings on Environmental sustainability in Lamu Old Town

This section presents the analysis of data pertaining to Specific Objective iv, which was to examine the contribution of adaptive reuse of old buildings to environmental conservation and sustainability of heritage tourism sites in Lamu town, Kenya.

4.3.5.1 Reliability of the Environmental Sustainability Scale

The analysis revealed that the 'Environmental Sustainability' scale possesses excellent internal consistency. The overall Cronbach's Alpha for the five-item scale was .948, a value that is significantly above the .70 threshold considered necessary for establishing instrument reliability. This high coefficient indicates that the items are strongly correlated and effectively measure the same underlying concept. The item-level statistics provide further support for the scale's high reliability. All items demonstrated strong corrected item-total correlations, which ranged from .796 to .939. This confirms that each item contributes positively and significantly to the overall scale score. Additionally, the 'Cronbach's Alpha if Item Deleted' values indicated that removing any single item would not enhance the already high reliability of the scale. Therefore, all five items were retained, and the scale was confirmed to be a highly reliable instrument for the study's subsequent analyses. The results of this analysis are presented in Table 4.24.

Table 4.24: Reliability Statistics for the Environmental Sustainability Scale (N = 49)

Statement	M	SD	Item-Total Correlation	α if Item Deleted
The adaptive reuse of old buildings in Lamu has positive effects on the preservation of local natural resources in heritage sites.	3.42	0.62	0.904	0.932
Efforts to minimize the environmental impact of adaptive reuse activities, such as energy consumption and waste production, are noticeable in Lamu Old Town.	3.19	0.66	0.842	0.940
The waste management practices in Lamu Old Town are environmentally responsible	2.65	0.61	0.796	0.948

and sustainable.

The adaptive reuse of old buildings has a positive overall ecological impact on heritage sites in Lamu. 3.67 0.82 0.894 0.931

The adaptive reuse of old buildings in Lamu contributes to the overall sustainability of the environment in heritage sites. 3.70 0.92 0.939 0.927

Cronbach's alpha for the full scale = 0.948

4.3.5.2 Descriptive, Qualitative, and Observational Findings

The examination of the descriptive statistics for the *Environmental Sustainability* scale indicates that respondents hold ambivalent and often skeptical views regarding the environmental outcomes of adaptive reuse. As detailed in Table 4.24, while a majority of participants (57.9%) perceived a positive overall ecological impact, there was significant uncertainty and disagreement on the specific practices. Most notably, the statement regarding responsible and sustainable waste management practices was met with widespread doubt, with 42.1% disagreeing and 50.9% remaining neutral. Similarly, a majority (53.1%) were neutral on whether efforts to minimize environmental impacts like energy consumption and waste production were noticeable, suggesting that these practices are not being effectively implemented or communicated. Table 4.25 summarizes the item-level descriptive statistics based on responses from 397 participants.

Table 4.25: Perceptions of Environmental Sustainability from Adaptive Reuse of Old buildings in Lamu Town (N = 397)

Statement	SD	D	N	A	SA	Total
1. The adaptive reuse of old buildings in Lamu has positive effects on the preservation of local natural resources in heritage sites.	–	6.8	44.6	48.6	–	100
2. Efforts to minimize the environmental impact of adaptive reuse activities, such as energy consumption and waste production, are noticeable in Lamu Old Town.	–	13.9	53.1	33.0	–	100
3. The waste management practices in Lamu Old Town are environmentally responsible and sustainable.	–	42.1	50.9	7.1	–	100
4. The adaptive reuse of old buildings has a positive overall ecological impact on heritage sites in Lamu.	–	6.8	35.3	42.3	15.6	100
5. The adaptive reuse of old buildings in Lamu contributes to the overall sustainability	–	6.8	41.1	27.5	24.7	100

of the environment in heritage sites.

Note. SD = Strongly Disagree; D = Disagree; N = Neutral; A = Agree; SA = Strongly Agree.

The qualitative data from heritage site officials provides a clear explanation for this indecision, highlighting a fundamental tension between the inherent environmental benefits of reusing buildings and the negative externalities that accompany increased tourism.

