COMMUNITY BASED TOURISM APPROACHES FOR CONSERVATION OF PALMYRA PALM IN SOUTHERN TAMIL NADU

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CERTIFICATE

This is to certify that the thesis entitled, "*Community Based Tourism Approaches for Conservation of Palmyra Palm in Southern Tamil Nadu"*, embodies the record of original investigation carried out by Ms. Preethi H (Regd. No. MZU/Ph.D./1938 of 28.8.2021), under my supervision and guidance, in partial fulfillment of the requirements for the award of the degree of Doctor of Philosophy of the Mizoram University, Aizawl.

She has fulfilled all the required norms laid down under Minimum Standards and Procedure for Award of Ph.D. of UGC Regulations 2018. She has been duly registered and the thesis is worthy of being considered for the Ph.D. Degree. Neither the thesis as a whole nor any part of it was ever submitted to any University for any research degree.

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DECLARATION

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I **PREETHI H**, hereby declare that the subject matter of this thesis is the record of work done by me, that the contents of this thesis did not form basis of the award of any previous degree to me or to do the best of my knowledge to anybody else, and that the thesis has not been submitted by me for any research degree in any other University/ Institute.

This is being submitted to the Mizoram University for the Degree of **Doctor of Philosophy in Tourism and Hospitality Management.**

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LIST OF ABBREVIATIONS AND ACRONYMS

AI	Artificial Intelligence
APEC	Asia Pacific Economic Cooperation
CAN	Central Nodal Agency
CBET	Community Based Ecotourism
CBMT	Community Based Mountain Tourism
CBNRM	Community Based Natural Resource Management
CBPT	Community Based Partnership Tourism
CBT	Community Based Tourism
CT	Community Tourism
ESD	Exploratory Sequential Design
FIT	Foreign Individual Tourists
GEF	Global Environment Facility
GIS	Geographical Information System
HRCE	Hindu Religious and Charitable Endowments Department
IUCN	International Union for Conservation of Nature
KDE	Kernel Density Estimation
KVIC	Khadi & Village Industries Commission
LMV	Light Motor Vehicle
MDGs	Millennium Development Goals
MGNREGS	Mahatma Gandhi national rural empowerment Guarantee scheme
MIS	Management Information System
NGO	Non-Governmental Organisation
NRN	Natural Resource Management
PEPPER	People's Participation for Participatory Planning and Empowerment through Responsible Tourism
PIP	Participatory Identification of Poor
PMGSY	Pradhan Mantri Gram Sadak Yojana
RBI	Reserve Bank of India
RH	Rural Homestays
RT	Rural Tourism
SCBET	Sustainable Community Based Ecotourism
SDGs	Sustainable Development Goals
SECC	Socio Economic and Caste Census
SHG	Self Help Groups
SLF	Sustainable Livelihood Framework
SSGHs	Special Self-Help Groups
TALC	Tourism Area Life Cycle
TAT	Tourism Authority of Thailand
TIES	The International Ecotourism Society
TIES	The International Ecotourism Society
TNSRLM	Tamil Nadu State Rural Livelihoods Mission
UDHR	Universal Declaration of Human Rights
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNWTO	United Nation World Tourism Organisation

WWF	World Wildlife Fund
UNESCO	United Nations Educational, Scientific and Cultural Organization

CHAPTER-1 INTRODUCTION

1.1 Background of Study

Overtourism has become a major challenge to manage popular destinations resulting environmental, cultural and social deterioration (Banerjee & George, 2024). During the COVID-19 pandemic several initiatives were taken to *"Bring Back Better tourism"* in a more sustainable and responsible manner in order to safeguard our Mother Earth. Many scholars have contributed research to protect and promote social and environment gems present in the world. Whereas, community based tourism bloomed in the mid 1980's, and gained popularity after the Earth Summit (1992) at Rio De Janeiro. This type is considered more to be an approach for sustainable development (Arintoko et al., 2020). Brundtland report, World Summit on Sustainable Development 2002, appreciates partnership building and collaboration. Such as public–private partnerships, community private partnerships, cross-sectoral planning, shared decision making processes and cultural distinctions (Okazaki, 2008).

UNWTO (2015) Sustainable Development Goals (SDGs) have been embraced to "… end extreme poverty, fight inequality and injustice, and fix climate change until 2030." Some of these goals match the goals of community based tourism. They are: Goal 5 "gender equality" empowers women at all stages; Goal 6 "access to clean water and sanitation" ensures basic human rights; Goal 10 "reduces inequality" empowers underprivileged communities, develops skills and creates more entrepreneurial opportunities; and Goal 15 "life on land" emphasizes protection, restoration and promotion of sustainable use on terrestrial ecosystems. Reciprocally, Millennium Development Goals (MDGs) Goal 1 and Goal 3 aimed to alleviate poverty and empower women (McArthur, 2014).

The present study community based tourism towards conservation of Palmyra palm in southern Tamil Nadu is considered as an explorative and explanatory case study to promote tourism in a responsible and sustainable manner aiming for conservation of social, historical, economical, ecological and cultural areas. Palmyra

palm is a state tree of Tamil Nadu found to be existing along with humans or even before human existence. Tala Vilasam, a classical Tamil poem written by Arunachalam describes 801 benefits of the Palmyra palm (Krishnaveni et al., 2020). Palmyra palm provides food with medicinal value, shelter to endangered and endemic species and protects humans from disasters. India's one third population of Palmyra palms are present in Tamil Nadu among them 80% are present in Southern Tamil Nadu. But the present decade observes rapid decrease of Palmyra palm count. Modernisation and usage of plastic leads Palmyra palm and its products to evanesce. Some notable actions are taken by the stakeholders on spatial recovery of Palmyra palm in recent times. The Govt of India had taken a pledge to ban single use of plastic by July, 2022 (Nandi, 2022) setting the pace for Palmyra palm and other similar eco-friendly products to revive. Honourable Prime Minister Narendra Modi acclaimed the initiative of the selective commune of Thoothukudi district during his monthly radio program 'Mann Ki Baat' on planting Palmyra palm trees in Gulf of Mannar Biosphere Reserve (Archana, 2021). Looking on to its extensive benefits and initiatives, the present study attempts to link community based tourism approaches for conservation of the Palmyra palm ecosystem and its belonging community in Southern Tamil Nadu. The study focuses to maximize community participation, considering it as the most receptive idea for sustainable development in tourism. It improves inclusive development, effective use of natural resources and understanding towards the cultural value attached to the community. It involves the community in the planning process to propel more rural and women entrepreneurs (Yaja, 2023). Therefore, the concept and theories relating to the study are appreciated to achieve multidimensional growth and sustainability in the field of the study.

1.2 Community Based Tourism and Livelihood Conservation

The majority of the Indian population live outside the urban areas, the rural areas that are considered as the strength of the nation are shrinking. Urbanization and Industrialisation promotes inequality and injustice to the men and women who share their dreams and tears with the land. Exclusive artisans and the inclusive arts are paralyzed. Most of the rural economy depends on seasonality. Season drives the demand. The individual or a group performs some activities in order to meet their

basic needs. Eventually, these rural activities become livelihood when it is passed from generation to generation. It also sustains natural, cultural, and social resources. When the natural resource in the destination defaces due to urbanization, the access is denied to the community to perform their livelihood. Millions of livelihoods have been destroyed in this process. Our farmers are the best example who distance themself from their crop due to the disastrous corporate model. Every livelihood has personalized skills preserving traditional knowledge, skills and attributes. The techniques of making unique craft are visually captive and irreplicable. These crafts have a number of patterns that are mechanical and calculative. If the livelihood disappears, it means it will erase the inclusive culture and traditional practices of the village. The food practices and the habits are replaced by another. Consumption of white sugar and white rice after colonial intervention can be the best illustration to completely remove palm, jaggery and millets from daily consumption (Karthikeyan,2019). The rise of sugar during 20th Century have influenced continuous rise of "capitalism and slavery".

Moving closer to the context of livelihood in India, it is based on the division of caste. India can yield a maximum number of degree holders but has a shortage of quality jobs. The underprivileged and the marginal groups relatively receive low wages in spite of being educated and skilled. For centuries they are fighting for their rights, respect and dignity. Pasanchay and Schott (2021) mentions livelihood can be sustainable only when it has a capability to overcome stress or shock to develop and maintain the assets without damages. Sustainable livelihood provides economic opportunity within the geographical region, conserves natural resources and supports the community in all manner. Tourism can "transform our world" by achieving SDG goals.

For the past four decades, community based tourism has been reviewed and reported as an active model to conserve livelihood. The success is monitored and being funded in developing countries. The time and labour received from the community with interest, initiative and investment has value and is often considered as a significant opportunity cost. Scoones (1998) Sustainable Livelihood Framework (SLF) consider history, political, macroeconomic conditions, trade climate, argo-

ecology, demography and social differences as context; Natural capital, economic capital, human capital, cultural capital and social capital as livelihood resources; agriculture, intensification, extensification, livelihood diversification, and migration as strategies to address poverty, capability of the community, number of working days, vulnerability and resilience, and conservation of natural resources. Scoones SLF have being applied to plenty of tourism studies, to identify the relationship between livelihood activity, tourism, and to examine the impact of tourism created on rural livelihood. These demonstrations concentrated on tourism and community livelihood are mainly studied in countries like China, Taiwan, Namibia, Africa, and other South Asian countries (Pasanchay and Schott, 2021).

Conserving biodiversity and sustainable livelihood are always a great challenge in developing countries. They not only advocate poverty alleviation, improve environmental awareness and conservation attitude, but also eventually change the mindset of the community to conserve their natural resources and the unsustainable practices followed in recent times for their survival. It provides desired economic benefits, but most of the community based tourism models are being enjoyed by local elites and investors, so it is necessary to understand the grass root of the community that remains marginalised. Majority of the cases under privileged communities are the ones who majorly depend on natural resources for their survival. The natural resources are deteriorating because of the dichotomised relationship among the community (Gidebo, 2023). Therefore, Planning community based tourism needs to address conservation of biodiversity, sustainability in livelihood, and empowerment of underprivileged communities.

1.3 Introduction to Tamil Nadu

Tamil Nadu, has total geographical area of 1,30,058 sq.km, the state lies between latitudes 8°05’ and 13°34’ N and longitudes 76°14’ and 80°21’ E. The state has a population of 7,21,47,030, of which 3,72,30,000 of rural (Reserve Bank of India (RBI) 2011 census report). The literacy rate reach at 80%. The forest cover of Tamil Nadu is 26,419 sq.km, accounting for 20.31% of its geographical area, the tree cover spans 4,424 sq.km. The state has 56.10 million hectares of cultivated

agricultural land. In the state the number of unemployed rural males is recorded at 40,000, and unemployed rural females at 37,000 (RBI data for 2022–23). Tamil Nadu has a Sustainable Development Goal (SDG) score of 74 (RBI's 2020). (Source-Government of Tamil Nadu; Government of Tamil Nadu Forest Department, 2021)

Tamil Nadu geographically expands from Chennai to Kanyakumari, but its cultural expansions are traced in Sri Lanka, Malaysia, Indonesia, Mauritius, South Africa, parts of Caribbean Islands and many other regions that led Tamil to attain the first classical language status termed as *Semmozhi* in Tamil language announced by Honourable President of India Dr. A.P.J. Abdul Kalam in the year 2004. Tamil Nadu is referred as "home to Dravidian culture" "land of Tamils" or "land of Periyar" in honour of E.V. Ramasamy commonly known as Periyar, a renowned social reformer. The State holds rich historical background. Remarkably the Great emperors the Cholas, the Cheras, the Pandya's and the Pallavas encouraged artisans, architects, poets and merchants to contribute the everlasting treasure to Tamil Nadu. Also, the land has received merchants from various countries since the Sangam Era. Tamil Nadu holds prehistoric archaeological sites, artifacts, manuscripts. *Tamizhi Brahmi* (the inscriptions that were recorded to be one of the oldest scripts in India) and Tamil is the only language that is in practice since 500 BCE till date had strength to the State (Government of Tamil Nadu).

Despite the fact that the majority of people follow Hinduism, minority religions such as Buddhism, Jainism, Islamic and Christianity are ubiquitous across Tamil Nadu. All these diverse religions invoke Tamil tradition and way of life incorporated from the philosophical principles of ancient Tamil scholars and saints. The ancient Tamil literature consists of eight anthologies and ten long poems together called "tales of anklet" describing palaeographic features and happenings of day-to-day life of ordinary people. Tolkappiyam, the ancient extant long work, Tamil literature is the oldest surviving manuscript with 1610 chapters. It includes grammar and significance of Tamil language (Parthasarathy, 1994).

The village and the city settlements are based on caste and class. One of the types has two stories, a flat roof, ornamental gates, and pillars adorned with

paintings. Some built with bricks, some with earthen muds and some thatched. These houses are connected with parallel streets on its left and right. The infrastructure and the condition of the roads are well maintained. On the other side, lives the underprivileged, lower caste community, their settlements own architecture at its minimal level, and the house is made up of a stick roof with thatched Palmyra leaves and mud. In recent times the Palmyra leaves have been replaced with coconut or other materials that are not ecofriendly. These settlements have no streets. The paths are smooth by the pressure of bare feet. The entire settlement lies in the shade in the grove of Palmyra palm or other traditional trees in which their local deity/ folklore god resides to protect them (Harriss et al., 2010).

"Tree Veneration" and the practice of worshiping "Sacred Groves" to protect the people and biodiversity are believed by the people of Tamil Nadu are also recorded in the ancient literature (Walter, 2016).

1.3.1 Livelihood of Tamil Nadu

According to an RBI report, the average daily wage of rural men engaged in construction work, agricultural work and non-agricultural work as labour receive ₹500, ₹470, ₹481 respectively in an average (Handbook of Statistics on Indian State RBI, 2023).

In the year 2012-13, the government of Tamil Nadu had implemented a scheme called Tamil Nadu state rural livelihood mission. 60% of the fund is released by the Government of India and 40% of the fund is released by state government. The main aim of this scheme is to improve the livelihood, especially for the target groups, comprising poor and vulnerable sections of communities. The target group are clubbed under active community based organizations to provide sustainable livelihood opportunities under the scheme Tamil Nadu State Rural Livelihoods Mission, Ramanathapuram (TNSRLM). The Salient features of the scheme are to identify poor and connect them into self groups; establish community organizations among the rural poor; provide capacity building programs to socially empower rural poor; promote livelihood of the vulnerable, differently abled and poor communities; provide financial assistance; provide skill training to rural youth and empowerment

opportunity; provide training to conserve their environment and sanitation and provide access to the basic facility. In southern Tamil Nadu, Tirunelveli district and Ramanathapuram district are being benefited by the TNSRLM project.

The TNSRLM project is being implemented in 425 Panchayats of Tirunelveli district. Poor, differently abled and vulnerable groups are identified through Participatory Identification of Poor (PIP). In total 1,14,706 families have been notified as target families to improve their livelihood Status. 2728 Self Help Groups (SHGs) and 951 Special Self Help Groups (SSGHs) have been formed. In Ramanathapuram district, 8704 SHGs are being formed in 4 blocks. Seed money has been fixed to 250 SHGs. Training on tailoring, expiratory, fish pickle, fishnet making and dry cooking, fishing, tally, data entry, beautician, lady conductor, Light Motor Vehicle (LMV) driver, nursing, front office management were given to hundred self-groups in the year 2013 & 2016.

1.3.2 Tamil Nadu Forest and Biodiversity

In Tamil Nadu, forest terrain is divided into three major types they are Tropical Forests, Montane Subtropical Forests and Montane Temperate Forests. These are further classified into nine types based on moisture and physiognomic variation. These forest types range from wet evergreen forest to moist deciduous, dry deciduous, sholas, grasslands and scrub forest (Forest Department, Government of Tamil Nadu).

1.3.3 Green Tamil Nadu

Tamil Nadu has launched the Green Tamil Nadu Mission in the year 2021 to increase the forest cover from 23.76% to 33% in the next 10 years. This mission also aims to reduce global warming, protect rural livelihood, conserve soil and moisture, increase trees to store carbon, increase biodiversity and importantly, aims at sustainable development goal 15. The objective of this mission is to plant 265 crore seedlings by 2030 in on 12076 sq. km, and 30 to 35 million tons projected additional carbon sink. The mission includes rehabilitation of coastal habitats through forming a bio-shield with Casuarina, Palmyra palm, and Mangrove to restore Seagrass, and Coral reefs. This bio-shield project is funded by the Department of Environment and

Climatic change addressing it as a mitigation for cyclone, tsunami, coastal soil erosion and many other calamities. The scheme also has a nursery, where a common man can purchase high-quality native seeds and native plant saplings for their personal use.

1.4 Tamil Nadu Tourism

Tamil Nadu, the State of India with rich culture, religious shrines, marvellous heritage, majestic architecture, mysterious archaeological sites, beach, misty hills, dazzling sculptures, grassy vegetation, wildlife and corals and age-old traditions attracts tourists throughout the year. Tamil Nadu had the highest tourist arrival from 2014 - 17. Around 218.58 million domestic tourists arrived in the state in the year 2022 (Indian Tourism Statistics, Ministry of Tourism, 2023). "Enchanting Tamil Nadu - Experience Yourself" campaign launched by Tamil Nadu Tourism Development Corporation in the year 2003-2004 paved the way for national and international tourists to experience the heritage, history, spirituality, peace and culture of the state. In the year 2023 Tamil Nadu Tourism has introduced policy for "Rural and Plantation Tourism" (Tamil Nadu Tourism Policy Report, Government of Tamil Nadu, 2023)

The Department of Tourism, Department of Culture and Hindu Religious and Charitable Endowments Department (HRCE) of the state has announced Minutes for the year 2021 and 2022 consisting 30 themes and schemes to boost Tamil Nadu tourism. Some of the vital schemes are: a) Master Plan to improve the standard of tourism destinations to international level. This includes, accommodation sector, advancing amenities and infrastructure and collaborating with private sectors. b) Tourism Destination Development Scheme - reconstruction of indigenous symbols, light and sound show on heritage monuments or statues. c) Tourism Hospitality Skill Development and Certification Program is planned to organise along with Tamil Nadu Skill Development Corporation to educate and empower participants on preparation, serving and marketing traditional food and beverages. d) Rural and Plantation tourism to attract inbound tourists (domestic and foreign). This initiative creates an opportunity for tourists to know about the nature of crops/ millet/ tea/tree

by interacting with the local community and the plantation workers and by directly experiencing in the field (Government of Tamil Nadu, 2021).

A total of ₹50 lakhs budget allocated for the scheme Skill up-gradation of tourist Guides. ₹25 lakhs allocated to organize Summer Festival in association Department of Horticulture in Chennai to exhibit flower, fruit, vegetable and Palmyra palm products every year. A total of ₹1.50 crore allocated to organize Chennai Vizha, an annual event to showcase and support national handicrafts, handloom and food from various parts of the country (Government of Tamil Nadu, 2021).

1.5 Rural and Community Development Scheme in Tamil Nadu

1.5.1 State Schemes

1.5.1.1 Mudhalvar Grama Salaigal Membattu Thittam (MGSMT): Chief Minister Road Connectivity Development Scheme

A proper road connectivity in a rural area contributes directly to the social economic development of the people. These roads provide access to education, health and market areas. They can also lift them above the poverty line. The density of the rural Road in Tamil Nadu is 146 km/ 100 sq. km compared to the national value of 11 7 km/ 100 sq. km. Overall, the length of the road is 1.55 lakhs Km in 2022 with an increase of 55 % from last decade. Upon expanding the state witnessed multiple issues on its maintenance, thus, Mudhalvar Grama Salaigal Membattu Thittam introduced in the year 2022 aims to address the issue in a comprehensive and sustainable manner.