HSO 005: *"By repurposing existing structures, adaptive reuse promotes sustainable development practices."*

HSO 007: *"...it's also bringing negative impacts like increased pollution by waste."*

HSO 009: *"Use of renewable materials and rainwater harvesting in restored buildings ."*

This dual reality described by the officials was directly confirmed through on-site observations. The positive principle of preserving natural resources was evident at Takwa Ruins, where the site is "surrounded by protected mangrove forests" and paths are designed to "minimize impact." The use of sustainable materials was also observed in the "traditional lime mortar and coral stone" used for repairs at Lamu Fort. However, the challenge of waste management was equally apparent. At the heavily trafficked Lamu Fort, waste bins were "observed to be full by midday," providing a tangible example of the pollution concerns voiced by officials and reflected in the poor survey scores. This triangulation of data confirms that while adaptive reuse is founded on sustainable principles, the management of its environmental side effects, particularly waste, remains a significant and visible challenge that shapes public perception.

4.3.5.3 Hypothesis Testing

A Pearson correlation was run to determine the relationship between the composite scores for 'Adaptive Reuse of Old buildings ' and 'Environmental Conservation Sustainability. The analysis revealed a very strong, positive, and statistically

significant correlation between the two variables, $r(395) = .951, p < .01$. This result indicates that there is a significant linear relationship between how respondents perceive the quality of adaptive reuse practices and their perceptions of environmental sustainability. Specifically, higher agreement with the positive implementation of adaptive reuse is strongly associated with higher perceived environmental conservation sustainability.

In essence, the Pearson correlation analysis revealed a very strong, positive, and statistically significant relationship between the adaptive reuse of old buildings and environmental conservation sustainability, $r(395) = .951, p < .01$. This result indicates that positive perceptions of adaptive reuse practices are strongly associated with positive perceptions of environmental outcomes. As the analysis shows a statistically significant relationship between the variables, the null hypothesis (H04), which stated that the adaptive reuse of old buildings has no statistically significant impact on environmental conservation sustainability, is rejected. The evidence suggests that there is a significant positive association between the two constructs. The results of the analysis are presented in Table 4.26.

Table 4.26: Pearson Correlation between Adaptive Reuse of Old buildings and Environmental Conservation Sustainability

Variable	1	2
1. Adaptive Reuse of Old buildings	—	0.951**
2. Environmental Conservation Sustainability	0.951**	—

Note. $N = 397$. $p < 0.01$ (2-tailed).

4.3.5.4 Discussion of Findings Contribution of Adaptive Reuse of Buildings on Environmental sustainability in Lamu Old Town

The fourth objective of this study was to examine the impact of adaptive reuse of old buildings on environmental conservation sustainability in Lamu Town. The analysis provides a firm basis for the rejection of the null hypothesis (H04), as the Pearson correlation revealed a very strong, positive, and statistically significant relationship between adaptive reuse and environmental sustainability ($r = 0.951, p < 0.01$). However, this statistical association belies a more complex and nuanced reality that is revealed through the triangulation of the descriptive, qualitative, and observational data. The findings suggest that while adaptive reuse is an inherently sustainable

practice at its core, its success in revitalizing tourism creates secondary environmental pressures that significantly temper public perception and pose ongoing management challenges.

The strong positive correlation can be understood as an affirmation of the fundamental principles of adaptive reuse, which are inherently aligned with environmental conservation. This practice, by its very nature, supports circular economy objectives by extending the life cycle of existing structures, thereby reducing demolition waste and conserving the embodied energy that would be expended in new construction. This principle is well-supported in the literature (Bosone *et al.*, 2021; Ragheb an Naguib, 2021) and was articulated by a heritage site official who stated, "By repurposing existing structures, adaptive reuse promotes sustainable development practices" (HSO 005). This foundational benefit was also evident through direct observation. At Takwa Ruins, the preservation of the site is intrinsically linked to the protection of the surrounding mangrove forests, while at Lamu Fort, the use of traditional and sustainable materials like lime mortar for repairs was noted. This evidence suggests that the positive statistical correlation is rooted in the tangible, building-level conservation efforts that respondents can see and appreciate.