1.5.1.2 Namakku Naame Thittam (NNT): Self Identity Development Program

This is a “demand driven scheme” aiming to build confidence and self-reliant attitude among the rural people. It was introduced by Dr M. Karunanidhi, Former Chief Minister of Tamil Nadu in 1997. Subsequently in the year 2021 the scheme is re-implemented. The scheme will help the community to be directly involved in stages of the development process from planning, mobilizing the resource, organizing maintenance and to the control stage. It ensures minimum public

contribution for any work should at least be 1/3rd of the estimated amount. For Scheduled Caste and Scheduled Tribe community could be 1/5th of the estimated amount. The guideline and the procedure for selections are: the participants should be a community. Community refers to an individual or a group that forms an institution, registered society, and trust or public private company. Work such as construction of buildings, toilets, fencing, construction of schools, colleges, auditorium, smart classrooms for government, school and government colleges. Repair or renovation of tribal schools, construction of community hall, kitchen, dining hall. Construction of women's hostel, installation of LED Low mass light, libraries in rural areas, Anganwadi's hospital, primary health centre and burial ground in rural areas. Purchase of furniture, computer for schools and Panchayat union. Maintenance of solid waste management and construction of buildings of physical fitness centres are listed as benefits of the scheme. Corporate Social Responsibility (CSR) fund cannot be taken for the consideration of one third of the local contributions. The district collector has given authority to decide and prioritize the work which gives maximum benefit to the community.

1.5.1.3 Samathuvapuram: Housing Scheme for Rural Community

The Govt of Tamil Nadu issued financial sanction for repair or construction of 14,880 houses in 145, old Samayapuram during the year 2021. For repair the sanction is issued only if the size of the house or not modified, if the resident or not government servant, If the house is not in good condition, if the beneficiary is not holding another house, If the house is not rented or sold out. 7574 houses were chosen by the district collector. Rs. 67 crores were allotted during the year 2022 to repair or renovate the existing houses.

1.5.1.4 Anaithu Grama Anna Marumalarchi Thittam II

Majority of the assets distributed to the village panchayats is skewed on one side because of the habitation of village panchayats and the population present in each panchayat. In Tamil Nadu 49 of the village panchayats are having less than 500 population and 290 panchayats are having more than 1000 population; this uneven balance is found a major disparity to Improve Quality of Life Index. Government of

Tamil Nadu has re-introduced a flagship program called Anaithu Grama Anna Marumalarchi Thittam II in the year 2021 to Improve and upgrade basic infrastructure needs. It includes rejuvenation of water bodies, creation and upgradation of streets and lanes habitation, creating infrastructure facility to the burial ground, creating infrastructure development in schools and public utilities, creating livelihood and marketing facilities in convergence and creating green clean villages. ₹20,00,000 fund is allocated to every village panchayat (Rural Development & Panchayat Raj Department, Tamil Nadu, 2023).

1.5.2 Central Scheme

1.5.2.1 Socio Economic and Caste Census (SECC)

The Government of India along with the Ministry of Rural Development initiated social, economic and caste census in the year 2011. The survey identified communities living below poverty level in both rural and urban areas. Tamil Nadu's rural population comprises over 10 million households and 39.6 million people. Only 11% of households have a salaried income. Majority are manual labour (65.77%). Only 6.61% graduates. More than 78% of households earning less than ₹5,000 per month. While rural homelessness is rare, about one-third of homes are built with temporary or substandard materials. These indicators reflect substantial challenges in employment, education, income security, and housing across rural Tamil Nadu.

1.5.2.2 Mahatma Gandhi National Rural Empowerment Guarantee Scheme (MGNREGS)

This scheme was launched on 2nd February 2006, it guarantees 100 days employment throughout the year for any rural member, aged above 18. This scheme emphasizes the realization of "right to work". Natural Resource Management (NRN) and agriculture, and allied work is reformed in Management Information System (MIS) of MGNREGS to ensure effective implementation. The permissible list includes construction of buildings, dams, rainwater harvesting, panchayat office, cement concrete road, brick stone road, gravel road, drainage system, water drain for coastal protection, cross drainage structure for community. Embankment for community, flood channel, mini percolation tank, ponds, sand filter for open well,

community sanitary complex, construction of minor canal for community, construction and maintenance of fish dry yards, plantation of farm forest trees in coastal line, boundary line tree plantation, canal line tree plantation, raising nursery for individual and groups, cyclone shelter, Anganwadi shelter, afforestation of waste land using forest trees, block plantation of bio drainage trees in the field of community, construction of poultry, livestock, shelter, cattle, shelter, goat, shelter, construction of common work shed of self-help group performing livelihood activity, maintenance of rural public assert and many more.

1.5.2.3 Indira Awaas Yojana

The scheme launched in 1997. Its objective is to provide a free house to the Scheduled Caste and Scheduled Tribe living in rural areas, under the poverty line. The beneficiaries are selected from the below poverty line approved by the Grama Sabha. 75% is funded by the state and 25% is funded by central. In Tamil Nadu Since 2011, the state provides Rs 1 lakh. The contribution of state and central in the ratio of 62.25: 33.75 respectively

1.5.2.4 The Member of Parliament Local Area Development Scheme (MPLADS)

Under the scheme, the government has allocated 5 crore per annum since 2011 for boosting infrastructure facilities in both cities and rural areas. The district collector has the authority to administer the work that is sanctioned by the Member of Parliament. Permissible works are pond, river, tank and canal maintenance providing cross drainage, and irrigation work, constructing road and buildings, maintaining sanitation and water supply (Rural Development & Panchayat Raj Department, Tamil Nadu.).

1.6 Research Problem

India, land of diverse community and livelihood practices. The residents are proud of its culture and heritage. But the nation building process rapidly converts the rural areas into cities increases the problem concerning inequality, low wages, and sustainability of livelihood along with the loss of green cover and water resources. Climate change and unpredictable seasons, low rainfall are also found to be another

barriers for sustaining livelihood. On the other hand, the caste structures discomforts for particular community and gradually destroy their livelihood. Their skill set, artistic expression and traditional ecological knowledge are unrecognized and unrewarded. Most of them are only seen in huge markets, malls and commercial food outlets. Their dreams and defeats are unnoticed. Their voices are unheard. Majority of the benefits from government are received by the intra dominant community of the village. This uneven shift multiplies its effect on the environment. These issues and the fundamental change can be addressed only if people outside their community initiate to recognise and respect them. The disappearing livelihood and dooming art forms associated with nature can be rejuvenated only with the change of interest especially with the young minds. The history, nutritional benefits and cultural significance might drive specific aspirants to sustain the traditional and livelihood. This study brings them into an account through introducing tourism to the community and Palmyra palm themed tours to the niche tourist. This attempt is to bring new opportunity for conservation of Palmyra palm and it's belonging community.

A large number of systematic research studies have been carried out in foreign countries on precise issues like “Community Based Tourism Development” and “Conservation”. In the Indian context, few and far studies have concentrated on these research issues. Also, there is very little research found connecting “Conservation of native flora” and “Tourism” both in the global and Indian context and no such research found specific to Tamil Nadu.

1.7 Scope

Tamil Nadu is listed as one of the top most visited states in India due to its abundant cultural diversity and inclusiveness in promoting rural livelihoods along with tourism. There is an urgent need to include the local community to participate and enjoy the benefits from tourism. There are certain fruitful schemes implemented by both state and central government to benefit the rural communities. Largely these benefits, focus on infrastructure development, and community empowerment. It is realized that these benefits would be helpful to scale up tourism activities in Tamil

Nadu. Most of the livelihoods of Tamil Nadu are disappearing. To untap the gaps and to regenerate sustainable livelihood activity, tourism and active community participation, attention of various stakeholders are considered as essential factors. A brief or superficial look at the region's resource, resident interest, infrastructure, amenities, and the support for development process has to be examined to integrate community based tourism approaches in the selected study area. Therefore, integration of tourism eventually creates value to the destination and transforms the status of underprivileged communities into a better form.

1.8 Need for the study

The systematic and theoretical study on "Community Based Tourism for conservation of Palmyra palm in Southern Tamil Nadu" aims to understand the key tenets of Palmyra palm such as community association, handmade food and hand crafted products, medicinal values, Palmyra biodiversity, cultural significance, reason behind decline of Palmyra palm, numerous challenges faced by climbers and conservation efforts taken to revive Palmyra palm. The purpose of the present study is to investigate the possibility of developing community based tourism in bringing a positive change in the ecosystem and the society. To address the need, the researcher aims to locate potential destinations as clusters. Various schemes, policies and conservation approaches are traced to recognise conservationists. Further, willingness of stakeholders is addressed to build a constructive community based tourism and to strengthen the local community participation for a long run. The study is expected to provide productive recommendations to uplift the livelihoods of local community and ecological wellbeing of Palmyra palm.

1.9 Objectives of the Study

1. To map the potential locations of Palmyra palm in Southern Tamil Nadu for developing community based tourism destination;
2. To identify and study various factors influencing conservation and restoration of Palmyra palm in Southern Tamil Nadu;
3. To examine the interest of the local community associated with Palmyra palm

for livelihood towards community based tourism activity and empowerment of the local community; and

4. To investigate the opinion of experts associated with Palmyra palm towards community based tourism approaches for conservation of Palmyra palm and empowerment of the local community.

1.10 Research Questions

1. What are the potential locations of Palmyra palm in Southern Tamil Nadu that could be developed into community based tourism destinations?
2. What are the key factors influencing the conservation and restoration of Palmyra palm in Southern Tamil Nadu?
3. How do socio-economic, cultural, and environmental factors affect the sustainability of Palmyra palm?
4. What is the level of interest among the local community in utilizing Palmyra palm resources for community based tourism activities?
5. In what ways can Palmyra palm contribute to livelihood opportunities and empowerment of local communities?
6. What are the expert perspectives on adopting community based tourism approaches for the conservation of Palmyra palm?

1.11 Chapter Organisation Design

The study presents six chapters. The chapters are arranged interlinking each other in a systematic manner with proper sequences.

Chapter-1: Chapter I introduces the background of the study, about Tamil Nadu, Tamil Nadu Tourism, livelihood conservation, state and central scheme, research problem, Scope of the study, need for the study and objectives.

Chapter-II: Chapter II review of literature is related to evolution and concept of community based tourism, stakeholders' involvement, factors affecting community based tourism, successful community based tourism model, details about Palmyra palm, conservation and restoration efforts taken to sustain Palmyra palm and gap in literature.

Chapter-III: Portrays the overview of Palmyra palm as “Palmyra palm: tree of life, legacy and learnings.

Chapter-IV: This chapter also discusses research methodology, tools and applications, source of primary and secondary data, validity and reliability research instrument, data and sample selection, data collection process the destination profile.

Chapter-V: This chapter consists of analysis of primary data and information; Interpretation of the results with discussion; GIS maps of potential Palmyra palm locations and creative routes.

Chapter-VI: The last chapter elaborates findings, suggestions, and conclusion and future research.

CHAPTER-2

REVIEW OF LITERATURE

2.1 Introduction

This chapter expresses the series of fruitful views, opinions and findings of the critics from peer reviewed literature sources and presented in thematic sequences. The theoretical dimensions such as evolution and concept of community based tourism, global perspective on community based tourism, community based tourism in India, overview of Palmyra palm, botanical, ecological, cultural and economic importances of Palmyra palm, conservation and restoration approaches of Palmyra palm and its belonging community, stakeholders engagement in community based tourism, stakeholders interest and participation, community participation and empowerment, Planning community based tourism, case studies, related theories and GIS mapping in community based tourism were collected. The collected review aims to understand the scenario, identify potential community based tourism destination in southern Tamil Nadu, analyze efforts taken by the stakeholders in conserving and restoring Palmyra palm and its belonging community, investigate the interest of stakeholders of the respective region in community based tourism planning towards conservation of Palmyra palm and empowerment of local community, examine interest of local community in participating in community based tourism activities. These reviews from scholarly literature contextualize the existing knowledge, broadens academic discourse, demonstrates relevance of the study, explores gaps, formulate research questions, identifies best practices, avoids pitfall, enhances research quality and supports the study with relevant evidence**.**

2.2 Community Based Tourism (CBT)

2.2.1 Definition and Concepts

Table 2.1: Definitions of Community Based Tourism

Definitions	**Author & Year.**
"Community based ecotourism is defined as a collective responsibility and approval by representative bodies particularly those inhabited by indigenous peoples, there are collective rights over lands and resources."	World Wildlife Fund (WWF), (2001)
"Community based tourism enables the tourist to discover local habitats and wildlife, and celebrates and respects traditional cultures, rituals and wisdom."	Francis, J (2012)
"Community based tourism support for conservation of culture and nature, delivery of authentic experiences based on local knowledge and Increases visitor awareness of, and support for, community issues"	UNEP (2005)
"Community Based Tourism (CBT) may be defined as tourism that takes environmental, social and cultural sustainability into account. It is managed and owned by the community, for the community, with the purpose of enabling visitors to increase their awareness and learn about community and local ways of life"	George et.al. (2006)
"Community Based Tourism (CBT) is tourism activity, community owned and operated, and managed or coordinated at the community level that contributes to the well-being of communities through supporting sustainable livelihoods and protecting valued socio-cultural traditions and natural and cultural heritage resources."	ASEAN community based tourism standard (2016)
"Community Based Tourism (CBT) is about social justice, empowerment, equity of benefits, redistributive measures, ownership of the tourism sector and holistic community development."	Giampiccoli & Saayman (2018)

"Community Based Tourism (CBT) as places that have yet to achieve maturity in developed or mass tourism; as spaces that have the capacity to explore, analyse and interpret visitors' responses to an offer, as areas for the application of contemporary and emerging visitor management practices."	Wiltshier (2019)
"Community based tourism fosters understanding between people, creating employment opportunities and bringing about socio-economic benefits for the community, particularly in interior and remote areas; striving towards balanced and sustainable development; and preserving, enriching, and promoting a region's cultural heritage."	Kumar Walia (2020)
"….tourism activities and services developed by local community members, working together in a 'CBT' club or group, sometimes in partnership with the private sector".	UNWTO
"Community Based Tourism (CBT) is conceived as a form of relatively low-scale tourism that is managed by a group of locally owned businesses to benefit the community and, in some cases, contribute to conservation (when taking place in or near protected areas)."	Encyclopedia (2022)
" Community based tourism (CBT) has gained recognition as a sustainable approach to tourism that fosters economic growth and social development while minimizing negative environmental and cultural impacts. By empowering local communities to own, manage, and benefit from tourism activities".	(Jackson, 2025)
"Community Based Tourism (CBT) is a kind of tourism that links natural, social and cultural resources through local communities as a complementary activity which is based primarily on agriculture and livestock farming."	Yuliane et.al., (2022)
"Community tourism refers to travel experiences owned, led and run by communities – non-profits, cooperatives, social enterprises. At its very best it breaks down barriers to engage underserved communities in meaningful, life-changing ways."	Planeterra (2022)

Source: Author's Compilation

Over time, the concept of community based tourism has evolved with notable milestones. The author's contribution to the transition of the context is represented in a systematic manner. The evolution and concept of community based tourism is bifurcated and overlapping.

The initial study on Community Based Tourism (CBT) was conducted as "Tourism as a Community Approach." In this study, the author discusses the social, cultural, and economic constraints created by tourism on the community. The author suggests that tourism planners should support communal goals and involve the community in the decision-making process (Murphy, 1983). Haywood (1988) presented a “community planning paradigm” to overcome conflicts, break stereotypical thinking, and generate communal benefits. Blank (1989) emphasized “the necessity and possibility of Community Based Tourism.” The concept of Community Based Mountain Tourism (CBMT) emerged in 1998, highlighting the importance of sustainable resource utilization and its role in strengthening the community economy (Mountain Forum, 1998). Further, Pearce and Moscardo (1999) provided guidance on shaping communities for future tourism development. Mitchell and Muckosy (2008) examined community based tourism within a sustainable and participatory framework. Richards and Hall0) explored the relationship between community based tourism and pro poor tourism. The integration of volunteerism (voluntourism), pro-poor tourism, and community based tourism has been recognized as a strategy to alleviate poverty in certain societal groups (Kennedy & Dornan, 2009; Wearing & McGehee, 2013).

The World Wildlife Fund (WWF) (2001) examined community based tourism as a tool for assessing ecotourism and conservation efforts. The year 2002 was celebrated as the International Year of Ecotourism. During and after this celebration, the concepts of Community Based Ecotourism (CBET) aimed at protecting nature and alleviating poverty and Sustainable Community Based Ecotourism (SCBET) focused on enhancing economic, social, and environmental sustainability gained popularity (Hafezi et al., 2023).

In the following years, several studies related to community based tourism emerged. Blackstock (2005) critically analyzed community based tourism as a functional approach that involves local entrepreneurs. Goodwin and Santilli (2009) highlighted the academic perspective of community based tourism, emphasizing "community ownership/management and community benefits." Across the world more research contributions on community based tourism were resulting after the year 2010's (Graciano & Holanda, 2020). Guzman et. al. (2011) exclusive research was conducted on "women empowerment" and "economic benefits" through community based tourism. Dwyer and Wickens (2011) overviews community based tourism as a "New Tourism" that enables to sustain host culture. Giampiccoli and Mtapuri (2012) perceives, Community based tourism centralized ownership within the community, Community Based Partnership Tourism (CBPT) discerns partnership between community and private organization, and Community Tourism (CT) considers community as an asset to invest.

Credible scholars have conducted in-depth research on community based tourism, socio-ecological approaches, and the conservation of natural and cultural heritage in recent years (Mora, 2022). Lo and Janata (2020) developed a model based on residents' perspectives on community based tourism development, emphasizing the conservation of cultural and natural resources to promote the local economy. The concept has also gained significance in the strategic aspect of sustainable tourism development, helping to understand how conservation and development resources are utilized in the tourism industry (Arintoko et al., 2020). Thang (2023) introduced the Technology Acceptance Model in community based tourism to enhance supply chain management. Additionally, the concept of the sharing economy in community based tourism has provided opportunities for integrating new technology and innovative business models. This includes startup innovations and breakthrough strategies such as "Live Like a Local," which has captured media attention and positioned itself as a key strategic agenda for the future (Lindstrom, 2020).

According to Ernawati (2019), community based tourism is characterized by several key features. Attraction features include existing and moderately

commercialized sites that cater to both hosts and guests while preserving authentic culture, nature, and the local environment. Business features highlight the small-scale nature of operations, with businesses being locally owned and managed. Spatial features are marked by a dispersed pattern and low-density development, ensuring minimal environmental impact. The architectural pattern follows a vernacular and natural style, blending harmoniously with the surrounding landscape. Economically, community based tourism generates low-income volume but remains locally linked, reducing financial leakage while fostering a multiplier effect that complements existing economic activities. Regulatory features emphasize strong community control, with public intervention prioritizing community well-being and ensuring a long-term, sustainable approach for tourism development.

2.2.2 Global Perspectives on CBT

Since the 2000s, community based tourism (CBT) has expanded globally, successfully implemented in developed countries such as Canada, New Zealand, and Australia and developing nations like Vietnam, Indonesia, China, and Malaysia. The Asia Pacific Economic Cooperation (APEC) developed a handbook titled “How to develop and sustain community based tourism? which presents insights from an Asian perspective. The book emphasizes the growing demand for participatory travel experiences, which are gradually transforming tourism and are expected to create both opportunities and challenges by 2040. The APEC Tourism Charter released in the year 2000 . The first Tourism Ministerial Meeting held in Korea, recognizing the role of CBT in enhancing the economic, social, environmental, and cultural well-being of APEC member economies. The Charter highlights CBT as a key driver of business opportunities for small and medium-sized enterprises (SMEs), an effective tool for distributing economic benefits across regions, particularly at the provincial level, and a catalyst for public-private sector partnerships (APEC, 2008).