However, this positive foundation is significantly complicated by the consequential impacts of the tourism that adaptive reuse successfully attracts. The descriptive statistics revealed profound public skepticism regarding the management of these impacts. 93.0% of respondents were either neutral or disagreed that waste management practices are sustainable. Majority (67.0%) were either neutral or disagreed that efforts to minimize environmental impacts are noticeable. This indicates a major disconnect between the sustainability of the buildings themselves and the sustainability of the broader tourism system they support. The qualitative data from heritage officials directly addresses this tension. While they celebrate the environmental benefits of reuse, they are also acutely aware of the challenges, with one official stating that increased tourism is "also bringing negative impacts like increased pollution by waste" (HSO 007).

This statement is not an abstract concern but a visible reality, as confirmed by the observational data. The observation that waste bins at the heavily trafficked Lamu Fort were "full by midday" provides a stark, tangible explanation for the poor survey scores on waste management. This finding suggests that the public's perception of environmental sustainability is not solely based on the conserved state of the old buildings but is more holistically informed by the visible environmental stressors in the surrounding public spaces. The success of adaptive reuse in attracting visitors has, in effect, strained the town's capacity to manage the environmental footprint of those visitors.

These findings provide a compelling, real-world illustration of the study's theoretical frameworks. The tension between the positive principles and negative consequences of adaptive reuse perfectly encapsulates the interconnectedness of the VICE model's pillars (van Niekerk and Coetzee, 2011). The successful implementation of strategies that benefit the 'Visitor' and 'Investor/Industry' has placed direct pressure on the 'Environment' pillar. This demonstrates that for heritage tourism to be truly sustainable, these components cannot be managed in isolation; a strategy that boosts one pillar at the expense of another is ultimately unsustainable. Similarly, the findings add a critical layer to Butler's (1980) Theory of Sustainable Development. While the success of adaptive reuse has propelled Lamu into a 'rejuvenation' phase of its tourism life cycle, this phase is not without its perils. The environmental challenges observed are classic symptoms of a destination approaching its carrying capacity, where the infrastructure is struggling to keep pace with the growth in tourism.

Overall, the rejection of the null hypothesis confirms a strong statistical association between positive perceptions of adaptive reuse and positive perceptions of environmental outcomes. However, the triangulated analysis reveals that this relationship is not straightforward. The study demonstrates that while adaptive reuse is an environmentally sound principle that is recognized and appreciated by the public, its very success in stimulating tourism creates significant, visible environmental challenges—particularly in waste management—that temper overall perceptions of environmental sustainability. For Lamu's heritage tourism to be environmentally sustainable in the long term, management strategies must evolve beyond the

conservation of the buildings themselves to proactively and effectively mitigate the environmental footprint of the tourism they attract.

The UNESCO training and monitoring programs such as 2024 World Heritage Volunteers in Lamu, engineer a site level management agent that support quality reuse and youth engagement in adaptive reuse activities. (UNESCO, 2024) Characterized by narrow alleyways lacking modern waste disposal systems, Lamu old town relies on traditional waste disposal systems unable to handle large influx of visitors. This is evident from the full bins at Lamu fort observed during data collection. This shows a destination approaching its carrying capacity. The materials used to repair converted old buildings and replicas are very sensitive to pollutions thus Lamu old town should focus on developing a holistic approach to waste management including infrastructural improvement to manage increasing waste generation.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

The findings for the first objective, which was to evaluate the contribution of adaptive reuse of old buildings to the social-cultural sustainability of the local community in Lamu town, showed that adaptive reuse has a positive and significant impact on the social – cultural sustainability of the local community in Lamu. The quantitative survey revealed overwhelming public agreement (over 93%) that these practices preserve traditions, promote cultural exchange, and foster community pride. The qualitative findings explained that this success is rooted in a deliberate management strategy of deep community engagement, including the consultation of elders and employment of local artisans. This was visibly confirmed through on-site observations of heritage sites being used for living cultural events. The inferential analysis solidified this conclusion, with the multiple linear regression model confirming that adaptive reuse practices, particularly the 'Conversion of Old Houses' ($\beta = 0.557$, $p < 0.001$), were significant predictors of social-cultural well-being, leading to the rejection of the first null hypothesis (H01).