From an American perspective, only a few community based tourism initiatives have been deemed successful. A study conducted by the Rainforest Alliance and Conservation International analysed 200 CBT projects across the America, revealing that only 5% of community based tourism accommodations

achieved occupancy. The major challenges contributing to this low success rate include lack of funding, poor governance, and limited market access. Additionally, a 2006 survey by ResponsibleTravel.com and Conservation International assessed 150 CBT organizations and found that there was an insufficient understanding and weak application of the concept and benefits of CBT (Goodwin and Santilli, 2009). These findings highlights the need for stronger financial support, improved governance structures, and enhanced marketing strategies to ensure the sustainability and growth of community based tourism in the Americas.

According to Solimar International, community based tourism is a crucial component of the tourism industry and a key driver of destination sustainability. However, despite its significance, local communities are often neglected in tourism worldwide. Many destinations either overlook local populations or reduce their role to mere gimmicks or low-wage labor for foreign visitors, with their voices remaining unheard (Noris, 2024). Ideally, tourism should function as a tool for enhancing destination development and improving the quality of life for local residents.

To address these challenges, various Non Government Organisations (NGOs) have initiated efforts to promote and support local communities in CBT activities. Global community based tourism networks, such as Planeterra, facilitate international collaboration by providing resources and training to local communities. The International Ecotourism Society (TIES) offers certification courses in CBT to encourage greater local participation in tourism. Additionally, the United Nations Development Programme (UNDP) implements sustainable livelihood and employment creation projects, providing funding, skill development training, and technical support to empower communities and integrate them into the tourism sector.

2.2.3 CBT in India

India has witnessed a growing interest in community based tourism and the promotion of the local economy over the past few decades. Several impactful projects have emerged, such as homestays and guided tours that allow travelers to explore Kashi culture and Mawlynnong, renowned as the cleanest village in Asia

(Dutta, 2024). The Ministry of Tourism, Government of India has actively promoted CBT through its Rural Tourism Project, designating 11 villages across Sikkim for development. These include Lachen in the North; Chumbung, Tingchim, Maniram Bhanjgyang, Rong, Srijunga Martam, and Darap in the West; Pastenga, Pendam Gadi Budang, and Tumin in the East; and Jaubari in the South (Chaudhary & Lama, 2014). Additionally, the Kerala Responsible Tourism Mission has introduced the People's Participation for Participatory Planning and Empowerment through Responsible Tourism (PEPPER) initiative, which integrates the local community into tourism planning, ensuring a more sustainable and community-driven approach (Kerala Tourism, 2017).

The Swadesh Darshan Scheme was launched by the Ministry of Tourism, Government of India, in 2014: 15 to promote community based tourism through the development of theme-based circuits, enhancing infrastructure and capacity-building programs in selected villages (Ministry of Tourism, 2014). A significant initiative under this scheme is India's first Tribal Circuit Project, which was inaugurated on September 14, 2018, in Chhattisgarh. This project connects 13 sites: Jashpur, Kunkuri, Mainpat, Kamleshpur, Maheshpur, Kurdar, Sarodadadar, Gangrel, Kondagaon, Nathiya Nawagaon, Jagdalpur, Chitrakoot, and Tirthgarh, with the aim of empowering tribal communities, promoting the local economy, and preserving tribal traditions (Ministry of Tourism, 2018).

Additionally, the Pradhan Mantri Gram Sadak Yojana (PMGSY) facilitates community based tourism by improving rural infrastructure, benefiting local communities and enabling the development of tourism in villages (Ministry of Rural Development, 2020). The Bharat Darshan Scheme plays a crucial role in raising awareness about community based tourism, particularly among youth and students, while also encouraging local communities to actively participate in and appreciate tourism (Ministry of Tourism, 2012).

The Central Nodal Agency (CNA), in collaboration with Rural Tourism (RT) and Rural Homestays (RH) Centres, state bodies, central agencies, and other stakeholders, has identified niche tourism areas such as agritourism, art and culture,

eco-tourism, wildlife tourism, tribal tourism, and homestays. Over 134 villages have been selected for development, aiming to support traditional occupations, preserve indigenous art and crafts, and rejuvenate rural lifestyles by creating new business opportunities through tourism, while ensuring sustainability and avoiding excessive infrastructure development. Under this initiative, clusters of five to seven villages will be identified to highlight and market local products. The CNA has directed states to prepare individual and clustered village tourism plans based on their tourism potential. In alignment with this initiative, the Government of India is also planning to activate the Paramparagat Krishi Vikas Yojana (PKVY) to promote organic farming and rural sustainability (Chakrabarty, 2023; Ministry of Tourism, 2023).

2.2.4 CBT Planning and Opportunities in India

Community Based Tourism (CBT) is widely recognized as a sustainable approach that actively involves host communities in the planning, management, and conservation of tourism resources. This participatory approach aims to enhance environmental, social, and cultural sustainability (Blackstock, 2005). Effective CBT development requires an evaluation of stakeholder interests in resource conservation and strategic marketing to ensure long-term positive impacts. The active participation of local communities is particularly crucial for fostering sustainable tourism development (Lo & Janata, 2020).

A well-structured CBT framework should emphasize the engagement of local communities in decision-making and managerial processes to enhance their sense of ownership and responsibility (Chadha & Onkar, 2019). Moreover, securing community trust, encouraging idea-sharing, and promoting collaborative learning are essential components of successful CBT implementation (Hafezi et al., 2023). These elements collectively contribute to a more inclusive, resilient, and sustainable tourism model, benefiting both the local community and the broader tourism industry.

Effective community integration in tourism planning and management relies on three key parameters: awareness, unity, and power, which enhance self-reliance and local control within communities (Park et al., 2023). Proper tourism planning is

essential to maintaining a balance in visitor volume and timing, reducing congestion, minimizing resource and infrastructure usage, and fostering mutualism between tourists and host communities. Additionally, well-planned tourism initiatives ensure that visitor expectations and demands align with local community interests while promoting responsible tourist behavior (UNWTO, 2015). Despite the potential benefits of Community Based Tourism, many initiatives struggle with long-term sustainability due to insufficient policies and welfare schemes (Yuliane et.al., 2022). Key criteria for effective CBT planning include carrying capacity, environmental conservation, visitor management, financial sustainability, employment quality, socio-cultural policies, stakeholder involvement, and infrastructure development (Ismail & Jaafar, 2022). Policies related to land use and ownership play a crucial role in protecting communities and conservation areas, ensuring that local populations benefit from tourism without losing control over their natural and cultural heritage (Chiawo et al., 2023). Furthermore, the integration of e-commerce applications in CBT enterprises empowers communities by enhancing business ownership, strengthening supply chains, and improving marketing strategies. To successfully implement such digital initiatives, essential factors such as intellectual capital, internet accessibility, software development, and digital literacy among youth must be considered (Thang, 2023). These components collectively contribute to a more resilient and self-sustaining community based tourism model, ensuring economic growth while preserving local traditions and ecosystems.

Emphasizing that “travel is becoming more experimental,” the Ministry of Tourism, Government of India (2022) announced the National Tourism Day Theme 2022 as “rural and community centric tourism” under the Azadi Ka Amrit Mahotsav initiative. This effort aims to promote and sustain indigenous communities by integrating them into mainstream tourism. The “Make in India” scheme, launched in 2014, was introduced to enhance economic sustainability, support locally made products, and generate employment opportunities for youth, thereby reinforcing national pride and self sufficiency (Make in India, Government of India, 2015). Building upon this foundation, in 2020, the Government of India launched the “Vocal for Local” campaign as part of the self reliant India movement, which draws

inspiration from the Swadeshi Movement. This initiative encourages the consumption and promotion of local products, further fostering economic resilience and community empowerment (Government of India, 2025). Additionally, the Indian government has implemented policy measures to expand homestay programs, which serve as a means to preserve local culture and empower communities. Notably, policies that support women's involvement in tourism related enterprises provide financial security and supplementary income, thereby contributing to gender inclusive economic growth (Yaja, 2023).

2.2.5 Role of GIS Mapping in CBT

Effective destination design, incorporating geographical clustering, enhances tourist experiences by providing greater clarity and accessibility (McKercher, 2005). Dona and Popa (2013) identified potential anthropogenic and natural destinations through cluster analysis, using spatial geographic mapping to highlight their distribution. Similarly, the Destination Roadmap approach assesses destination potential by identifying desirable qualities necessary for development. This method not only helps prevent overtourism but also provides opportunities to analyze and design appropriate interventions, reducing conflicts among stakeholders (Koens et al., 2021).

Several studies have adopted Geographical Information System (GIS) mapping as a tool for tourism planning and environmental conservation. For instance, Rosalina et al. (2023) utilized GIS mapping to preserve the aquatic ecosystem and protect mangrove habitats in Kuri Caddi Mangrove Ecotourism, Maros Regency, South Sulawesi, Indonesia. Similarly, Maaihah et al. (2023) classified nature based tourism clusters in Jordan into water attractions, forest attractions, natural reserves, and deserts, mapping potential locations through GIS. Additionally, GIS mapping has been applied to identify megalithic stones and create a heritage trail to support the cultural heritage of Tambunan, minimizing negative impacts on the landscape, human settlements, and ecosystems (Amangeldi et al., 2025).

Further, Fafurida et. al. (2023) explored rural tourism clusters, employing GIS and to analyze landscape changes in distributed villages. The findings suggest that GIS based clustering effectively groups similar tourism activities, strengthening destination development models. The authors emphasize that cluster based tourism planning can serve as a valuable framework for policymakers, government agencies, and developers to design innovative and sustainable tourism products.

Dukic et al. (2014) developed a community based strategic planning model that integrates agriculture, tourism, and natural and cultural heritage. This model emphasizes a bottom-up approach, ensuring that development initiatives originate at the grassroots level. The protection of natural and cultural heritage is considered vital at all stages of destination and product development. The model also incorporates resource mapping, involving product identification, promotion, sales, and efficient revenue management, with a focus on ensuring that economic benefits remain within the community. In recent years, community based tourism planning and development has advanced significantly, incorporating Artificial Intelligence (AI) and Geographical Information System (GIS) based decision support systems to enhance strategic planning and destination management (Jurkus, 2022). These technological advancements contribute to data-driven decision-making, enabling more efficient resource allocation, sustainable tourism practices, and improved community participation in tourism development.

2.2.6 CBT and Conservation

After many years, the urge of conservation regains attention. COVID– 19 pandemic has shifted tourism close to community and conservation (Chiawo et al., 2023). “The most significant feature of the 1972 World Heritage Convention is that it links together in a single document the concepts of nature conservation and the preservation of cultural properties. The convention recognizes the way in which people interact with nature, and the fundamental need to preserve the balance between the two” (The World Heritage Convention, UNESCO). International Union for Conservation of Nature (IUCN) has launched “Nature 2030: One Nature One Future” a union in action program to overcome habitat loss, over exploitation,

climate change, urbanization and industrialization, agriculture, fishing and forestry, water use, transportation and resource use consumption. The target was taken to accelerate “living in harmony with nature” by 2050, that supports SDGs to the great extent.

Critics have shared their views on the need for conservation in community based tourism as: conservation promotes sustainability, generates income and fabricates better livelihood opportunities (Ulian et al., 2017). Tourism with living organisms develops emotional connection along leisure activities and learning. Observation and interaction with nature is a prime start for conservation and today many tourists have shown their willingness towards conservation. On the other side multiple campaigns, community projects and external/ CSR funds promote conservation, manages conflicts between the communities, avoid deforestation and satisfy ecological requirements (Izidoro & Schiavetti, 2022; Setiawan, 2021; Mora, 2022; Chiawo et al., 2023). Zhang et. al. (2022) articulates that ecological restoration and tourist experience shed light on environmental philosophy, environmental ethics and nature based tourism providing value to conservation management. The practice of restoring ecological resources that are damaged, or destroyed was found to be a necessary measure to reverse the impact created by the natural region (Harris et al., 2006; Clewell & Aronson, 2013). The restorative cell operated to experience social and ecological restoration, mutual benefit by strengthening the capacity of local community and the environment (NOSTOC, 2017). Natural resources that played a vital role in the livelihood of rural economies are in greater threat due to shifting land use, improper land management, poaching and lack of biodiversity conservation (Jagger, 2012). Vulnerability among communities pushes the members to sell the land under conservation to satisfy the basic needs (Chiawo et al., 2023).

Community based tourism conserves the local ecosystem, reverses the damaging environment, develops the livelihood of the community and prevents the destination from disaster (Zhang, et al., 2022). Livelihood diversification and conservation is considerably focused in underdeveloped or developing countries. Livelihood strategies are influenced by social, political and environmental policies. Livelihood diversification eradicates poverty, generates additional livelihood and

income, improves quality of life, manages usage of resources and supports present and future conservation (Kimengs, et al., 2019). Also, multilayered tourism integration and conservation of agriculture heritage can sustain traditional ecological knowledge among communities (Su et al.,2020; Wang, 2022). Conservation of intangible and tangible cultural heritage creates uniqueness to the destination and drives tourists with cultural and natural sensitivity to build a strong image on local culture (Esfehani & Albrecht, 2018).

In 1993, United Nations member states excluding the United States endorsed Convention on Biodiversity Conservation aimed to protect endangered species and safeguard the ecosystem. Claus Dieter 'Nick' Hetzer termed ecotourism for the first time in 1965. From the insight of various literatures "conservation" "development" "experience" are coined as facets of Community Based Ecotourism. Environment conservation requires grass root cooperation and socio economic and political empowerment among communities. Compared to other forms of alternative tourism, Community based tourism is more proportionate to conservation and tourism sustainability due to the involvement of the Community (Jurkus, 2022). Some of the barriers of heritage conservation are that it is more concerned with cultural property rather than natural property. understanding stakeholders' perspective, attitude and interest towards conservation keeps the action for a long run (Zhang et al., 2022). In summary, community based tourism and Conservation of ecological, social, economic and cultural sustainability includes safeguarding nature, supporting local entrepreneurs and locally made products, protects Natural and cultural heritage, preserves traditional knowledge and manages resources (Hafezi et al., 2023).

2.3 Palmyra Palm: Transdisciplinary Significance

2.3.1 Overview of Palmyra Palm

The Palmyra palm plays a significant role in showcasing inherited cultural traditions. A transdisciplinary approach to the study of the Palmyra palm provides insights into its ecology, history, society, culture, folklore, food, religion, festivals, medicine, handicrafts, economy, and industrial applications. This tree adorns the semi arid regions of Tamil Nadu. According to the Tamil Nadu Agricultural

University (TNAU) in 1999, Tamil Nadu had approximately 51.9 million Palmyra trees. Of these, 50% were concentrated in the southern districts of the state, with Thoothukudi alone accounting for 10 million trees (Sankaralingam et al., 1999). The tree is also known as ***Panjam Pokki*** and ***Karpaga Tharu*** for the immense benefits it provides to people (Krishnaveni et al., 2020). Additionally, the Palmyra palm is recognized as the national tree of Cambodia and the state tree of Tamil Nadu (Nagarajan, 2015; Shrikumar, 2018). During the Sangam era, trees and their associated communities were highly revered and held privileged statuses. Historical evidence indicates that streets, resettlement areas, kingdoms, hillocks, and townships were often named after this tree (Samuel, 2023).

2.3.1.1 Distribution

Borassus flabellifer (Palmyra palm) is predominantly cultivated in South Asia and South East Asian countries. The tree is believed to be a category of B. aethiopum native to Africa. Although some critics argue that the tree originated from the African continent it is traced to be distributed from India to South East Asian countries till New Guinea. The tree is largely found in India, Myanmar and Cambodia. These locations lack authenticated statistical data. The study conducted to record the presence of Palmyra palm in 2018 reveals that two thirds of 10 million trees present in Sri Lanka are located in Jaffna district and two thirds of 60 million trees present in India are in Tamil Nadu. A total of 2.5 million trees is present in Central Myanmar. 1.8 million trees are present in Cambodia. 0.5 million trees are present in Indonesia (Jana & Jana, 2017).

Some authors state that India has the highest number of Palmyra (85.9 million) in the world and out of this it is believed that 60% are in Tamil Nadu. Tamil Nadu has the major share with 51.9 million trees with the district of Thoothukudi ranking first (Krishnaveni et al., 2020).

2.3.1.2 Botanical Characteristic

The word Borassus flabellifer is derived from the Greek word referring to its "fruit with leather cover" and "fan bearer "It is known as nature's perennial gifts as it grows well in arid and semi arid regions. It grows up to 30 meters and lives a maximum of 100 years. The tree starts its yield after 10- 15 years. That may vary with the availability of the water. The trunk is grey, robust and ringed with leaf scars; old leaves remain attached to the trunk for several years before falling cleanly. The leaves are fan shaped and 3 m (9.8 ft) long, with robust black teeth on the petiole margins. Like all Borassus species, B. flabellifer is dioecious with male and female flowers on separate plants. The male flowers are less than 1 cm long and form semi circular clusters, which are hidden beneath scale like bracts within the catkin like inflorescences. In contrast, the female flowers are golf ball sized and solitary, sitting upon the surface of the inflorescence axis. After pollination, these blooms develop into fleshy fruits 15- 25 cm wide, each containing 1-3 seeds. The fruits are black to brown with sweet, fibrous pulp and each seed is enclosed within a woody endocarp. Young Palmyra seedlings grow slowly, producing only a few leaves each year (growth phase), but at an as yet undetermined time, they grow rapidly, producing a substantial stem (Jana & Jana, 2017).

Table 2.2: Scientific classification of Palmyra palm

Scientific classification of Palmyra palm
Kingdom – Plantae
(unranked) – Angiosperm
(unranked) – Monocots
(unranked) – Commelinids
Order – Arecales
Family – Arecaceae
Sub-family – Coryphoideae
Tribe – Borasseae
Sub-tribe – Lataniinae
Genus – Borassus
Species – Flabellifer

Source: (Jana & Jana, 2021)

2.3.1.3 Ecological Importance

Palmyra palm trees grow in tropical and subtropical regions of the world and hold high ecological importance, displaying complex spatial patterns of species distribution and diversity. These trees have played a crucial role in ecological conservation, particularly in water management and soil erosion control since ancient times. In Tamil Nadu, during the Sangam era, kings and other altruistic personalities foresaw the future need for water and maintained a balanced ecosystem by utilizing the Palmyra palm. Unlike other trees, the roots of the Palmyra palm grow vertically into the ground, which helps regulate groundwater levels. This unique root system facilitates irrigation, significantly contributes to the circulation of water in aquifers, riverbeds, and rivers, and ensures a well-balanced water consumption system. As a result, rivers remained perennial. Traditional ponds and lakes were often surrounded by Palmyra palms, forming a natural barrier (Jana & Jana, 2021). The tree is also planted in coastal regions to prevent soil erosion and mitigate the impact of natural calamities (Sivasubramaniyam, 2016). Palmyra palms serve as significant hosts for numerous species. Indian robins, palm civets, and various other wildlife species depend entirely on these trees for survival. The slender loris, a primitive species native to Tamil Nadu and listed as endangered by the IUCN, is known to inhabit the Palmyra palm trees in the Erode and Dindigul regions. Recognizing the ecological importance of these trees, on October 8, 2018, the Seeds Trust, Palmyra Nation, Arulagam, and the Tamil Nadu Forest Department launched an initiative to plant Palmyra palms to protect the vulnerable slender loris (Samuel, 2018).

2.3.2 Cultural and Economic Importance

The Palmyra palm tree has earned the names *Panjam Pokki* and *Karpaga Tharu* for providing immense benefits to people (Krishnaveni et al., 2020). It is recognized as the national tree of Cambodia and the state tree of Tamil Nadu (Nagarajan, 2015; Shrikumar, 2018). This tree holds an enchanting history, an enduring heritage, perpetual economic benefits, and exceptional nutritional value.

During the Sangam era, trees and their communities were highly revered and held privileged status. Historical evidence suggests that streets, resettlement areas,

kingdoms, hillocks, and townships were named after the Palmyra palm (Samuel, 2023). Chera, one of the three great rulers of Tamil Nadu, adorned themselves with Palmyra palm flowers during celebrations. The tree also held symbolic importance in historical flags, including the flag of Bheeshmacharya, a major commander in the *Mahabharata*, and that of the medieval Chozha kingdom's ruler, Pazhuvettarayar.

The report of Palm Sugar Market: Global Industry Analysis (2025–2026) states that "the global Palmyra palm sugar market was valued at USD 1.8 billion in 2024 and expected to grow from USD 1.9 billion in 2025 to USD 2.4 billion in 2034, at a CAGR of 2.9%. In recent years, the commercialization potential of Palmyra sugar as a natural alternative sweetener has gained attention. The price of the product is determined by its colour, flavor, and texture due to lack of popularity.

Products derived from the Palmyra palm provide significant economic benefits to local communities. Today, people are developing more value-added products to enhance quality, artistic appeal, and production. Several self-help groups collaborate to create artistic crafts from Palmyra palm leaves, adding colours and customizing them according to customer demand. Above all, the Palmyra palm, often referred to as a "factory by itself," provides a sustainable livelihood for rural communities (Krishnaveni et al., 2020).

2.4 Conservation of Palmyra Palm and Local Livelihood

In Tamil Nadu, there are an estimated 5 crore Palmyra palm trees, and approximately 3 lakh people depend on them for their livelihood. The Tamil Nadu Palm Product Development Board, established in 1995 and headquartered in Chennai, aims to promote and export Palmyra palm products, increase production, and alleviate rural poverty.

In the year 2002-03, Palmyra palm fiber was exported to America, England, Belgium, the Philippines, Japan, Germany, Australia, and the Netherlands, amounting to a total value of ₹200 lakh. Additionally, Palmyra leaf handicrafts, crafted by women from Manapad, Pulicat, Adukkamparai, and Manamadurai districts of Tamil Nadu, were exported to America, London, France, Germany, Switzerland, Canada, Japan, and the Netherlands. This initiative aimed at both

economic conservation and poverty alleviation for communities reliant on the Palmyra palm industry.

To overcome social barriers, the Tamil Nadu Palm Product Development Board provides training exclusively to 30,000 Scheduled Caste tappers and artisans. The Palmyra Development Board, introduced by the Horticulture Department of Tamil Nadu, has allocated ₹2.65 crore to increase neera production and improve the living standards of Palmyra farmers (palm climbers).

The board has undertaken several initiatives, including:

a) Training in the production of value-added products.

b) A 75% subsidy on equipment used for climbing or manufacturing Palmyra palm products.

c) Training in high-quality Karupatti production for 250 selected members.

d) Handicraft training for 100 selected women.

e) Awards for outstanding innovations in Palmyra palm climbing instruments.

f) Distribution of produced Palmyra products.

g) A 100% subsidy for distributing 10 lakh Palmyra seeds (Tamil Nadu Horticulture Department Government Order, 2022).

The Central Palmgur and Palm Product Institute, a unit of the Khadi & Village Industries Commission (KVIC), was established in 1974 in Madhavaram, Chennai. This institute provides skill development training to Self-Help Groups (SHGs), unemployed youth, college students, and the general public. It received the National Award for "Best Training Center" in 2012-13 and again in 2021-22. In addition to skill development, the institute trains the local community in preparing value-added products from Palmyra palm.

Another significant state body is the Palmyra Workers Welfare Board, established in 2006 by former Chief Minister Dr. M. Karunanidhi. During 2010-12, the board was led by former Minister Kumari Ananthan. It was re-established in 2022 by the current government and is now headed by former Minister Narayanan. The board provides various benefits to registered members, including:

- A monthly pension of ₹1,000 for Palmyra palm climbers aged 60 and above.
- Accidental death assistance of ₹1,00,000.
- Natural death assistance of ₹25,000.
- Financial assistance for children's education (₹8,000 - ₹12,000).
- Marriage assistance of ₹25,000. These benefits are available only to registered members of the board (Tamil Nadu Labour Welfare Board).

2.4.1 Restoration of Palmyra Palm

"The first step to restoring the Palmyra palm is to bring it back into our daily routine." The people of Tamil Nadu once enjoyed numerous benefits from the Palmyra palm. However, in the late 19th century, Palmyra palm products were gradually replaced by plastic, leading to a decline in the consumption and value of Palmyra-based foods. As a result, the tree began to disappear, leaving its associated communities in distress (Samuel, 2019). Traditional artisans and tappers now receive lower wages despite their arduous work (Karthikeyan, 2019).

Despite this decline, the medicinal properties of Palmyra palm leaves continue to be utilized by Siddha practitioners. Additionally, the tree plays a crucial role in biodiversity, supporting the Slender Loris, a primitive species native to Tamil Nadu that is now facing extinction. The Slender Loris depends on the Palmyra palm for shelter during the day, protecting itself from predators while searching for food. It preys on insects, frogs, and mice that inhabit the tree.

Recognizing the importance of conservation, organizations such as the Tamil Nadu Forest Department, Palmyra Nation, Arulagam, and Seeds Trust launched a large-scale Palmyra seed plantation drive in October 2018. This initiative aimed to plant 10,000 Palmyra seeds in adjacent villages, farmlands, and Ayyanar temple land in Kombai, Dindigul district. The objective was to protect and increase the existing population of the Slender Loris (Samuel, 2018). The Tamil Nadu Palm Product Development Board, in collaboration with the Agricultural Department, has also undertaken efforts to plant Palmyra seeds in wastelands while raising public awareness about the nutritional benefits of Palmyra based food products (Tamil Nadu Palm Product Development Board).

During the 2021–2022 period, Tamil Nadu Horticulture produced 1 lakh Palmyra seeds and took measures to collect genetic resources to identify high-yielding Palmyra varieties. Additionally, research on improving nursery techniques was carried out at the Agricultural College and Research Institute in Killikulam, Thoothukudi District. The department launched the “Palmyra Development Mission” as a commercial and profit-oriented scheme.

On September 17, 2021, the Hon'ble Chief Minister of Tamil Nadu, Thiru M.K. Stalin, received Palmyra palm seeds from the Hon'ble Speaker, Thiru M. Appavu, along with the Hon'ble Minister for Agriculture and Farmers’ Welfare, Thiru M.R.K. Panneerselvam, and the Agricultural Production Commissioner and Secretary to the Government, Thiru C. Samaya Moorthy, I.A.S. (TN Horticulture Policy Note, 2022).

Furthermore, in 2021, during his election campaign in Achankulam village, Kanyakumari district, Honorable Rahul Gandhi, opposition leader Lok Sabha rejoice ice apple, often referred to as the "poor man's rich fruit," offered by the local community (India.com, 2021).

2.4.2 Conservation and Restoration Approaches

Several news articles have displayed the efforts taken by various stakeholders on conserving and restoring Palmyra palm.

Table 2.3: Conservation and Restoration Approaches

Conservation and restoration Approaches	Authors & Newspaper
Anand Lal, a conservationist collects Palmyra palm seeds to sow them in an agricultural area near peruvilai village of Kanyakumari, Ashok Kumar sows Palmyra palm seeds in the interior of Tirupur district. Vishwanath a Naturalist sown closely 4000 Palmyra palm seeds near Madurai since 2015. Above all Godson Samuel, Author and Palmyra palm conservationist gathering young minds in Tamil Nadu and organized an initiative "*Panai Nadu"* (Palmyra Nation) to conserve native flora Palmyra palm and deliver awareness talk on its benefits and to bring back Palmyra palm in our day-to-day life.	(Shrikumar, 2018). The Hindu
Despite the cyclone Gaja hit in Tamil Nadu, Palmyra palm stood firm and saved certain regions from washing out. Many coconut trees and other trees were snapped into two or more pieces. This incident reveals the ecological importance of Palmyra, attracting many ecologists and naturalists to collect and sow its seeds.	The News Minute, 2019.
During North East monsoon conservationist of Chennai joins hand to sow Palmyra palm seeds in lakes, ponds beaches and other water bodies to increase the water level and to bind and strengthen the soil quality	(Kanthimathi, 2020, The Hindu)
The Mannar Bay Biosphere Reserve Foundation, Thoothukudi forest officials, Coastal Village Environmental Protection Committee, local community and guards, have planted 2,000 Palmyra palm seeds since 2018 to prevent sea erosion in the Van Island area. Palmyra seeds have been planted in 10 more islands.	(Archana, 2021)
Palma Federation, Kanyakumari organize Palmyra climbing program, Karupatti (Palmyra Jaggery) making, Palmyra candy making, purifying Palmyra Neera and basic Palmyra handicraft making trainings are exclusively for educated youngsters to create awareness and restore livelihood of Palmyra climbing.	(Dinakaran, 2021)
Karigar biriyani, a cloud kitchen in Chennai offers perunchooru in Palmyra palm petti. The handcrafted tradition package option attracts more customer also consider as a sustainable ecofriendly option	(Anantharam, 2021, The Hindu)
Palmyra climbers of Anthoniyapuram, Thoothukudi district considers education for their community is vital and contribute their profit from tapping Palmyra Neera as a salary to school teachers for past 18 years of RC Intermediate school Also, request	(Sun News, 2022)

the government to provide salary to the teachers.	
Thoothukudi Nazareth CSI diocesan's environmental concerns department secretary and Pandarachettivilai St Luke artisan collaborated to celebrate Ash Wednesday in a responsible manner by distributing eco-friendly hundials made of Palmyra leaves. Also, Roman Catholic devotees of churches apply the ash created by burning the palm leaves on their forehead during the occasion Palm Sunday.	(Express News Service, 2023).
Vanipatti, a village near Tanjore district of Tamil Nadu sustains the cultural practices by writing the name of the village leader in each Palmyra chits. The lot is shuffled to release the cows. This event happens mostly on the third day of Pongal celebration (Kaana pongal), a tamil cultural festival. People of the village gather to watch the show gleefully.	(Thinathandi, 2023)
People of Thoothukudi belt, Tamil Nadu near the Gulf of mannar island found a natural solution to prevent soil erosion by planting Palmyra palm. This initiative prevents the island from submerging and avoids natural catastrophe.	Honourable, PM Narendra Modi, Maan ki baat, Navabharata Times, 2021.
The drive, 'one crore palm tree saplings planting movement', launched by Green Needa and the Tamil Nadu Volunteers' forum is supported by the state govt, good Samaritans and environmental NGOs across the state. The movement aimed for spatial recovery of Palmyra palm which can fight against the climatic change	Times of India, 2024

Source: Authors Compilation

2.5 Identification of Stakeholders

2.5.1 Types of Stakeholders in Community Based Tourism

Stakeholders are individuals, groups, or organizations responsible for and affected by decisions made (Freeman, 2010). Reed et al. (2009) classify stakeholders into two categories: active and passive. Active stakeholders participate in and influence the environment through their decisions and actions, whereas passive stakeholders are affected by the decisions made by active stakeholders. Passive stakeholders may also include non-living entities.

Hadijah (2021) further classifies stakeholders based on their interest and participation into four categories:

1. **Subject stakeholders** – Those with a high level of interest but low influence.
2. **Key players** – Those with both a high level of interest and high influence.
3. **Context setters** – Stakeholders with low interest but high influence who shape the situation.
4. **Followers** – The general crowd, who have both low interest and low influence.

2.5.2 The Penta Helix Model

The Penta Helix Model has been developed by multiple researchers with different components. This innovation model identifies various stakeholders and analyzes their roles in supporting the creative economy. It emphasizes active participation and collaboration among stakeholders such as academicians, society, government, non-governmental organizations, and private organizations in planning (Azwar et al., 2023; Nainggolan et al., 2020; Sudiana et al., 2020).

The model aims to foster socio-economic development by encouraging academicians to provide ideas that promote innovative entrepreneurship, suggesting government support for innovation systems, public investment, research and development, basic infrastructure development, policy framing, and collaboration with academicians and private institutions. It also highlights the role of private organizations in funding research and product development, while non-governmental organizations and society are expected to cooperate and engage in socio-economic development (Sudiana et al., 2020).

Halibas et al. (2017) modify the model by replacing “non-governmental organizations” with “social entrepreneurs,” who build cross-cultural networks to improve services and sustain socio-economic benefits. By collaborating with other stakeholders, social entrepreneurs focus on addressing social and financial issues within communities through innovative solutions. Similarly, Awaluddin et al. (2016) substitute “non-governmental organizations” with “social entrepreneurs” and “society” with “community” to enhance the performance of the digital creative industry.

Cabrera-Flores et al. (2020) extend the Penta Helix Model to natural resource management by incorporating environmental, social, and economic considerations while accelerating the application of traditional ecological knowledge and best practices. The model's outcomes emphasize that sustainable competitiveness strengthens communities and environmental conservation, with a focus on the exchange of ideas and best practices.

Azwar et al. (2023) apply the Penta Helix Model to community based tourism development. Their findings suggest that media should play a role in promoting destinations and amplifying community voices. Additionally, they stress the importance of increasing community participation while preventing stakeholder overlap.

2.5.3 Roles and Responsibilities of Stakeholders in Building CBT

Ellis and Sheridan (2014) describe the roles of stakeholders in conducting genuine anthropological field research, building collective understanding, achieving sustainability, managing resources, providing solutions to problems, and disseminating the right information to the right people at the right time. Stakeholder involvement in the conservation of natural resources leads to higher transformative values (George et al., 2006). However, in many regions, specific stakeholders play a dominant role in decision-making and policymaking. Stakeholders with greater capacity, capital, resources, and political influence tend to have more power over marginalized communities (Rachmawati, 2023).

Marginalized communities should be empowered to take on roles as legitimate planners, investors, implementers, managers, supervisors, and evaluators (Noviati et al., 2022). Additionally, community roles can be classified as decision-makers, direct sellers of tangible products, promoters of local culture and festivals, entrepreneurs (engaging in local food preparation, handicrafts, and homestay services), self-employed individuals (operating micro and small-scale businesses), conservation practitioners, and tour facilitators with traditional knowledge (Nagarjuna, 2015; Prakoso et al., 2020).

2.5.4 Roles of Stakeholders Identified from Successful Case Studies

1. **Tourism Conscious Group**: Manages the tourist village, provides traditional education for tourists, establishes relationships and cooperation with other stakeholders for sustainable development, and represents community members in improving the tourism sector in the village.
2. **Banks**: Provide CSR programs and financial support in the form of grants for startups, MSMEs, and the construction of basic infrastructure.
3. **Educational Institutions**: Initiate research documentation, involve students in the promotion and development of tourist villages, and conduct socialization and training programs to enhance community skills, knowledge, and attributes.
4. **Government**: Provides fund grants for startups, MSMEs, and infrastructure development, as well as assistance in managing operational activities.
5. **Media**: Plays a crucial role in promoting tourist villages through online and offline platforms, serving as an interaction medium between tourist villages and the market (Ernawati et al., 2019; Permatasari et al., 2024).

2.5.5 Stakeholder Interest and Participation

Critics have highlighted both the advantages and disadvantages of stakeholder involvement in community based tourism while also providing valuable guidelines for effective engagement. Stakeholder involvement should be carefully managed to support and empower rural communities through collaboration in planning activities, power-sharing, and transparency. This involvement strengthens key pillars: human resources (through socialization, guidance, workshops, and training programs), infrastructure (by providing essential amenities for collaboration and development), and institutions (by enhancing management capacity and establishing a village consultative body).

Active participation and the proper channeling of stakeholder involvement help prevent conflicts, improve the quality of community based tourism planning, and ensure mutual benefits for all stakeholders. A "bottom-up" approach**,** characterized by decentralized and inclusive governance, should be adopted to

encourage community participation and foster collaborative partnerships (Rachmawati et al., 2023). Community based tourism helps individuals understand life more deeply while fostering stronger community attachment and satisfaction (Baniya et al., 2018). However, it can lead to both empowerment "power with the local community" and disempowerment "power over the local community" (Park et al., 2023). Anti-participatory stakeholders often dominate local communities, limiting their autonomy and decision-making power (Yanes et al., 2019).

Bianchi (2002) argues that *"local elites are complicit in the underdevelopment of their states, not as instruments of capital but as a result of the prevailing ideological climate of privatization and deregulation, which has further constrained their range of development options"*Increased community participation fosters social justice (Giampiccoli & Saayman, 2018; Gantait et al., 2021; Wen et al., 2021), strengthens the identity of vernacular communities (Durkin & Peric, 2017; Maheshwari, 2019), and provides tourists with an immersive experience of local life, habitats, endemic flora and fauna, vernacular traditions, and cultural rituals (Maheshwari, 2019). Additionally, community based tourism promotes both commercial and social value (Mtapuri et al., 2021) while contributing to broader development goals across multiple levels (Giampiccoli & Mtapuri, 2012).

Ngo and Creutz (2022) emphasize the importance of harmonious stakeholder participation in community based tourism. Their findings highlight the role of stakeholders in conserving local craftsmanship and traditional values, managing biodegradable and non-biodegradable waste, controlling pollution, and fostering sustainability through collaborative engagement and innovation**.**

Table 2.4: Factors affecting stakeholder participation in tourism initiatives

Type of Tourism	CBT	Conventional Tourism Forms	Authors and year
Definition	Tourism enables self-actualization, community growth by creating authenticated experience from bottom-up initiative and management.	Tourism for profit making, maximize employment opportunity, carrying capacity and delivers luxuries experience to tourists.	
	SOCIO CULTURAL FACTORS		
OPPORTUNITIES	Distributes economic and social benefits. Empowers the local community and creates new opportunities from existing livelihood activities. Empowers women by providing stable household income. Improves quality of life and eradicates Self-help groups and capacity building programs bring collective benefits with government and non-government organizations. Increases individual benefits among communities. Induce self-management. Involves the local community in the planning process. Ables local control in the decision-making process. Reduce migration. Generates authenticated experience. Sustains local culture and traditions. Encourages performance of local dance,	Increases the rate of job opportunity and improves quality of life and eradicates discrimination based gender, race, caste etc. local cultures are not prime focus and are rarely limelight for economic benefits.	(UNEP,2005; Giampiccoli & Mtapuri, 2012; Goodwin & Santilli, 2009; Bolanos, 2014; Ngo, &

	music, festivals, fairs and other traditional practices. Cultural identity becomes USP of the destination.		Creutz, S, 2022; kim et.al. 2014; Zielinski et al., 2021; Caribbean Tourism Organisation, 2020; Prakoso et al.,2020)
C **H** **A** **L** **L** **E** **N** **G** **E** **S**	Autonomous association within the community. Social exclusion and discrimination-based gender, race, caste, disability etc. Collaboration with different stakeholders. Heterogeneity. Support from the government (policies and schemes). Low education, interest and awareness. Busy routine conditions. Tourist retention and perception towards tourism. Demonstration effect, tourist assimilation and transformation of indigenous culture. Prostitutes, drugs and child and women trafficking.	Change in livelihood pattern and creates different opportunities. Increase in demonstration effect. Local communities gradually lose individuality. Tourist retention. Local cultures are not considered for development. Social Imbalance. Identity Theft.	
	ECONOMIC FACTORS		
O **P** **P** **O** **R** **T** **U** **N** **I** **T** **I** **E** **S**	Economic viability delivers long term benefits. Local prosperity. Employment quality. Direct participation in the tourism business. Marketing through developing local networks. Local handmade products and food products can be sold directly without an intermediator. Provides guiding opportunities. Increase in number of homestays and local facilitators.	Multiplier effects. Increase revenue. Rapid development on Infrastructure Global products in one market. Increase in the number of conventional hotels and escorts. Increased services Increased income. Technology, ICT, AI	

C **H** **A** **L** **L** **E** **N** **G** **E** **S**	Slow development of infrastructure. Seasonality. Price inflation, cost of living. Middlemen between producer and consumer. Required business skills in the tourism industry. Private sector development within a community owned reserve. Involvement of external facilitators in MSME. Technology, ICT, AI.	Seasonality Price inflation, cost of living, increase in competitions. Required business skills in the tourism industry.	
	ENVIRONMENTAL FACTORS		
O **P** **P** **O** **R** **T** **U** **N** **I** **T** **T** **I** **E** **S**	Creates awareness on the environment to the local community and tourists. Physical integrity: engages local communities to protect geographical landscapes and its ecosystem. Involves local community to support the conservation of natural areas, habitats and wildlife. Minimises the usage of resources for developing tourism facilities and services. Engage the local community in environmental purity activities to minimise the pollution of air, water and land. Inculcate knowledge on nature and ecosystem to the local community. Provides overall tourism sustainability.	Conventional tourism doesn't focus on improvising environmental impacts rather enjoys the benefit from nature by transforming the destination into adventure tourism spots, leisure tourism destination, Amusement park, luxury hotels etc**.**	

C H A L L E N G E S	Maintenance of natural resources. Political and legislative conditions.	Exploitation of natural resources. Increases high rate of carrying capacity. Many endemic species will fall under the endangered list. Destruction in the entire ecosystem. Loss of rich biodiversity.	
	POLITICAL FACTORS		
O P P O R T U N I T I E S	Leadership. Self-reliance and stability. Trade and International relationship Revenue Management. Value chain. Political empowerment. Guarantees rights. Democratic and independent life.	Ownership. Trade and International relationship Revenue Management. Value chain.	