Regarding the second objective, which aimed to assess the contribution of adaptive reuse of old buildings to local economic sustainability generated by heritage tourism, the data revealed that adaptive reuse is a significant catalyst for local economic growth. The survey data showed near-unanimous agreement on direct economic benefits, such as job creation (93.9% agreement) and the positive impact of visitor spending (100% agreement). This was confirmed by qualitative accounts from officials and visibly confirmed by the vibrant economic ecosystems observed around

the main heritage sites. However, the study also uncovered significant general doubt regarding revenue reinvestment and the equitable distribution of benefits. The inferential analysis confirmed the powerful positive relationship, with the regression model showing that adaptive reuse dimensions, especially 'Building Replicas of Old Structures' ($\beta = 0.603$, $p < 0.001$), significantly predict local economic sustainability, leading to the rejection of the second null hypothesis (H02).

Concerning the third objective, which sought to determine the contribution of adaptive reuse of old buildings to tourist satisfaction and experience, the analysis demonstrated a statistically significant improvement. The quantitative data captured a clear transformation, shifting from an experience characterized by neutrality before adaptive reuse to one of complete agreement, high satisfaction after. The qualitative data linked this shift directly to tangible enhancements in amenities, accessibility, and the quality of cultural interpretation, which were verified through on-site observations. The paired-samples t-test provided statistical confirmation of this transformation, revealing a significant increase in mean satisfaction scores ($t(92) = -38.11$, $p < 0.001$). Consequently, the null hypothesis (H03) was rejected, confirming that adaptive reuse has been a transformative success from the visitor's perspective.

Pertaining to the fourth objective, which was to examine the contribution of adaptive reuse of old buildings to environmental conservation and sustainability, the findings indicated a complex and conflicting relationship. The inferential analysis confirmed a very strong, positive, and statistically significant correlation between the two variables ($r = .951$, $p < .01$), leading to the rejection of the null hypothesis (H04). This suggests the inherent environmental principles of adaptive reuse are recognized. However, this positive association was strongly tempered by widespread public doubt and on-the-ground challenges, particularly regarding waste management (93% of respondents were neutral or disagreed that practices were sustainable). This indicates that while the practice itself is seen as sustainable, its success in driving tourism has created significant environmental pressures that negatively affect overall public perception.

5.2 Conclusion

The research provides robust evidence to reject all four null hypotheses. The adaptive reuse of historic structures in Lamu historic Town is a significant and multi-faceted contributor to heritage tourism sustainability. It reinforces social-cultural fabric by preserving identity and fostering community pride; it acts as a strong engine for local economic growth through job creation and visitor spending; it dramatically enhances tourist satisfaction by making the guest experience more genuine and high quality; and it is founded on environmentally sound principles. Its success, however, introduces critical management challenges, particularly in waste management. The holistic positive impact across these four pillars confirms that one essential tactic for accomplishing sustainable heritage tourism in Lamu is adaptive reuse sustainable heritage tourism in Lamu.

5.3 Recommendations

The recommendations that follow are based on the results and conclusions, structured to address the outcomes of each specific objective:

- i. To improve the historic tourism industry's social-cultural sustainability in Lamu town, policymakers and site managers should: Formalize Community Involvement by developing and institutionalizing a clear framework for community participation in adaptive reuse projects at every level, from design and planning to implementation and management, ensuring the continued engagement of elders, artisans, and youth. Programming for living cultural practices (e.g., Swahili poetry, music, crafts) should be intergraded directly into adaptively reused spaces to ensure these traditions are actively performed and transmitted, moving beyond static preservation. This safeguards intangible heritage. To Promote Cultural Education, educational programs for both tourists (on local etiquette and cultural significance) and younger community members should be implemented to strengthen intergenerational cultural literacy and pride.
- ii. To improve local economic sustainability and ensure equitable benefit distribution of benefits the county government and tourism boards should enhance Transparency in Revenue Management through establishment of a

transparent and publicly communicated system for tracking and reinvesting tourism revenue into heritage conservation and community development projects to build public trust. They should also support Local Enterprise by actively promoting and facilitating community-based tourism models and local entrepreneurship through targeted support, such as grants or training for businesses that supply goods and services to the tourism sector. Developing a wider range of authentic, culturally based tourism products and experiences to create year-round economic opportunities and distribute income more evenly across different community segments is recommended.