C **H** **A** **L** **L** **E** **N** **G** **E** **S**	Initiative and power disparities. Power relations. External agencies, intermediaries and power structure. Legitimacy and urgency Hegemony. Westernization performed by the local elite.	Power relations. Competitions through political influences.	

Source: Authors compilation

2.6 Empowerment of Local Communities: Community Participation

The **Universal Declaration of Human Rights** (UDHR, 1948) asserts the fundamental rights of individuals within a society. **Article 21** states that *"everyone, as a member of society, has the right to social security and is entitled to realization, through national effort and international cooperation and in accordance with the organization and resources of each state, of the economic, social, and cultural rights indispensable for his dignity and the free development of his personality."* Similarly, **Article 27** affirms that *"everyone has the right freely to participate in the cultural life of the community, to enjoy the arts, and to share in scientific advancement and its benefits."*

A community can be understood as a representation of shared social attributes and common interests (Kusin et al., 2019). It is also described as the *"social system of human alliance"* within a particular location. Communities can be classified based on geographical location or common interests (Giampiccoli & Mtapuri, 2012).

Community participation is a key factor in the success of community based tourism (Thananusak, 2023). It involves collective action toward a shared goal, whether for group development or problem-solving, while fostering relationships and trust. Participation reduces isolation, promotes a sense of belonging, and encourages active engagement, rational thinking, self-motivation, confidence, leadership, and

entrepreneurship, along with essential skills and attributes (Imbaya et al., 2019; Kusin et al., 2019).

Raising awareness, reinforcing community identity, and fostering trust are essential in increasing participation (Global Economic Facilities, UNDP, 2018). Active community involvement in conservation and ecological restoration contributes to both environmental integrity and community well-being, requiring strong social capital. To ensure sustainability, community participation must address the diversity within both the community and tourism sectors. A well developed understanding through participation helps eliminate conflicts, empower communities as facilitators, and provide unique opportunities for voluntourists and special interest tourists (Moayerian et al., 2022).

Community based tourism is a form of social enterprise with a strong commitment to empowering communities, building capacity, fostering partnerships and collaboration, and transforming communities into entrepreneurs (Thananusak, 2023). Conti (2014) defines capacity-building programs as the *"creation of awareness among the local population, establishment of local working groups, and training of human resources in specific aspects of tourism."*

Sustainable Development Goal (SDG) 17.9 emphasizes international support and the development of capacity-building programs to achieve national plans through triangular cooperation (Dolezal & Novelli, 2020). Capacity-building programs, combined with community participation, help protect tourism from becoming an unsustainable and exploitative industry (Moayerian et al., 2022). These programs enhance the potential of communities by increasing their knowledge, skills, and attributes. While capacity-building is a time-consuming process, it is essential for strengthening necessary skills and delivering long-term benefits to communities (UNWTO, 2009).

The United Nations Development Programme (UNDP) views capacity-building as a key driver in reducing poverty, promoting self-reliance, and improving quality of life. Despite facing barriers such as limited access to information, skills, and capital, capacity-building programs play a crucial role in overcoming these

challenges (Imbaya et al., 2019; Moayerian et al., 2022). Capacity development is conceptualized as a “positive sum of powers” within the community, fostering empowerment, adaptability, and collective well-being (Moayerian et al., 2022; Park et al., 2023).

The relationship between community, capacity, and cultural activity is fundamental to sustainable tourism and rural development. Effective capacity-building programs transfer power, integrate sustainability principles, and maximize equity (Kusin et al., 2019). Community Based Natural Resource Management (CBNRM) engages local communities in conservation initiatives by leveraging their knowledge and resources to safeguard natural ecosystems, recognizing that environmental quality is directly linked to their well-being.

However, several barriers to community empowerment persist. Common challenges observed in community meetings include top-down decision-making by high level managers, passive participation of women and youth, power imbalances, and limited awareness of rights and responsibilities **(**Dolezal & Novelli, 2020; Imbaya et al., 2019). Addressing these obstacles is critical for fostering truly inclusive and sustainable community based tourism**.**

Case 1: Candirejo Village: A Model for Community Based Tourism

Candirejo Village, located near the Borobudur Temple in Central Java, underwent a significant transformation through community based tourism initiatives. In 2002, the village had only 10 homestays, 5 local transport services, and no local restaurants. Despite the large influx of tourists to the area, local residents had limited opportunities to benefit economically from tourism. Recognizing their potential, a series of small businesses were developed. By 2004, the village saw a remarkable increase in tourism related enterprises, including 22 homestays, 22 local horse-drawn carts (Andong), and 6 warungs (local restaurants)**.**

The Koperasi (cooperative) model played a pivotal role in this transformation. Through the tourism cooperative, all income and profits from entrance fees, handicraft sales, accommodation, meals, and other services were shared equitably among community members. The revenue generated was reinvested

in village hygiene, environmental improvements, and infrastructure development, ensuring fair distribution of benefits. This initiative successfully created 63 new jobs, significantly improving the quality of life for the local community. Before Candirejo was established as a tourism village, there was no collective community income. Today, through sustainable tourism, the village has become a self-sufficient, economically empowered community, serving as a model for poverty alleviation through tourism.

Source: UNWTO (2006) *Poverty Alleviation through Tourism: A Compilation of Good Practices*.

Case 2: Sustainable Interior Architecture using Date Palms to Build Ecolodges

From a cultural heritage perspective, in the western oases, after observing the negative impacts of modern architecture, a sustainable development initiative was undertaken to practice traditional construction and interior techniques using date palms to build ecolodges and educate the youth of the community. This initiative revived and sustained the community's inherited skills. Source: (Darwish & Eldeeb 2023).

Case 3: The Creative Tourism Route in Thailand involving Palmyra Food Products, Artisans, and Climbers.

The creative tourism routes promote unique packages involving Palmyra food products, artisans, and climbers. The author creates two day itineraries across three distinct routes to attract Foreign Individual Tourists (FIT). These itineraries serve as models, comprising three themed routes: the Salt Route, Jaggery Route, and Fish Route. The itinerary empowers the local community by engaging them in tourism activities connected with Palmyra palm. Unique cuisine made from Palmyra palm and prominent handicraft attractions are included in the itineraries. The entire tour showcases rich Palmyra palm biodiversity. An improvement in the socio-economic status of the community and the interest of tourists is observed in the study. The model is supported by Tourism Authority of Thailand (TAT). Source: Vorasiha (2019)

Case 4: The Rehabilitation and Conservation of Nypa Palms

In 2018, the Global Environment Facility (GEF) and the United Nations Environment Programme (UNEP) conducted research on the rehabilitation and conservation of Nypa palms located downstream of the Thu Bon River in Vietnam. The Nypa palm, a mangrove species, supports aquatic ecosystems and provides income for the local community. However, unsustainable harvesting activities led to a decline in resources; between 2010 and 2013, fishing in the Nypa palm forest decreased from 68% to 55.5%. The study provided guidelines to enhance local capacity for managing the Nypa palm area and implemented sustainable natural resource and responsible initiatives in the protected area. Major activities included conducting field surveys, mobilizing local community participation in rehabilitation efforts, establishing community based networks and voluntary work, organizing camps, exploring technical solutions, and providing training for community based tourism initiatives. The project positively contributed to conserving native species, with plantations established near rivers and small canals, and raised awareness of the economic value of Nypa palms. The established network facilitated conservation and sustainable harvesting of Nypa palms, promoting sustainable livelihoods for the local community. As a result, both the local community and authorities became more familiar with the benefits of Nypa palms, leading to increased interest and willingness to develop community based ecotourism. During the implementation stage, Cam Thanh village developed homestay services, engaging around 50 households, with an average monthly income from homestays ranging from 9 million to 12 million VND. Additional income sources for the local community included rowing coracles and guiding tourists within the forest. In total, four community groups were established, hosting three meetings annually where all community members could share experiences and address grievances. Overall, the project improved livelihoods and the socio-economic conditions of the local community, empowered them, and conserved regional biodiversity.

C**ase 5**: **Model for Promotion and Conservation of Coconut Palm Weaving in Kumarakom**

Kerala's Responsible Tourism Mission developed an exclusive model in Kumarakom to promote and conserve coconut palm weaving. This experiential tourism model provides visitors with the opportunity to observe the creation of coir products by skilled local craftsmen. Additionally, visitors can experience toddy tapping a mild alcoholic beverage made from the fermented sap of the coconut palm tree. The initiative transforms the community's traditional livelihood activities into attractions, offering experiential engagements that draw tourists from around the world. Source: (Kerala Tourism, Responsible Tourism Mission 2018).

2.7 Frameworks and Models for Community Based Tourism

Several theories have significantly contributed to the planning, development, and sustainability of community based tourism. Doxey's Irritation Index (1975) illustrates how residents' attitudes toward tourism can evolve from euphoria to antagonism as tourist numbers increase and perceived benefits diminish. Butler's Tourism Area Life Cycle (TALC) Model (1980) describes the stages a tourist destination undergoes, from exploration and development to potential decline or rejuvenation. Ap's application of Social Exchange Theory (1992) suggests that residents' support for tourism is based on their evaluation of its benefits versus costs. The Dimension Theory for Tourism Destination Development with Community Interface (1997) emphasizes the importance of integrating community perspectives into tourism planning to ensure sustainable outcomes. The Ladder of Citizen Participation Model (2019) categorizes levels of community involvement in decision-making, highlighting that higher participation leads to more sustainable tourism practices. Lastly, the Minimal Model on Tourism Sustainability and Conservation (2002) provides a framework for balancing environmental conservation with socio-economic benefits in tourism development. Collectively, these theories offer valuable insights into the dynamics between tourism development and community engagement, guiding the creation of sustainable community based tourism initiatives.

2.7.1 Doxey Irridex Index

Doxey Irritation index signifies the relationship between tourist and host community.

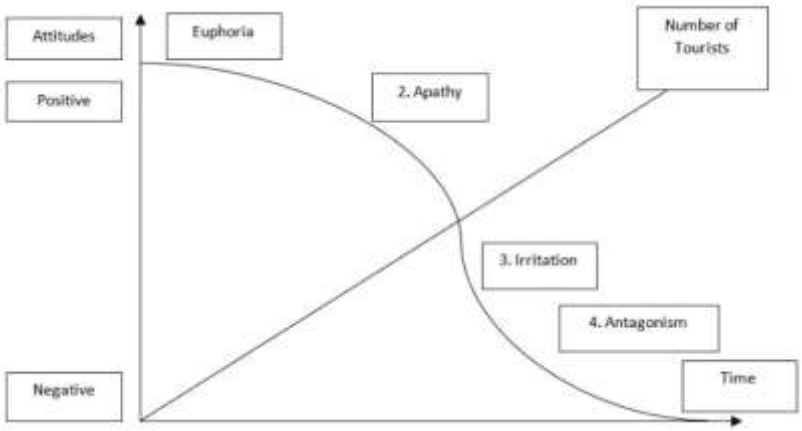


Figure 2.1: Doxey Irridex Index

Source: Doxey (1975).

Euphoria: At this initial stage, there is limited interaction between tourists and the local community. However, locals are enthusiastic about the new tourism activities, welcoming visitors wholeheartedly. Some community members may be hesitant to participate actively.

Apathy: As tourism becomes more established, locals engage formally in tourism activities to reap its benefits. Tourists are taken for granted, and interactions become more routine.

Annoyance: Rapid tourism growth leads to a large influx of visitors, pushing the destination toward saturation. Natural resources may be depleted to accommodate infrastructure development for tourists. The demonstration effect can emerge, affecting the freedom of the local community and causing disputes between tourists and residents.

Antagonism: At this stage, deprivation and dissatisfaction among locals result in negative attitudes toward tourism. Overtourism leads to the loss of the destination's

natural beauty, and residents' tolerance wanes, leading to open expressions of frustration, both verbally and physically.

2.7.2 Butler's TALC Model (Tourism Area Life Cycle)

This model is a core theoretical underpinning for numerous research configuring Exploration, Involvement, Development, Consolidation, Rejuvenation, Stagnation, and Decline stages.

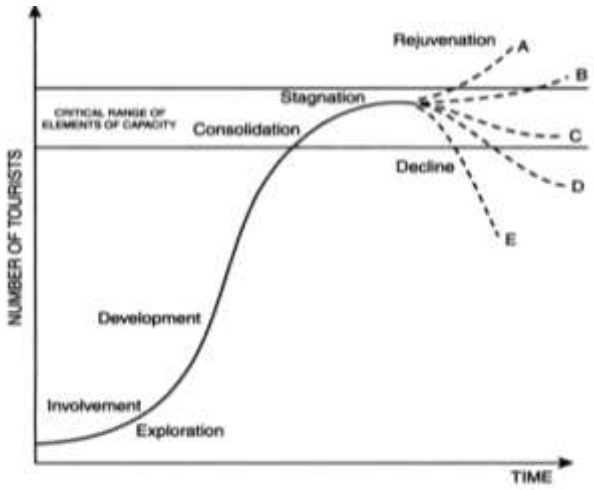


Figure 2.2: Butler TALC MODEL

*Source***:** Butler TALC Model (1980)

First stage - In the **Exploration** stage, unexplored destinations were given attention. Infrastructure and tourist service facilities at the destination are found absent. Second stage - In the **Involvement** stage, destination reaches to the public and provides opportunities for tourism linkages such as accommodation, transportation, food and entertainment Industries.

Third stage - In the **Development** stage, destination gains popularity. In certain cases, a middleman will have overall control over tourism business. At this stage, some conflicts arise among stakeholders.

Fourth stage- In the **Consolidation** stage, tourist inflow reaches to the higher level. Tourists result in a high number to the total local community.

Fifth stage- **Stagnation,** tourist inflow reaches to the peak exceeding carrying capacity and results in exploitation of all resources. The destination welcomes artificial, non-biodegradable, unhealthy products to increase revenue. Tourism creates disaster to the social, environmental and cultural value of the destination.

Sixth stage - **Decline or Rejuvenation.** Tourist inflow drastically declines.

If a destination reaches a **decline stage;** the destination struggles for its survival. It is no longer able to compete with other destinations. In the **rejuvenation stage** the destination strives to reconstruct into a new destination with a better image. Innovative and alternative practices are introduced in order to understand the key value of the destination. The destination can survive only with cooperation of the local community and only by inculcating responsible and sustainable approaches in tourism with the support of the local community.

Giampiccoli & Saayman (2018) explains Community based tourism flows from very high to very low, back to high in the rejuvenation stage. Community participation in tourism flows from a bottom-up approach to a top-down approach until the decline stage at rejuvenation stages again the Bottom-up approach is practiced. lack of information, external agency, power disparity among community members and local elite provide barriers to community participation. Rapid development causes large leakage of expenditure, erodes good will and quality of life. By matching the cycle to the cycle of attitude change, it is observed that scale is neither consistent nor moving towards a negative position. Over tourism and mass tourism has led the downfall to the destination. Carrying capacity is noted as an evolution model for development until reaching exploitation. Whereas, exploiting new forms of tourism are implemented to balance negative impact at the rejuvenation stage. Thus, the rejuvenation stage attracts “centric venture tourists” or “explorers”. Community based tourism seeks the remedy, that has slow growth monitoring planning process and adjoining principles of sustainability. Understanding the TALC model helps to plan community based tourism for long term sustainability.

2.7.3 Social Exchange Theory

This theory was studied to understand the diverse opinion of the commune.

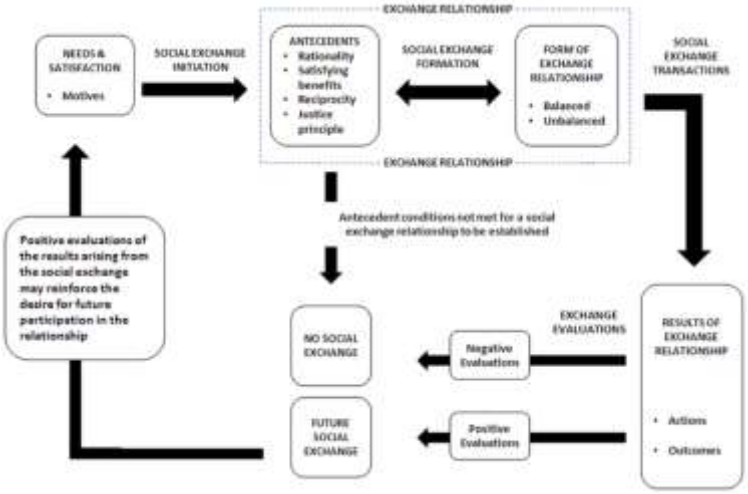


Figure 2.3: Social Exchange Theory

Source: Ap (1992)

According to this theory, the community evaluates the benefit gained from tourism. Willingness of the community is directly proportional to the benefit incurred by tourism. The approach towards tourism development in a community varies from one individual to another. Beneficiary individuals believe that the benefits influence tourism growth. The theory builds strong notation between belief, perception and behavior of the community. It is used to understand the individual community opinion on the respective destinations.

2.7.4 Dimension Theory of Tourism Destination Development

Combining different perspectives of the Destination life cycle, irridex model and social exchange theory, Faulkner and Tideswell (1997) draws two broad dimensions of tourism destination development along with Community interface as a framework for monitoring community impact.

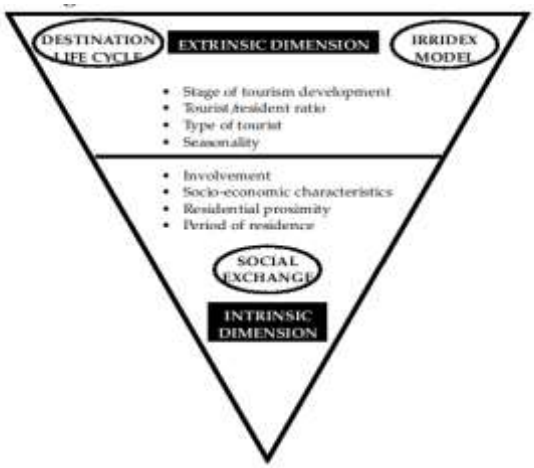


Figure 2.4: Dimension Theory of Tourism Destination Development

Source: Faulkner and Tideswell (1997)

(1) The extrinsic dimension, view on characteristics of the location level of tourist activity and the types of tourists involved at the respected destination. The nature and stage of tourism development are also reflected in this dimension. From the insight of Doxey's Irridex Index, the model states that communities come across a series of reactions as the tourism industry grows, their perceptions change reflecting with their gained experience. And from Butler's TALC model it claims that the evolving destination soon popularized as a mass-tourism destination. Social carrying capacity becomes an important factor to decide the development of the destination. Variations in the attitudes of the residents towards the perceptions of tourists are affected by the type of tourist visiting the area. Crucially, determinants such as racial characteristics, cultural background and socioeconomic factors also reflect on bearing tourist arrivals.