- iii. To further elevate tourist satisfaction and experience, heritage site managers and tour operators should Invest in Quality Interpretation through Standardizing and professionally training local tour guides to ensure high-quality, engaging, and accurate storytelling that deepens the cultural immersion for visitors. They should Maintain and Enhance Amenities by Ensuring the consistent upkeep and availability of high-standard visitor amenities, including clean restrooms, clear signage, and accessible pathways. Finally, develop Immersive Experiences through creating more hands-on, interactive experiences (e.g., Swahili cooking classes, dhow sailing workshops) that allow tourists to connect emotionally and intellectually with Lamu's culture, thereby exceeding expectations.
- iv. To address the critical challenge of environmental sustainability, a multi-stakeholder approach is required: A Robust Waste Management System should be implemented. The county government, in partnership with private stakeholders, must urgently invest in and implement a modern, efficient waste management system capable of handling the volume of waste generated by tourism, including regular collection and recycling initiatives. Sustainable Building Practices should be enforced through mandating and monitoring the use of traditional, sustainable materials (e.g., lime mortar, coral stone) in all adaptive reuse and maintenance projects to minimize environmental impact and preserve building authenticity. Finally ensure Management of Carrying Capacity. Develop and enforce strategies to manage tourist numbers at

sensitive sites, mainly through timed ticketing or by promoting niche, low-impact tourism products, to prevent environmental degradation and ensure long-term sustainability.

5.4 Recommendations for Further Study

This study has yielded significant insights regarding the contribution of adaptive reuse to heritage tourism sustainability in Lamu Old Town. However, it has also highlighted areas where further research is needed:

- i. The current study captured a snapshot of perceptions regarding the equitable distribution of economic benefits. A longitudinal study, conducted over several years, would be beneficial to track how these benefits are distributed over time and to identify the long-term economic impacts on different segments of the Lamu community.
- ii. To have a deeper comprehension of Lamu's distinct achievements and difficulties, a comparative study with another coastal UNESCO World Heritage site (e.g., Stone Town, Zanzibar) could provide valuable insights into best practices in adaptive reuse, community engagement, and environmental management.
- iii. Given that waste management was identified as a critical weakness, a dedicated study focusing specifically on this issue is warranted. Such a study could analyze the sources and types of waste, evaluate the current management system's capacity, and propose technically and financially viable solutions tailored to Lamu's unique island context.
- iv. The susceptibility of conventional building materials like lime and coral rag was emphasized in the qualitative data. To guarantee the long-term physical preservation of Lamu's natural resources, future studies should examine the precise effects of climate change (such as rising sea levels, elevated humidity, and temperature swings) on these materials and consider sustainable adaption techniques.

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APPENDICES

Appendix I: Questionnaire for Community Members and Tourists

I am a postgraduate student at Chuka University pursuing a Master's degree in Tourism Management. For my thesis, I am researching the role that the adaptive reuse of historic buildings plays in promoting sustainable heritage tourism in Lamu, Kenya. This survey is designed for residents of Lamu Old Town and tourists to gather your valuable perspectives on this topic. Your responses will be kept completely anonymous to ensure confidentiality, so please do not write your name anywhere on this questionnaire. Your participation is greatly appreciated.

Instructions:

1. Please provide the following demographic information. Your responses will remain confidential, and the information will be used solely for research purposes.
2. Before answering the question in a section, read the instructions given first

Section A: Demographic Information

1. Age:

☐ 18-25

☐ 46-55

☐ 26-35

☐ 56- and above

☐ 36-45

2. Gender:

☐ Male

☐ Female

3. Occupation:

☐ Tourist

☐ Local Resident

If local resident, please indicate your employment status

☐ Employed

☐ Unemployed

☐ Self-employed

☐ Retired

4. Please Specify your nationality? _____

*(Only answer if you answered **Tourist** in 3 above.)*

5. When last did you visit Lamu before now? *Only answer if you answered **Tourist** in 3 above.)*

☐ This is my first time

☐ 1-2 years ago

☐ More than five years

☐ Less than a year ago

☐ 3-5 years ago

ago

Section B: Adaptive Reuse of Old buildings

No.	Statements	SD	D	N	A	SA
1.	Old houses in Lamu Old Town are converted to preserve their authenticity and historical value.					
2.	Old converted buildings in Lamu Old Town have a well-preserved functionality and usability.					
3.	Accurately replicating historical structures is common practice in Lamu Old Town.					
4.	Old heritage structures in Lamu Old Town are replicated using high quality materials.					
5.	Old old buildings in Lamu Old Town are replicated using a high level of craftsmanship.					
6.	Old buildings in Lamu Old Town are maintained using effective maintenance methods and practices.					
7.	Lamu Old Town has well-established systems for monitoring the conditions of old heritage structures.					

Instructions:

For each statement, please **indicate** your level of agreement using the following scale:

SD = Strongly Disagree, **D** = Disagree, **N** = Neutral, **A** = Agree, **SA** = Strongly Agree

Section C: Contribution of Adaptive Reuse of Old buildings to Social-Cultural Sustainability

Instructions:

For each statement, please **indicate** your level of agreement using the following scale:

SD = Strongly Disagree, **D** = Disagree, **N** = Neutral, **A** = Agree, **SA** = Strongly Agree

No.	Statements	SD	D	N	A	SA
1.	Heritage tourism, through adaptive reuse, significantly contributes to the preservation of traditional practices in Lamu Old Town.					
2.	Adaptive reuse effectively promotes cultural exchange in Lamu Old Town.					
3.	Adaptive reuse empowers local communities in Lamu Old Town by providing economic opportunities and support.					
4.	Adaptive reuse of old buildings in Lamu Old Town preserves the cultural identity of the local					

	community.					
5.	Adaptive reuse of old buildings in Lamu Old Town positively influences the social fabric of the community fostering a sense of pride and belonging among community members.					

Section D: Contribution of Adaptive Reuse of Old buildings on Sustainability of the Local Economy

Instructions:

For each statement, please **indicate** your level of agreement using the following scale:

SD = Strongly Disagree, **D** = Disagree, **N** = Neutral, **A** = Agree, **SA** = Strongly Agree

No.	Statements	SD	D	N	A	SA
1.	The adaptive reuse of old buildings in Lamu significantly contributes to job creation in Lamu.					
2.	Visitor spending as a result of heritage tourism has a positive impact on the local economy of Lamu Town.					
3.	The revenue generated from heritage tourism is appropriately invested in the conservation of heritage sites in Lamu, which stimulates economic development in the town.					
4.	The adaptive reuse of old buildings in Lamu Old Town promotes the development of infrastructure and services that benefit the local economy.					
5.	Economic benefits from the adaptive reuse of old buildings are equitably distributed among various segments of the local community in Lamu.					

Section E: Influence of Adaptive Reuse of Old buildings on Visitor Satisfaction

Instructions:

This Section is for TOURISTS ONLY. If your answer for **question 3** above was **Tourist**, please **indicate** your level of agreement with each of the statements below using the following scale:

SD = Strongly Disagree, **D** = Disagree, **N** = Neutral, **A** = Agree, **SA** = Strongly Agree

Sub-section I: Experience Before Adaptive Reuse of Old buildings

No.	Statements	SD	D	N	A	SA
1.	My experiences as a tourist in Lamu Old Town before the adaptive reuse of old buildings was culturally enriching.					
2.	The accessibility of heritage sites before the					

	adaptive reuse influenced my overall satisfaction as a visitor.					
3.	Overall, my satisfaction with the heritage tourism experience in Lamu Old Town was influenced by the state of old buildings before adaptive reuse.					
4.	The integration of local culture into the heritage tourism experience was noticeable before the adaptive reuse of old buildings .					
5	My expectations as a heritage tourist in Lamu Old Town were met/exceeded before the adaptive reuse of old buildings .					

6. In your own opinion, how did the state of old buildings before adaptive reuse impact your overall satisfaction in Lamu Old Town?

Sub-section II: Experience After Adaptive Reuse of Old buildings

No.	Questions	SD	D	N	A	SA
1.	The adaptive reuse of old buildings in Lamu Old Town contributed to my cultural enrichment as a tourist.					
2.	The accessibility of heritage sites after adaptive reuse positively influenced my overall satisfaction as a visitor.					
3.	The adaptive reuse of old old buildings enhanced my overall satisfaction with the heritage tourism experience in Lamu.					
4.	The integration of local culture into the adaptive reuse of old buildings positively influenced my heritage tourism experience.					
5.	The adaptive reuse of old buildings in Lamu Old Town met/exceeded my expectations as a heritage tourist.					