(2) The intrinsic dimension, view on characteristics and impact created to members of the community involved in tourism activity. Doxey Irridex model and Butler TALC models reveal homogeneity in particular to the inherent heterogeneity. From analyzing social exchange theory, relationships between residents and guests result in mutual costs and benefits. As a result, both tourist and host balance between costs and benefits. Community proximity is compounded with overall involvement. The effect on communities and their reflective reactions to tourism depend on the

destination's history at different development stages. Newcomers reside less in destinations that are underdeveloped.

2.7.5 Ladder of Citizen Participation

Arnstein (2019) ornaments the ladder of citizen participation into three segments as "non-participatory segments", "degree of tokenism" and "degree of citizen participation".

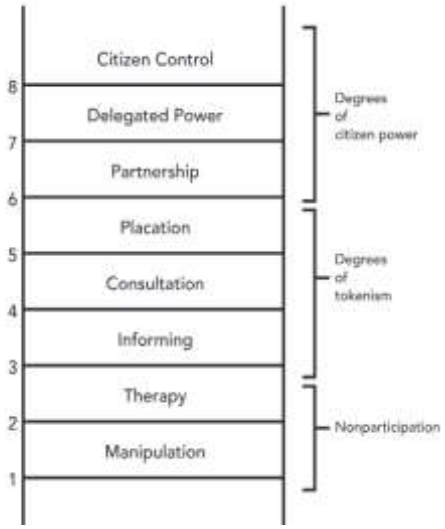


Figure 2.5: Ladder of Citizen Participation

Source: Arnstein (2019)

Manipulation and therapy describe **non-participatory segments** that insist power holders to educate/ cure the community. Information, consultation and placation denote **degree of tokenism**, to receive opinions and allows participation to a restricted level. **Degree of citizen participation** represents delegated power and citizens control over managerial and decision-making tasks. This theory defines "participation as redistribution of power" "…. A fundamental principle explodes into many shades of outright racial, ethnic, ideological, and political opposition." appreciated globally.

Further the model is reshaped as the model expanding 'ladder of empowerment' along with typology of empowerment theories' emphasis requirement of basic needs, education, life skills and quality of life. More than the decision-

making process ‘empowerment perceives an individual to make decisions. It is the slow process that disseminates power to the community gradually from the top end of Arnstein’s ladder. In tourism such empowerment creates community centric destinations rather than government, tourist or corporate centric.

2.7.6 Minimal Model

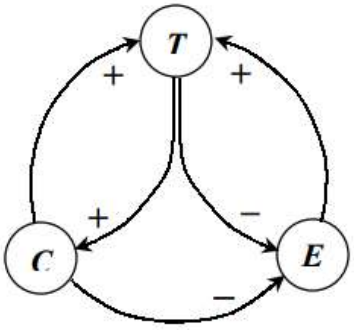


Figure 2.6: Minimal Model

Source: Casagrandi and Rinaldi (2002)

Casagrandi and Rinaldi (2002) minimal model represents a specific system incorporating core components presenting three variables:

T(t): the tourists at the given time period(t).

E(t): Quality of the natural environment at the given time period(t) and

C(t): Capital gained (tangible asset) from tourist activities at the given time period(t).

These single variables are amalgamation of other variables;

The Variable Tourist T(t) denotes tourists of different incomes, lifestyles, geographical location, age group, gender and socio-cultural backgrounds, or from varying interests. The variable quality of the environment E(t) denotes air quality, water quality, biodiversity, wildlife and landscape conservation. To obtain a workable problem the variables are amalgamated. To record long term behavior seasonal effects are not taken into account. These limitations have to be considered

carefully while developing tourism. The model states that general theories can sometimes be as powerful as empirical observations.

1. Tourists (T) and tourist Amenities (C) impact negatively on environmental quality (E),

2. Environmental quality and infrastructure are attractive to tourists.

3. The positive arrow from T to C represents profits gained from tourism.

The model is used to denote the role of tourism actors in ecological economic systems. And states that sustainable development can be achieved if profits gained are reinvested to conserve the environment. At initial stages, destinations are observed to adapt sustainable policies and practices but not for long term. Further discussing profitability, compatibility, and sustainability, the prevalent factors of resource management, the model sees through between sustainability and bifurcation theory.

2.8 Gaps in the Literature

Despite the contribution of several researchers on community based tourism and conservation of natural resources, a notable research gap arouse considering theoretical and practical understanding on the context of developing community based tourism approaches towards conservation of Palmyra palm in southern Tamil Nadu. Available literature on transdisciplinary importance of Palmyra palm lacks information on statistical data on population of Palmyra palm, census of the community engaged in Palmyra palm activities. Some of the provided information is outdated. Absence of record found on spatial analysis to find accurate data on distribution of Palmyra palm generate obstacles to prioritize potential green zones for protection and restoration. Apart from general conservation and restoration practices like plantation drive of Palmyra palm, no tailor-made conservation and restoration strategies and practices were recorded in any existing documents. No research was found on conservation and rejuvenation of the socio-economic condition of the community depending on Palmyra palm for their livelihood in the entire state. There is inadequate research on stakeholders' participation and collaboration working on

common shared goals exclusively in the context related to conservation of the tree and community development. Identifying and analyzing these gaps are crucial for the study. The thesis aims to bridge the gaps and contribute valuable theoretical and practical implications that can be implemented to eradicate the prevailing condition of the community. The outcome of the thesis desire to be a notable study on community based tourism research.

CHAPTER-3

PALMYRA PALM: TREE OF LIFE AND LEGACY

3.1 Introduction

The word “Palmyra” is derived from the Latin word ‘Palmera’. Referring to the human palm. Palmyra palm is scientifically known as Borassus flabellifer referring to the leathery covering fruits and fan bearer. The tree belongs to the family “Arecaceae” which is a very old group of perennial species, having strong woody stems. Palmyra tree is believed to be “Karpaka Vrisha” (i.e. The divine tree provides boon) (Subramanian et al., 2024). The tree lives for more than 100 years striving from any pests or diseases. In India, Palmyra palm is seen in Tamil Nadu, Andhra Pradesh, Kerala, Karnataka, Maharashtra, Madhya Pradesh, Chhattisgarh, Bihar and Odisha (Panda et al., 2021).

In Tamil Nadu Palmyra palm has grown in a semi-arid region, coastal belts, grasslands and foothills. It was honored as a state tree of Tamil Nadu in 1978, addressing the impact on rural livelihood, historical and ecological significance. More than 50% of the trees in the state are found in districts from south east coast of Tamil Nadu i.e., Ramanathapuram, Thoothukudi, Tirunelveli and Kanyakumari. The tree shares mutualism among the climber’s community. It provides a large livelihood opportunity to the community residing in the region. The tree is revered and worshipped by the community irrespective to their caste or religion as it is utilized for transdisciplinary purposes such as manuscript writing, art and architecture, preparation of nutritional rich edible foods and beverages, craft products, exporting raw material and finished products, developing value added products, ingredients in Siddha and Ayurveda medicines. This present chapter provides the detail on the transdisciplinary avenue of Palmyra palm that helps to understand the potential of Palmyra palm and its belonging community and helps to analyze what best can be done to develop tourism in these potentials (Subramanian, 2024)

“O tree of the East, with thy thousand gifts

In thy hand, so wide and free,

There is mighty strength in thy arrow shafts,

And a poem we sing to thee.

There is a song in the rustle of every leaf

Thou wavest in upper air,

Where a home is found for the squirrel's young,

And the doves which nestle there.

There is not a fence by the wending road,

Or a roof to keep of rain

There is not a mat where the weary sleep,

And forget their toil and pain.

There is not a hut, a house, a boat

On Serendib's stormy sea, -

But is built from a part of thy stately limbs,

O great Palmyrah tree!

The earth is full of the great god's gifts,

Wide scalter'd O'er every land,

And he aids the nations who work and toil

With a sturdy, brawny hand.

So, he gave the thankful Jaffna man

A priceless boon and free,

When He gave to him his kingly palm,

They loved the Palmyrah tree.”

- Atherton R.

The poem was taken from the book, Panai valam (Kularathinam, 1977)

3.2 History

The archaic findings of Palmyra palm are traced from stone inscriptions, Sangam literature, religious books and documents published during colonial periods. Tamil Brahmi inscriptions dating to 3rd to 1st BCE mentions about Palmyra palm. Azhagar malai inscription mentions that the Nedumalam Palmyra merchant sets a stone bed to a Jain monk; Eddakal cave has a pictorial representation of Palmyra palm and Ratnagiri cave mentions a location named “*Panaithurai*” meaning Palmyra near to waterbodies. This evidently reveals the practice of naming regions after Palmyra palm. In Tamil Nadu, today, the names of many locations have *Panai* (Palmyra palm) in their prefix or suffix. Toponym recollects history and restores the sense of the place (Franco et al., 2020). *Panangadi, Panangudi, Panangulam, Panaiyakulam* are some of them that are in Tamil Nadu. Palmyra tree is positioned as parable, simile, metaphor, and analogy in the realm of the Sangam literature. Along with "*panai" "pendhai "* and *"pennai*" are the other two word threads with literature to refer to Palmyra palm.

Pulliman Kombai, hero stones mention the caste name "*Theyan"* and Thiruparankundram cave inscription mentions the caste name *"Eezha'* ‘that are referring to the community engaged in Palmyra Palm occupation. Those days they were fortunate to live a privileged life under the king's rule. *Purananuru* highlights the incident of war during the period of Nedugilli chozha. The first set of warriors appeared and consumed ice apples. The second set consumed Palmyra fruit and the third set consumed Palmyra sprouts. This consumption reveals the time interval of warriors' arrival to the war zone (Purananuru 225: 1-3).

Chera', one of the three great rulers of Tamil Nadu, decorated themselves with Palmyra palm flowers during celebrations. The major commander of Mahabharata, Bheeshmacharya's flag and the medieval Chozha kingdom’s ruler,

Pazhuvettarayar's flag depicts the Palmyra palm tree.

The prominent literature of the Sangam period narrates the importance and joy of consuming toddy. The literature describes that from king to layman, male to female, everyone enjoyed drinking toddy. Toddy was neither considered taboo nor alcohol, but rather considered the elixir of life or the elixir of immortality (*Amrutham*). In Purananuru, an ancient literature after the death of *Adhyamaan*, *Avaiyar*, with her bittersweet tone, explicates her memories of consuming toddy. Literature such as *Agananooru* versus (216), *Patinapalai* versus (105 to 108), and *Paripaadal* records female drinking toddy. Toddy was part of the Tamil cuisine; women who don't consume toddy directly ensure they get its benefit by adding it to their food. In those days, the community practiced offering toddy to the guests. People living in Tamil Nadu face several diseases due to the heat generated in the body. Consuming toddy relieves heat from the body and prevents the community from staying away from diseases. The common layman and underprivileged people who believe in folklore or tutelary deities offer *Karupatti* (Palmyra Jaggery), *Panampazham* (Palmyra Fruit), Panakilangu (Palmyra Sprouts), and Pathaneer (Palmyra Neera) to the gods (Sivasubramaniam, 2016).

3.3 Manuscript Writings

Prior to the invention of paper, people used Palmyra palm leaves *(olai)* for writing. The utterance of English printing words such as "leaves" and "folio" is derived from Palmyra leaf writing (Davis & Johnson, 1987). The matured Palmyra leaves were cut, dried, boiled in turmeric solution and etched using a stylus, a sharp nail-like knife. The engraved portions are filled with black pigments for visibility. Several historical manuscripts, Siddha medicinal procedures, administrative documents, personal records, and religious literature were written in these *olai*. It was also used as a book for children who studied in high school. The lark leaves were used as stamp leaves, which were used as a transaction agreement between parties. The vendor selling the leaves used to pay tax to the government. A painted manuscript depicting epics of devotional stories such as *Thiruvaimozhi Vaasagamaalai* present in Tanjore Saraswathi Mahal. Tamil Jains also consider them

as wealth and use them to write religious and spiritual writings (Sivasubramaniam, 2016).

After the invention of paper, these manuscripts lost their importance. Over time they were shattered, destroyed, and buried. The left-out manuscripts are presently preserved in different regions of Tamil Nadu by various scholars. 58,580 Palmyra leaves manuscripts are at Government Oriental manuscript library and research center, Chennai. Among them 11,183 manuscripts are in Tamil language. Along with preservation and conservation of these manuscripts, they focus on creating awareness and digitalization. Publication of rare magazines into a book format can also be traced in this library (Department of Archeology, Govt of TN).

2170 Palmyra Leaf Manuscripts containing ancient literatures such as *Pathu-pattu, Ettu-thogai, Pathinenkeezh Kanakku, Agapporul Vilakkam, Agaradhi Nigandu, Harichandra Puranam, Saminatham, Sekizhaar Puranam, Thonnool, Kamba Ramayanam, Temple's Sthala Puranams, Veerachoziyam, Tholkappiyam explanatory notes, Perunkadhai, Ramayanam, Mahabharatham, Bhagavat Gita, Periya Puranam, Ilakkana Kothu,* siddha medicinal texts are housed in UV Swaminathan Iyer Library.

Most of the manuscripts are older than 350 years (UV Swaminathan Iyer Library, Chennai). 5968 manuscripts are at Saraswathi Mahal Library, Thanjavur. The department of Palm manuscript, (Tamil Nadu University, Thanjavur) preserves rare manuscripts through digitization and microfilming. It houses more than 8000 manuscript collections covering several subjects such as Philosophy, medicine, astrology, grammar and Sangam literature. Among these 6410 are Tamil works.

The department also conducts preservation, translation, digitalization and cataloging workshops to the students. 2500 bundles comprising 2,00,000 manuscripts are present at Theosophical Society, Adyar Library and Research Centre Chennai (Theosophical Society International) and 8500 at The French Institute Pondicherry. Chennai Government Museum plays an important role in collecting, preserving, cataloging Palmyra Palm leaf manuscripts that contain information about language, Tamil culture and historical thoughts. The numerous manuscripts

preserved by the Tamil scholars are kept in the Tamil history and culture department of the museum. These manuscripts are commonly affected by insects that stick to the leaves and make tunnels. To remove them, leaves are kept in a steam bath and are then treated and cleaned using 2% solution of citronella oil in rectified spirit with a little of lampblack. In this process the hardened leaves soften, the insects are driven off by the oil and the black colour adds visibility to the etches (Chennai government Museum).

3.4 Caste and Mythological Stories

There are interesting stories of communities that developed based on the plants they cultivated. Mythological stories about Palmyra palm are prevalent and are binding with the origin of some caste. The Nadar caste of Tamil Nadu predominantly lives in Kanyakumari, Thoothukudi, Tirunelveli, Virudhunagar and Ramanathapuram districts. A large sub group engaged in Palmyra tree climbing while others were landlords, agriculturist, practicing Siddha medicine, Kalari or silambam practitioner, mathematicians and more. Stories combining the evolution of Palmyra Palm and Nadar caste were interlinked in the form of oral history and poems. Mythological story: Seven Maidens from Nagaloga reached near a spring to bathe. Saint Vidhyadhara was attracted towards one among them. He decided to use his meditational power to increase the cold and he stood in the form of fire to reach them. As he went closer, they became pregnant, gave birth to seven male children and left for Nagaloga.

The saint Vidhyadhar left his seven children to goddess Kali. Kali raised them as great warriors. Kali and her seven sons killed Asura Thandhan who troubled people living in heaven. Kali became thirsty after drinking the entire blood of thandhan. Her sons reached to a pond in search of water, and found saint Sabha deva and his wife were hiding Amrita brought from devaloga. Knowing this, Kali rushed to them and tied them upside down in the Palmyra tree. She broke her soolam that turned to another weapon referred as kurudu. She asked one of her sons to climb the tree and tap the toddy from the tree.

When king Karikaalan embanked river Kaveri he ordered kali's son the Nadar who were wealthy and prosperous to carry mud on their heads. When they refused, he started killing one after the other. Seeing all the six brothers dying the last one still stood sturdy. King Karikalan left him alive; he then moved to Pandya Kingdom from Chola kingdom to continue his livelihood practices.

Archaeologist Raasu, S in the year 1991 found copper plates representing Batra Kali image and livelihood practice of Palmyra climbers' image as evidence to this oral story.

Similar to this caste formation story Devendra kula Vellalar caste is also linked with Palmyra palm; the evidence is found in stone manuscripts of Sankaran Kovil Temple located in Tirunelveli. This manuscript dates back to the 17^{th} to 18^{th} century. King Ukkiraperuvizhudhi from Pandya kingdom reached Devendra house along with Chera and Chola Kings to request him to grant rain. Indra was postponing rain by providing false promises. Knowing this Pandya King brought Deva Kulam to Earth. He provided red rice seeds, banana seeds, Palmyra Palm seeds, cows, and buffalo for their livelihood. There are some Devendra Kula community and *vaadhiriyaargal* a sub caste located in *Sevalpatti, Palla Kulam, Maadunayanaarpuram, Keezhaseithalai, kunjaipuram, Athangaraipallivasal, kaatunatakanpatti, Cholapuram Chidambaram Nagar* belong to Palmyra palm community. Along with this, *Vembaar,* a fishermen community belonging to *valaiyar caste and kuchaipuram*, a Dalit community belonging to *Arundhadhiyinar* caste also practice Palmyra climbing.

Inscriptions dating back to 1149 CE state that during the period of Raja Raja Chozha ll. Karupatti banana, milk, and rice were offered to God in the form of *appam, aval, adhirasam, and Pongal*. A 1219 CE inscription during the period of *Veeraasendhiran XII inai Udumal* Coimbatore states that *Kaikolaar* offered aval made of Karuppati, Coconut, Pepper, and Jeera to God. During the colonial period, the British found it difficult to produce large quantities of Karuppati As an alternative, they produced refined sugar, which became the primary reason for the decline of Karupatti. A 1492 CE inscription located in the district museum of

Kanyakumari states that *Venaatu* King ordered that *thirumadaipalli* food should not include Karupatti. addressing it as a product made by Shiva devotees. Vaishnava temples started offering Channa Dal Sundal. The food was introduced by Europeans to feed horses (Sivasubramaniyam, 2016).

3.5 Folklore

The Oral folklore *kummi* song titled *Panai maram sorpannam* praises the vitality of Palmyra. A classical folklore practice named "*madal erudhal"* is recorded in many Tamil literatures, exclusively in *Kurunthogai, Natrinai, Ainkurunuru, and Kalithogai*. The practice explains a meeting between a man and a woman that leads to a natural attraction. The man believes the universe brought her to him. When obstacles arise for him to meet her, pain and grief surround him. Her thoughts trouble him. He makes the utmost efforts to reach her. He sends a letter through her friend. When everything fails, he performs a romantic ritual near the temple premises called "*madal erudhal."* Here, *madal* refers to Palmyra petiole. He makes horses using this. He drew her image on a cloth. He applies *thiruneer* (sacred ash) to his entire body. He wears garland made from Ouret lanata, a crown flower, and some bone. Precautionarily, she accepts him to avoid unnecessary gossip and questions from society. When ancient Tamil writers *tholkappiyar and thiruvallur* argued women do not perform these rituals, *thirumangai Aazhvaar* sang *siru thirumadal* and *periya thirumadal* recorded the performance to convince *thirumal* (Ramesh, 2023).

Along with the amphora jar that was used to make wine, *Arikamedu* Excavation discovered hero stones, or memorial stones, which were installed to commemorate the memory of a warrior who died during the war. Common people offered *flower aarthi* and sacrificed domestic animals to these stones. 53 stones dating back to the Pallava period has a pot-like structure near the legs of the stones. This might indicate a toddy pot. As days passed, the heroes in the hero stone were considered gods. The hero stone is transformed into a statue (a folklore deity), and the ritual of offering toddy continue. (Sivasubramanian, 2016).

In present days, it is heartbreaking to witness the replacement of toddy with other alcoholic beverages while offering to the hero stones or folklore deities

in Tanjore the Palmyra tree with bifurcated branches is considered sacred and has a cross, crescent and *thirusulam* (three-pointed emblem); emphasizing the symbols of Christianity, Muslim and Hindu. In *Melakkal* Madurai Palmyra palm was found bearing eighteen branches. The community believed the tree is associated with munisamy, a folklore deity. When T.A Davis, prominent researcher of the field wanted to click a photo, he was warned by the community not to do so considering the deity will be annoyed. Despite that he took the photo without any consequences (Davis & Johnson, 1987).

3.6 Worship Place

In Tamil Nadu, the power of the king or certain privileged groups played a role in constructing and reconstructing huge temple structures and installing new deities by clearing forest cover (Paramasivan, 2022). The single tree left to survive or be replaced in the temple complex is called "*Thala Maram"* (Gunasekaran & Balasubramanian, 2012). *Thala maram,* derived from the Tamil word *'thala',* refers to location and '*Maram'* refers to a tree that is prominent in that location (Prabhakaran & Lakshmi, 2017). This ecological representative of the location loses its habitat and urges to be extinct, endangered threatened, and vulnerable (Kumar & Aruna, 2018) as it became an integral part of temple architecture. The multipurpose tree with extensive utility found across Tamil Nadu is also recorded as *thala maram* (sacred tree) in nine major Shiva temples and association with other folklore or tutelary deities. They are *Thiruppanandal, Tiruppurawar Panangatur, Tiruppanayur, Thirumalabadi, Thiruvothur, Thiruvanparthan Panangattoor, Thiruvalampuram, Tiruppalaithurai, and Thirukannapuram* (Aanmeegam Report, 2020).

Table 3.1: Description of Sacred Grove

Palmyra sacred grove/ standalone tree shine	Location	Description
Thirupanangadu	Tiruvannamalai district. 36 km away from the town of Cheyyar.	In the stone manuscripts located inside the premises of the temple. The God name is inscribed as Thirupanagatu Devar, Thirupanangatudaiyar, Thirupangaudaiya Nayanaar, and Thirupanangatu aludaiyaar. After vedic intervention God is named after the Sanskrit word Talapureeshwar; tala refers to Palmyra palm in Sanskrit, and Eshwar refers to Lord Shiva. The Goddess is named Amruthavalli. Amrutham means Toddy, which is considered as Goddess. Valli refers to the Goddess. The Palmyra fruit from the tree located outside the shrine is offered to the god during Avani. The stone manuscript, dating back to 1300 CE, mentions the punishment given by the king to the people for cutting the living Palmyra tree. The inscription also mentions that the location is being considered a sacred grove. In olden days, the Dravidian temples in Tamil Nadu were measured using a scale of either 12 feet or 16 feet. The 15th-century inscription of the temple depicts a Palmyra tree sculpted on both corners, denoting the scale used for construction. The 14th century inscription also mentions adjoining sacred groves. It is named Sirupanangadu Vanpaakam, meaning Palmyra Forest. Sundarar 8th century poet Thevaram trio sang Thevaram in this grove. Thevaram is the collection of Thirumurai, shiva narratives of the puranic heroes.
Thirupananthaal	Centered to Kumbakonam and Thiruvarur.	This site has both male and female Palmyra palm as a thala maram. The male and female Palmyra palms denote Shiva and Parvati. The deity is named Thaalavaneshwar and Thaaavaneshwari. Saint Kungiliya Kalaya Nayanar attained jeeva samadhi in this temple.

Thirupananiyur	Nannilam, Thiruvaarur.	In this location, it is believed that Karikala Chola was bought by Irupidaar thalaiyaar at a young age to save him from an unpleasant situation. Thirugnana Sambandar, a 7th-century poet, and Thevaram Trio mentioned this site in Padhinondru Pathikangalil. Sundarar sang a portion of Thevaram.. From these Thevaram songs, it is evident that the village was blessed with natural wealth and scenic beauty. The deities named Azhagiya Devar and Azhagiya Naayanaar are replaced with Suntharaeshwar. The Parasarar statue is on the temple premises. Who is said to be the father of Vyasar, a writer of the Mahabharata. The 1110 CE inscription depicts that the location was also called Brahmatheya Pannaiyur, Panaiyur Kizhavan, and Panaiyur Nadu during the Chozha period.
Thirumazhampadi	Ariyalur	The grove and the place were ruled by Mazhavar. Mazhavar refers to a young warrior. Sundhar had sung Thevaram on these temple premises. In Thevaram, the word Ponnarmeni refers to this location. This location was initially termed Mazhavar Paadi or Mazhampaadi. Sundarar praises the Lord as Mazhpaadi Maanikam in his song. The deity is named Sri Vaidyanatha Swamy, meaning doctor.
Thiruvothur	Cheyyar, Tiruvannamalai	This place is named after the word Oothu. In the Tamil language, the word for sacred text is Oothu. It is believed that Sambandar argued with Tamil Jains and threw the sacred text written in Palmyra manuscripts in the Cheyyar River, and the manuscripts reached this location. The Lord is named Vedapureeswarar and Vedhanaathar. Sambandar Thevaram also narrates about the location. The Palmyra palm, Thala maram, is found in the southeast corner of the temple. It is a female tree and comes in different sizes. There is also a statue depicting the transformation of a male Palmyra palm tree into a female Palmyra palm tree.
Puravaar panangadu	Mundiyampakkam, Villupuram	The God was named Kanuganda Nyagar; Kanmaardha Naayanaar was later replaced as Panangateeshwarar. Similarly, goddess Maiyama is replaced with Stambha.
Panaimalai	Anandapuram Ginjee, vizhupuram	It is a cave temple located in the hilly town of Panaimalai. The inscription written in Sanskrit, dating back to the 7th century, depicts the glory of Pallava King Narasimha II. Another inscription states that the cave temples would have been constructed by Narasimha II. It has Pallavas, Cholas, and Nawab's inscriptions. The cave has 3-D-dimension paintings of Shiva and Parvathi in the position of performing the Thandavam dance. The paintings are totally out of view due to poor

		maintenance. The deity in this temple is named Thalagerieshwar. The deity is also called Somasundaram; it is believed that Somasundaram was first introduced to Tamil Nadu from this temple. The inscription dates back to 1597. The name of the deity in the inscription is mentioned as Panasai Nagar Thalagirishwar. Panamalai is a hill lock named after the Palmyra palm tree, but today not even a single tree can be found at this place. The architecture style of this temple and Kailasanathar temple located in Kancheepuram has major similarities.
Thiruvallapuram	Melaperumpallam, Poompuhar, Mayiladuthurai.	The God is known as Valampurinathar. The temple holds the memorial of Eranda Munivar. Thevaram has its significant record in these shrines.
Thirukandrapoor	Thiruvarur.	The main deity is named Nadutharappar (linga in the form of a loom wedge). The temple wall features 10 divisions of Thevaram.
Thirupaalaithurai	Papanasam	The god is named Palaivananathar. The temple was initially constructed by cholas and later by vijaynagar. It is located on the bank of river Kudamurthy.
Thiruvirinchipuram	Vellore	The deity was named as VazhithunaiNadar later changed to Markapathu
Thiruporur	Medavakkam, Chennai	Pattu pona (Palmyra palm about to die) of about 5 feet in height is believed to be Lord Muruga, along with its other two sticks made up of metals that are believed to be Valli and Devayani. This temple is commonly worshipped by fishermen, Veriyargal, and the Kaikoura community. Even though Palmyra is worshipped in this temple, it is not a Thala maram. Chidambara Swamygal came here to comment on Ozhipiyal Ozhukam. When he was struggling to find the meaning of the word Kalaasam, it is believed Muruga came and stood as a stick to make him understand its meaning.
Thirukkurungudi	Nanguneri, Tirunelveli	The Vaishnavas sung Mangalasasanam in this sacred place. The temple is located in the foothills of the western ghats. Mahendragiri, an adjacent hill, records many medicinal plants and is the is the refuge of Siddhars. Thala maram of this temple is Palmyra palm.

Source: Modified from (Preethi & Ramasamy, 2025)

3.7 Historical Verses and Songs

Historical Verses

"Each benefit to those of actions' fruit who rightly deem, though small as millet seed, as Palmyra palm-tree vast will seem" - Thirukkural (104).

Through these verses, it is evident that the benefit of Palmyra palm is considered extraordinary and cannot be compared with any other. Palmyra palm, entwined with a parasite tree, kills itself to produce nutritional support for these trees. Mythologically, this incident is compared with Sathyavan Savithri. When Emadharma is about to take away the life of Sathyavan, Savvthi protects him with love and prayers.

"A lofty tree that a believer resembles and its beautiful structure" - Quran 50.10

In the Quran, a lofty tree represents a palm tree. Here, a palm tree resembles a believer in Islam. i.e., a believer should be deeply rooted in the holistic belief of Islam. And just like palm trees, believers should survive in any situation to yield fruit.

"The righteous will flourish like a palm tree, they will grow like a cedar of Lebanon; planted in the house of the Lord, they will flourish in the courts of our God" - Psalm 92:12–15.

When these verses are translated to Tamil, the Tamil community refers to the palm as Palmyra palm.

"If you plant a Palmyra palm tree near a well, the water in the well will never get dried off"- Namazhwar

Songs

1. *Panai maram, thennai maram, vazhai varam:* Song written by poet Kannadasan for the film Kulavilakku (1969). The song compares and praises Palmyra palm (Panai maram). It talks about the growth of Palmyra palm with less consumption of water. And the plethora of benefits it showers is compared with supportive affectionate relatives (Vembar Manivannan Pazhaiya paatu puthagam, 2019).

2. *Panamara erum thozhilali ivan pamara makkal thozhali:* The song is a peppy folk song describing the joy of life style led by a community dependent on Palmyra palm. The song narrates the mutualism between the climber and the tree (Laugh Line Studio, 2022)
3. *Kadavul thunai Panai mara soppanam:* This folklore song is a narrative song reciting the uses of Palmyra palm in detail. It is famous among elderly womens aged above 60. The song was published by jayavelu muthaliyaar in periya nayakam press in the year 1923. Recently 90 years old lady sung the song and it has become viral on social media platform (Tamil Art Academy)
4. *Paramala kettu pochi parambariyam ninu pochi*: Song sung by Rajagopalan, a Palmyra climber from Southern Tamil Nadu region the song draws attention to the pain of shrinking livelihood opportunities with increase in financial deterioration and civil distress faced by Palmyra palm climbers' community of Tamil Nadu. He states them as nomads who travel in search of Palmyra palm for practicing their livelihood and better living conditions but their situation becomes exacerbated with poverty and disease (Channel 4Tamil, 2020).
5. *Panai marame panai marame en valarthai*: The song presents in standard IV Tamil school book. This song is a conversation between a child and the Palmyra palm tree. The child asks the tree why did you grow this tall? The tree justifies its birth reason by highlighting its offerings.
6. This tree has witnessed the imagination of Bengalis, Rabindranth Tagore has written a nursery rhyme *Taal Gaach ek Paye daariye'* (Tall tree standing on a single leg) in Sahaj Path, a famous reading material followed in most schools of West Bengal and Bangladesh (Jana & Jana, 2017).
7. *Nungu kadai orathula:* A folklore song details the benefit of consuming products from Palmyra palm one by one. The song also expresses sustainable living practices (Sirkali TV, 2020).
8. *Azhagana Antha panai maram adi kadi ninaivil varum:* This song expresses the memoryscape of beautiful palm and the dearest land that are forever living as a vivid memory to the community once lived with it (Eelam Library, 2021)
9. N*ooru aandu nimrdhu irukum panaimaram dhan:* The poet. Mr. Kumara Raseswaran Department of Drama, Kangayam Tamil Sangam sang this song in

Second World Palmyra Palm Economic Conference 2019. The song describes the tree as a strong and sturdy Palmyra palm that lives for 100 years and benefits the entire generation (Gamarra Vazhi Paadu, 2019).

10. *Panai maram panai marame parthu parthu engurenu:* Dr. Chandra Pushpam Prabhu from thoothukudi composed and sang a song to celebrate the great Palmyra palm (Gramathukuyil, 2019).

3.8 Festivals and Rituals

Karthigai Deepam, a festival of light, is celebrated during the full moon day of Karthika month called *Karthika Pournami.* A row of *Agal Vilakku (*clay lamps) lit up every house. *Panang Kozhukattai* is a traditional Tamil cuisine rich in nutrients, containing millets and Karupatti wrapped in Palmyra palm leaves and stemmed. On the same day, *Maavuli,* otherwise known as *Karthi or Soonthu,* is an indigenous and eco-friendly firework that is lit and spined during *karthigai deepam* (The Tamil festival of light). Unlike other fireworks, they cause less noise and air pollution. During the festival seasons, Adults and children collect the male inflorescences of the Palmyra palm tree that falls on the ground. Then it is crushed and partially burnt into ashes. These ashes along with coconut fiber pith and salt crystals are placed in a piece of cloth, bundled and kept in a Y- or U-shaped wooden stick or rod. The open end of the stick is closed and tied using a rope. The fireworks are ready to ignite and spin. The entire community enjoys spinning the eco-friendly firework that whistles melodiously.

The book *Nedu Nelvaadai* narrates the practice of people taking sticks and setting fire during the rainy season. All over the world, there are many ritual practices followed to stop the pouring rain. The stick with a fire or broomstick is kept facing the sky to stop the rain. In some places, ashes are thrown to stop the rain, as mentioned in Tamil Nadu. Similarly, a ceremony for burning *Sokka Panai* is conducted in Shiva temples in Tamil Nadu. Palmyra leaves are arranged in a circular way, like a hut with a gateway. The priest is then called to offer prayer and light the hut. The Palmyra palm catches fire that reaches the top of the tree. The ashes after burning are left for cooling. These ashes were later sprinkled on the cultivated land,

believing that the crop would grow healthier. The Shiva devotees believe that Shiva has fired the three directional belongings of kings *Vidiyun, Maligaatshan,* and *Kamalashan,* who had troubled Vishnu, Brahma, and Indira (Sivasubramaniyam, 2016).

3.9 Palmyra Economy

3.9.1 Historical Background of Palmyra Economy

When kings were ruling Tamil Nadu. Palmyra palm was considered a vital product to strengthen the kingdom's economy. More people were engaged in Palmyra palm based work and large revenue was generated to the kingdom. Special taxes were collected from the toddy tappers and document writers. Those days most of the important documents were hand written using brass stylus on Palmyra palm leaves. They received millets as remuneration. During the Chola period Palmyra palm was largely planted, semi domesticated, understanding its socio- economic significance. tappers were given separate resettlement areas. *Kizhavan sethupathi* (1674 - 1710) offered forest land to increase the yield of Palmyra palm that are scattered inside the forest. He ordered the clearing of the forest for settlement of the community. In olden days, the craft made from Palmyra Palm, is commonly utilized by the society in different circumstances and adjoins with their tradition. The crafts have geometrical and symmetrical formation, subtle patterns and techniques which are unique in many geographical locations. Economy and the commercial are linked with the local culture of the community. Today, the craft evolves with more easy patterns and techniques that help the women in making them for their economic benefit and to support their families. Mahatma Gandhi viewed Palmyra palm as an antidote to poverty. Therefore, many self groups and government organizations provide training in the making of Palmyra craft and value added food products. Along with empowering women through capacity building programs, they also support the attainment of their financial assistance. This co-creating economy regenerates new artistic works, new product development, stakeholders' engagement, entrepreneurship opportunity, scalability, resource management, innovation, infrastructure and ecosystem for community well being. Also aims to sustain

disappearing livelihood and traditional knowledge gained from the tree. Another important source of Palmyra economy is food. The edible and value-added products that are received from the tree are plenty. Numerous traditional cuisines are made from the tree (Sivasubramaniam, 2016).

Table 3.2: Parts of Palmyra Palm and Economic Uses

	Nos	Name	Uses
	1.	Taproot	Protects soil erosion, store ground water and used for making baskets and brushes
	2	Bottom of the trunk	Water storage
	3	Trunk	Used as Rafter, pillar and beams in permanent construction and scaffolding structure in temporary construction. Used as Shadoof irrigation tool, door and other furniture and as bullock cart
	4	Spadix	To extract fibre and to clean floor
	5	Tip	Used as a barrier to protect water bodies.
	6	Leaves	Manuscript writing, thatching, fishing net, Palmyra leaves to pour Neera and drink, packing or parcelling perishable products, making hats. basket, mat and many other handicraft items.
	7	Chillax, fibre web	Filter Neera to make broom or mesh to clean
	8	Inflorescence	Tapping toddy, Neera.
	9	Ice apple/fruit	Ice apple or fruit is found only in female Palmyra palms. The fruit is to receive Palmyra sprout and thavun. Used to make handicrafts, playing toy, firewood. Palmyra fruit can be added to several bakery and confectionery foods along with the

			traditional cusines.
	10	Petiole	Fencing, Crafts extract fibre to make cot, muram or solavu is a tool to remove weeds, firewood
	11	Old leaves	Basket, mat, bag, box and other handicraft items
	12	Young leaves	Decorative items,

Source: Author Compilation

3.9.2 Edible Palmyra Palm Products

- Jan - March: Pathaneer (Palmyra Neera) and Kallu (Toddy)
- April - June: Nungu Endosperm/ Ice Apple/
- July - Sep: Panampazham (Palmyra Palm fruit)
- Oct - Dec: (Panankizhangu) Palmyra Sprout.

a. **Toddy:** Neera is the sap extracted from the inflorescence of Palmyra palm. If it is undisturbed, it builds alcohol in a few hours called toddy. Toddy is obtained by tapping the tip of the tree collected in the hanging pots. Initial drink has a sweet taste. A few hours in contact with the dawn light, the drink starts fermenting that leads to change in taste and pungency. It tastes fruity and sour. It contains calcium, phosphorus and iron, vitamin A, Niacin, Thiamin and Riboflavin. It acts as a laxative and diuretic. This beverage is very popularly consumed across tropical parts of India to protect against heat. It is called Tadi in north India and kallu in South India.

b. **Endosperm:** The young fruit obtained for 60- 70 days. This summer delicacy called Nungu (Ice apple). It is in jelly form and nutritious. It is seasonal and highly perishable (Maathangi et al., 2021)

c. **Palmyra fruit:** The soft orange-yellow meso- carp pulp of the ripen Palmyra tree is a bit bitter and sugary, the fruit appears to be dense and edible. This fruit is rich

in vitamin A and C. The ripened fibrous outer layer of the palm fruits can also be eaten raw, boiled or roasted (Chaurasiya et al., 2014).