6. In your opinion, how well does the adaptive reuse of old buildings contribute to the overall visitor satisfaction in Lamu Old Town?

Section F: Effect of Adaptive Reuse of Old buildings on the Environment

Instructions:

For each statement, please **indicate** your level of agreement using the following scale:

SD = Strongly Disagree, **D** = Disagree, **N** = Neutral, **A** = Agree, **SA** = Strongly Agree

No.	Statements	SD	D	N	A	SA
1.	The adaptive reuse of old buildings in Lamu has positive effects on the preservation of local natural resources in heritage sites.					
2.	Efforts to minimize the environmental impact of adaptive reuse activities, such as energy consumption and waste production, are noticeable in Lamu Old Town.					
3.	The waste management practices in Lamu Old Town are environmentally responsible and sustainable.					
4.	The adaptive reuse of old buildings , has a positive overall ecological impact heritage activity on heritage sites in Lamu.					
5.	The adaptive reuse of old buildings in Lamu contributes to the overall sustainability of the environment in heritage sites.					
6.	In your opinion, how well does the heritage tourism industry in Lamu address and mitigate environmental concerns associated with adaptive reuse activities?					

7. In your opinion, how well does the heritage tourism industry in Lamu Town address and mitigate environmental concerns associated with adaptive reuse activities?

Section G: Heritage Tourism Sustainability

Instructions:

*For each statement, please **indicate** your level of agreement using the following scale:*

SD = Strongly Disagree, **D** = Disagree, **N** = Neutral, **A** = Agree, **SA** = Strongly Agree

No.	Statements	SD	D	N	A	SA
1.	Heritage tourism in Lamu contributes significantly to the sustainability of the local economy.					
2.	The environmental sustainability practices in heritage tourism in Lamu are noticeable and effective.					
3.	Overall, the level of tourist satisfaction with heritage tourism in Lamu Town is indicative of its sustainability.					
4.	Heritage tourism in Lamu effectively promotes and contributes to the social and cultural sustainability of the local community.					
5.	The balance between heritage tourism and the preservation of local culture and traditions is well-maintained in Lamu Town.					

Thank you for your participation.

Appendix II: Interview Schedule for Heritage Site Officials

Section 1: Introduction and Professional Background

1. To begin, could you please provide a brief overview of your role and responsibilities as a heritage site official here in Lamu Old Town?
2. How many years have you been involved in heritage management, and what has been your specific experience with adaptive reuse projects for historic buildings?

Section 2: Challenges and Benefits of Adaptive Reuse

3. From your professional standpoint, what are the primary challenges encountered when repurposing historic buildings in Lamu Old Town? (e.g., structural, regulatory, financial, or community-related).
4. Could you share an example of a specific project where these challenges were particularly pronounced, and describe how they were addressed or overcome?
5. Conversely, what do you consider to be the most significant benefits of practicing adaptive reuse for buildings within this UNESCO World Heritage site?
6. Can you provide examples of how these initiatives have positively impacted the local economy, the community's quality of life, or the local environment?

Section 3: Community Engagement and Cultural Authenticity

7. How is the local community typically involved in the planning and implementation of adaptive reuse projects? Are there formal mechanisms for consultation?
8. In what ways have you seen adaptive reuse projects empower the local community, for instance, through skills development, employment, or business creation?

9. A key concern in heritage sites is authenticity. What specific measures, policies, or guidelines are in place to ensure the cultural and architectural integrity of a building is maintained during its adaptation for a new use?
10. How do you and your organization navigate the delicate balance between conserving the historical fabric of Lamu's buildings and the need for modern amenities and development?

Section 4: Sustainability and Future Outlook

11. Could you highlight a specific adaptive reuse project that you believe serves as a model for contributing to the long-term sustainability of heritage tourism in Lamu? What makes it successful?
12. Looking forward, what do you see as the future of adaptive reuse in Lamu? Are there upcoming opportunities or potential threats that concern you?

Appendix III: Observation Checklist

Instructions for Use:

1. Visit each heritage site and surrounding areas in Lamu Old Town.
2. Observe and record the presence or absence of each item on the checklist.
3. Use the "Notes" column to provide additional details or context for each observation.
4. Compare observed data with questionnaire and interview responses to verify their accuracy.

Observation Item	Yes	No	Notes
Adaptive Reuse of Old buildings			
1. Evidence of converted old houses in use (e.g., hotels, museums, etc.)			
2. Presence of replicas of old houses, statues, and pillars			
3. Maintenance of old structures (e.g., condition of walls, roofs)			
4. Signage or information boards explaining the history of reused buildings			
Social-Cultural Sustainability			
5. Local community involvement in heritage tourism activities			
6. Presence of cultural events or festivals			
7. Availability of local handicrafts and traditional goods			
8. Use of traditional architectural styles in new constructions			
Economic Impact			
9. Number of local businesses benefiting from tourism			
10. Employment of local residents in heritage tourism			
11. Presence of tourist accommodations (hotels, guesthouses)			
12. Tourist spending in local markets			
Tourist Satisfaction			
13. Tourist foot traffic at heritage sites			
14. Availability of tourist amenities (e.g., restrooms, information centers)			
15. Cleanliness and upkeep of heritage sites			
16. Tourist interactions with local culture (e.g., guided tours, workshops)			

Environmental Impact			
17. Presence of waste management systems			
18. Efforts to preserve local natural resources			
19. Condition of the natural environment surrounding heritage sites			
20. Use of sustainable materials in the maintenance and construction of buildings			



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OFFICE OF THE DIRECTOR

BOARD OF POSTGRADUATE STUDIES

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11th September, 2024

Director

National Commission for Science Technology and Innovation

Off Waiyaki Way, Upper Kabete

P O Box 30623, 00100

Nairobi.

Dear Sir / Madam,

SHADRACK M. NGWILI

The above-named person is a *bona fide* student of Chuka University pursuing MSC in Tourism Management, proposal titled:—**Contribution of Reuse of Heritage Building on Heritage Tourism Sustainability in Lamu Town, Kenya**

Mr. Shadrack has defended at the Faculty level and is now expected to conduct research.

Any assistance accorded will be highly appreciated.

Yours sincerely,

Prof. Moses Muraya, Ph.D.

DIRECTOR

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Appendix IV: University Introductory Letter

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CHUKA UNIVERSITY INSTITUTIONAL ETHICS REVIEW COMMITTEE

Telephones: 020-2310512/18

Direct Line: 0772894438

Email: info@chuka.ac.ke

P. O. Box 109-60400, Chuka

Website: www.chuka.ac.ke

REF: CUIERC/NACOSTI/638

TO: Shadrack M. Ngwili

13th August, 2024

**RE: Contribution of Adaptive Reuse of Heritage Building on Heritage Tourism
Sustainability in Lamu Town, Kenya**

This is to inform you that *Chuka University IERC* has reviewed and approved your above research proposal. Your application approval number is *NACOSTI/NBC/AC-0812*. The approval period is 13th August, 2024 – 13th August, 2025.

This approval is subject to compliance with the following requirements;

- i. Only approved documents including (informed consents, study instruments, MTA) will be used
- ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by *Chuka University IERC*.
- iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to *Chuka University IERC* within 72 hours of notification
- iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to *Chuka University IERC* within 72 hours
- v. Clearance for export of biological specimens must be obtained from relevant institutions.
- vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
- vii. Submission of an executive summary report within 90 days upon completion of the study to *Chuka University IERC*.

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

Yours sincerely


Dr. Benjamin Kanga
SECRETARY



Appendix V: Ethics Review Board Authorization Letter



REPUBLIC OF KENYA

Ref No: 124778



NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY & INNOVATION

Date of Issue: 23/July/2025

RESEARCH LICENSE



This is to Certify that Mr.. Shadrack Muuo Muuo of Chuka University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Lamu on the topic: CONTRIBUTION OF ADAPTIVE REUSE OF HERITAGE BUILDINGS ON HERITAGE TOURISM SUSTAINABILITY IN LAMU TOWN, KENYA. for the period ending : 23/July/2026.

License No: NACOSTI/P/25/4177238

124778

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Appendix VI: NACOSTI Research Permit