d. **Sprout or Tuber (Apocolon):** Palmyra sprout is grown under the ground when seeds are sown. Matured form breaks very easily. It is rich in carbohydrates. After sowing the seed, it approximately takes 4 to 5 weeks to harvest the sprout.
e. **Spongy haustorium:** The haustorium formed during germination of seed nuts. It is a spongy delicacy consumed during summer (Srivastava et al., 2017).
f. **Distilled Palmyra palm Arrack:** Pathaneer (Palmyra Neera) is distilled to produce the liquor called Palmyra palm arrack. The trade involving toddy and its associated products is carried out by the underprivileged community of the society. Arrack is illegal in India, whereas, the drink is openly available in some south east Asian countries (Srivastava et al., 2017).
g. **Palm Jaggery:** It is called as *Karungatti or Karupatti*. It has rich nutritional and medicinal value. It tastes like a chocolate. Karupatti is processed from the unfermented Pathaneer (Neera). The Neera is transferred into the boiling galvanized iron pan and boiled at 110°C. Boiled condensed Pathaneer (Neera) is poured into a coconut shell or earthen pots and allowed to cool. About 8 liters of Pathaneer is used to receive 1 kg of Karupatti. The quality can be improved by precipitation of lime with Carbon dioxide or Citric acid or unripe tamarind fruits before boiling the juice (Vengaiah & Murthy, 2015).
h. Even though Karupatti found to be declining after the introduction of refined sugar, it attracts a niche audience. Global market Insight (2025) states that globally the Palmyra palm sugar market is estimated at USD 1.8 billion in 2024. The market is expected to rise from USD 1.9 billion in 2025 to USD 2.4 billion in 2034. Health consciousness across the globe has resulted in an increase that has shifted consumers from choosing refined sugars to using more nutritional and healthier alternatives like Palmyra palm sugar. The awareness of the unique taste and the blend of butterscotch has raised its further acceptance in the culinary world, especially in food and beverages. Awareness on organic food consumption, social and environmental benefits, nutritional and antioxidant benefits of palm sugar and popularity of vegan foods has fueled the choice and consumption of palm sugar in new markets such as US, Canada and Western

European countries.

i. **Palm Sugar:** The liquid is evenly boiled and allowed to cool. The sediments are removed and then it is heated to 110°C for about 2 hours until it reaches honey-like consistency. The fluid is then allowed to cool and poured into a crystallising machine. After forming sugar crystals, it is ready to collect sugar.

j. **Palmyra Tamarind Candy:** 1 kg of Ripe, dry and shelled tamarind fruits is dropped in 10 liters of condensed Pathaneer (Palmyra Neera). The pot is tightly tied with cloth and vessels are kept on its top, then it is left to cool and dry for about 130 to 180 days. Sugar crystallizes on the sutures of tamarind and the fruits turn into delicious candies (Srivastava et al.,2017).

k. **Sprout Spicy Powder:** The peeled sprouts of Palmyra palm are eaten by steaming or roasted. To make powder sprout is left for drying under the sun, then added rice, herbs, chili peppers, fish or other added ingredients.

l. **Palmyra Palm Pulp:** The ripened Palmyra palm fruit is washed, peeled and extracted manually by squeezing using an extractor. Water is added additionally to this concentrated pulp to the ratio of 1:1 and then heated to prepare the actual pulp and then added with sugar.

m. **Palmyra Palm Spread:** The Palmyra palm spread is Prepared by adding sugar, milk powder, and cardamom to the pulp. The preparation of palm spread has been. The spread can be stored at both room and refrigerated temperature.

n. **Palmyra Palm Toffee:** Palm toffee is obtained by mixing fruit pulp with required ingredients such as sugar, maida and milk powder. This toffee can be stored at room temperature.

o. **Palmyra Palm Burfi:** Palmyra shoot and coconut are combined to make Palmyra palm burfi (Chaurasiya et al., 2014; Srivastava et al., 2017).

3.9.3 Inedible Palmyra Palm Products

a. **Palmyra palm leaves or Palmyra leaf boxes:** predominantly used to offer food to needy people in Tamil Nadu. Islamic community serves nombu kanji in the Palmyra leaf. Poothalam church Kanyakumari serves kanji in Palmyra leaves during easter. In some Dargah, biriyani is packed using Palmyra palm leaves (Panam petti) and Hindus serve temple prasadam in a similar packing method

(Preethi & Ramasamy, 2025). In recent years, this eco-friendly packaging has been widely used by many food outlets. Apart from these the boxes are customized and modified boxes are developed for distinct functions.

b. **Palmyra baskets:** these baskets are widely used to carry or to store such as rice, grain, fruits, vegetable food etc. The baskets are in different sizes and shapes.
c. **Palmyra palm in architecture:** In vernacular architecture of Tamil Nadu and Sri Lanka, the Palmyra palm leaves are used for roofing, they provide insulation and keep the room cool. The fiber is also made as ropes and used for wall panels. The trunk is used for pillars, rafters and beams.
d. **Palmyra palm home or stage decors:** Palmyra palm leaves are added with artificial colours to make decors that are used for marriage stage deorations, and as common hangings many self-help groups units among Tamil Nadu are involved in making these decors.
e. **Value added products from Palmyra palm:** Palmyra lamps are made from Palmyra leaves and petiole. Jewelries are made from Palmyra leaves; Laser printing is printed on Palmyra palm leaves. Cloth is made from the fiber collected from the tree.
f. **Palmyra mat:** there are two types of mats made from Palmyra palm leaves. One is a sleeping mat exclusively made from young Palmyra palm leaves and another is used for sitting, drying food in large quantities or also for drying fish.
g. **Palmyra Fences:** The stem of the leaves has thorny edges. Fences can be prepared from these stems by nailing them together.
h. **Palmyra Rope Cot:** The skin of the stem of the leaves can be peeled off and be used as rope and also used to weave into cots.

i. **Palmyra Hats and Hand fans**: the leaves are used to make hand fans. These are mostly used during the summer (Jana & Jana 2017)
j. **Cosmetics**: Palmyra palm has an anti-inflammatory substance. The fruit is used as a face pack. The thin coat is applied on the face and washed off upon drying. The powder is applied with sandalwood and coconut water to treat sunburn. The presence of antioxidant content in Palmyra palm prevents aging and wrinkles. It is prepared as antibacterial cosmetics to get rid of acne and assist in dental and

dermal health care. The bark of this celestial tree is used in mouthwash and dentifrice production prevents dryness and the fruit pulp can be used as toothpaste. The pulp with rock salt and cold-pressed virgin coconut oil are many ingredients to prepare liquid soap. The brand named “Reju Ayur” introduced an “Under Eye Gel with Ice Apple & Cucumber” that clears dark circles, wrinkles near the eye area. In 2020, Balinese pharmacists invented hand sanitizers with 96% alcohol altering fermented palm wine to overcome the shortage of disinfectant supply. The brand named “Cocoon” introduced body polish from Palmyra palm sugar crystals with Vitamin B5 and Macadamia oil. Inspired by the specialty of the A Giang province of Vietnam, a grainy body exfoliation formula was developed from the concept of fragrant palm sugar cakes. This removes dead skin and dirt from the body surface, nourishing skin to be soft and smooth (Sayanhika & Selvakumar, 2024).

k. **Dermatological products**: According to Siddha principles and practices formed during ancient Southern India, especially Tamil Nadu, a decoction termed *Panai Karpam* is prepared by mixing small bits of Palmyra roots with two parts of water and drying the solution under the sun. The concentrated mixture treats alopecia when applied thrice a day. The literature sources about traditional medicinal knowledge of ethnic communities using mixtures of Palmyra palm extracts and herbs to treat scabies, sores, burns, secondary syphilis and leprosy are still available. Ayurvedic medicines also use the product from the tree to treat skin allergies and pruritus. The Vitamin C present in Palmyra palm fruit can be used to treat tension and improve texture of skin. Also, it reduces post-inflammatory discolouration. The Vitamin E present in Palmyra palm treats Darier diseases. Acetic acid present in the Palmyra fruit pulp treats bacterial and fungi infection (Sayanhika, & Selvakumar, 2024).

3.10 Palmyra Palm Ecology

Palmyra palm is considered as nature's perennial gift. Historically it was used as a scale to measure ground water. The tree withstands extreme drought, unfavorable climatic conditions and natural calamities. It promotes carbon sequestration and helps in lowering greenhouse gas. The deep root of Palmyra palm

prevents soil erosion and improves the quantity and quality of the water. It recharges groundwater and plays a major role in circulation of water in aquifers. their roots go deep to the ground and bring water to different levels. Planting Palmyra palm near the lake and pond is considered to be a day old practice. When rivers and ponds are revered by community and subjected to sacredness the trees also became celestial (Jana & Jana, 2017). The tree provides shelter to birds, reptiles, insects and to several other tiny species. It removes air pollutants and produces purified air for breathing. Many of them were cut to construct brick kilns and factories. The dense patches of trees were cut to build their warehouse and factories.

On October 8, 2018, the Seeds Trust, Palmyra Nation, Arulagam, and Tamil Nadu Forest Department took the initiative to plant Palmyra palm to protect vulnerable slender loris, the primitive and endangered species of Tamil Nadu, that records its movement in the tree (Samuel, 2018). The tree canopy contains organic matter necessary for insect breeding even at the daytime (Poche et al., 2012). A tree grown near the water body yields a maximum amount of Neera and ice apple, but the sweetness is rich from the tree grown near arid or dry regions. The climber adds value to the Palmyra palm by domesticating and taking care of the tree; the relationship between the tapper and the palm is mutually shared. When energy is transferred from one partner (Palmyra palm) to another (climber) the palm receives protection, seed dispersal and suitable habitat conditions to grow. Climbers gain traditional ecological knowledge observed from the tree. They call the tree with different names and treat the tree as one among their family members (Franco et al., 2020). The products from the tree were in usage prior to plastic being and gaining popularity again to reduce the usage of plastic and other environmentally unfriendly materials. Some innovations like usage of Palmyra palm in textile industry, cosmetics, pharmacy and interior designing are eye opener to the present market scenario. They not just solve environmental problems, but also to improve social economic conditions (Booth et al., 2005).

“Ancient trees are precious. There is little else on Earth that plays host to such a rich community of life within a single living organism.” - Sir David Attenborough.

CHAPTER-4

RESEARCH METHODOLOGY

4.1 Introduction

This chapter discusses the sources of primary and secondary data used for the study, sampling techniques, selection of respondents, validity and reliability of the variable, research design and description about the study area.

4.2 Primary Data

The primary data were collected through questionnaires, field observation, focus group interviews, Delphi techniques, from the local community and experts. The responses from the participants were written and recorded on the phone, which were gathered through administering schedule and through personal interview and telephonic interview (Yaja, 2021).

4.3 Secondary Data

The secondary data was collected from multiple sources of information both directly and indirectly. The sources include scholarly research articles, peer-reviewed publications, published government and non-government reports, books, blogs and websites. In addition, it is also obtained by numerous studies on the participation of the local community and their engagement in the planning process, especially in rural areas, these studies were chosen for critical examination of the research problem from all perspectives.

4.4 Mixed Method: Exploratory Sequential Design

For the study, a prudent mix of both qualitative and quantitative approaches have been adopted to capture data from transdisciplinary angles. The mixed methods have been chosen for an in-depth analysis especially Exploratory Sequential Design (ESD). Although This method is prevalent in the medical field it is also applied in social science to address many fundamental questions about experiences, behavior, thoughts, attitudes, and perceptions of individuals/ communities, to improve the research quality and to enhance credibility, clarity, and specificity of the gathered

information. This particular method is chosen for the study due to paucity of information available to conceptualize the phenomenon and to test the variables. Therefore, the method carefully explores the study and builds strong foundations for present and future research (Serra-Silva, & Raimundo, 2024) the method involves qualitative and quantitative phases respectively that complement each other by integrating its strength (Bowen et al., 2017) and provides solid evidence and robust validity (Gogo & Musonda, 2022). It initially starts with collecting qualitative data followed by designing a tool (questionnaire/ schedule) from the outcome of data analysis. The structured tool is then tested among large samples. In the qualitative phase the approach includes field observation, focus group interviews, Delphi techniques, from the local community and experts under different themes. This information involves both quantitative and qualitative interpretation. The opinions, viewpoints and perspectives of respondents were captured through personal interviews and focus group discussions. The researcher's systematic observations in the field visits have been incorporated to substantiate the interpretations.

4.5 Data Validity and Research Instrument

Tourism research methodology is rapidly evolving incorporating knowledge from diverse disciplines weaving the ideology and methods together to create a flagship in research. Drawing the perspectives from multifaceted disciplines can enrich, improve knowledge, analytical skills and critical thinking ability to solve research problems.

During the study design and data collection, the researcher took several steps to ensure data's rigor, accuracy, and validity. As a start, all relevant information was collected and reviewed through scholarly literature.

Secondly, study initiated familiarization using Snowball Sampling technique and with Delphi technique. The study areas were narrowed down to choose appropriate study destinations that are rich in Palmyra palm density and increase in the number of people dependent on the tree for their livelihoods. For Delphi technique the sample pool recruits the individuals such as academicians and researchers who excel in the field of the study, president of the village, heads of

cooperative societies, federations, NGOs and members of Palmyra palm workers welfare board as informants. The audio recordings captured during the interview were recorded in Tamil and then transcripted in English.

Thirdly, the field survey was initiated to map the locations such as Palmyra density (tapping area and Palmyra value added product making area), market area and shops (where Palmyra food and handicraft products are sold) and Palmyra palm Sacred Grove or stand-alone tree that is considered as a worship place are mapped using GIS software. The latitude and longitude points of the locations are noted using Google Maps and feed in the ArcGIS software and the Holistic Maps combining all the three maps are represented to design creative routes.

Fourthly, the first draft of the survey questionnaire was made from taking insights from review of literature and from the analysis of information collected from Delphi technique and field survey. The prepared schedule was finalized by consulting with the supervisor and subject experts.

Fifthly, the pilot study was conducted with 50 samples from the local community who are associated with Palmyra palm.

Finally, the feedback and suggestions of the experts and supervisor of the final schedule questionnaire were incorporated. Thus, the researcher refined and fine tuned the questionnaire before finalising its relevant contents and information.

To enhance the reliability of the research instruments, reliability statistics were run after a pilot study Program for statistical analysis of sampled data (PSPP 2.0.1) for identifying relevant variables and constructs through the Cronbach alpha test.

Table 4.1 Reliability Statistics Test

Cronbach's Alpha	No of items
.854	59

The test result is shown in Table 4.1 where all constructs reached more than 0.700 considered higher consistency.

4.6 Survey Questionnaire

Majority of the local community are illiterate therefore, survey questions were prepared in English and explained in Tamil local dialects wherever required. The survey questionnaire took 30-40 minutes for its completion in some cases it exceeded more than an hour. Before executing and conducting a survey questionnaire, the researcher tries to build trust and establish connections with respondents in order to make the respondents feel comfortable.

Many respondents lucidly shared their views on many issues related to their livelihood and social problems that are collected as semi-structured questionnaires. Some respondents were enthusiastic to share their happiness and trouble, while some were reluctant to spare time for personal interviews and responding to the questionnaire.

4.7 Selection of Respondents

The data was collected from local community members who are directly engaged in Palmyra palm activity for their livelihood. These include climbers/ tappers, Karupatti makers, local chefs involved in preparing Palmyra palm-based food, artisans and sellers.

4.8 Data Collection

The data was collected using a purposive sampling method in the initial phase, and later, it turned out as snowball sampling technique. Data collection started with experts' opinions to gather in-depth information about the subject scenario and to select the study area. Details about the list of climbers with license were obtained from the Palmyra palm workers welfare board. Details about artisans were largely collected from Palma Federation, Kanyakumari, Tirunelveli Self Help Groups supported by District Collectorate office and Nellai crafts, Ramanathapuram and Thoothukudi Self Help Groups supported by District Forest Department. Individual artists and chefs who are not listed with these were also added as informants. Data and Information were collected between June 2022 - September 2022 from the five districts of Tamil Nadu.

The five districts were selected on the basis of the count of the tree and number of people dependent on the tree for their livelihoods. The relevance is reported by agriculture department of Tamil Nadu. Anthoniyapuram, Udangudi, Adaikalapuram, Palani Appalpuram, Thanoothu, Nallur Alankulam, Thotavilai, Muthaliyarpetti, Sothavilai, Valavancode, Marthandam, Thellandhi, Kiliyoor, Agastheeswaram, Kusavankuzhi, Thikamkode, Kanjirapuram, Keezhmundhal, Vembar, Naripayur, Alagulam Tenkasi, Devikulam, Thisayanvillai Radhapuram, Nallupanai, Kundhal, Ironiyapuram, Kuzhithurai, Sethukarai, Thoothukudi, Manapaad, Keezhakarai, Thiruchedur, Kayalpattinam, Thinaikulam and sikkal are the selected study location.

Among these 5 districts 36 villages were selected that included the tapping area of climber’s community, making area of value-added products and workplace of artisans. The census regarding population of the community and their geographical dispersion are unknown. Therefore, a non-probability sampling method was adopted. Both licensed / unlicensed artisans and climbers were included in the survey. Licensed artisans and climbers were selected using purposive sampling technique and unlicensed climbers and artisans were selected through snowball sampling technique. 385 local community members participated in the survey. However, 352

samples were considered for final analysis. The survey schedule was used along with semi-structured interview to support scheduled questions.

4.9 Statistical Tests

The Normality test is conducted to determine if the variables in the study are distributed normally or not. Shapiro-Wilk is recommended to find the p- value. If $p \leq 0.05$. The result of this study signifies that the data is not normally distributed. Therefore, the study chooses Cross Tabulation and Descriptive test.

Table 4.2: Production of Palmyra Neera district wise distribution

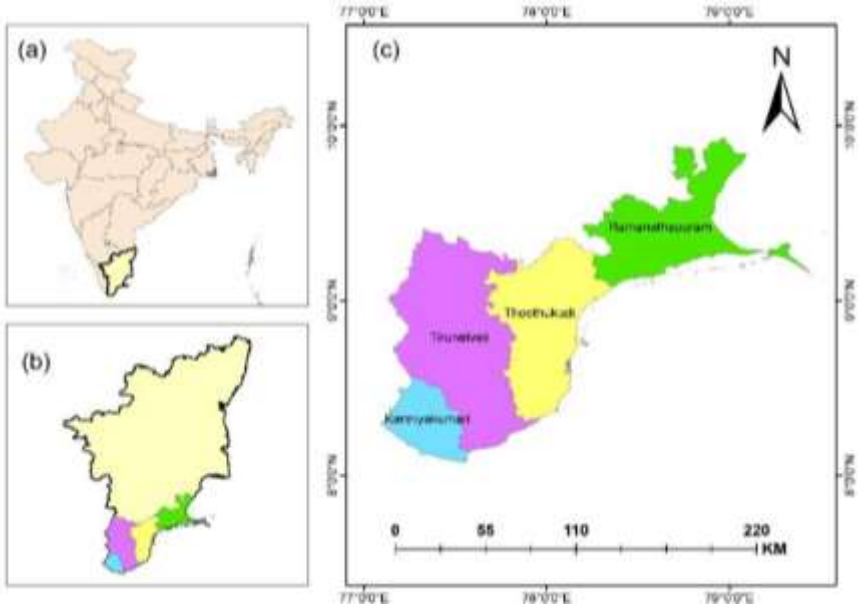
Sl.No	District	Area (ha)	Production (000 tones)
1.	Ariyalur	8	NA
2.	Coimbatore	36	1
3.	Cuddalore	45	1
4.	Dharmapuri	151	3
5.	Dindigul	68	1
6.	Erode	9	NA
7.	Kancheepuram	3	NA
8.	Kanniyakumari	1141	19
9.	Karur	31	1
10.	Krishnagiri	75	1
11.	Madurai	180	3
12.	Nagapattinam	411	7
13.	Namakkal	NA	NA
14.	Perambalur	4	NA
15.	Pudukkottai	119	2
16.	Ramanathapuram	3264	55
17.	Salem	9	NA
18.	Sivaganga	3	NA
19.	Thanjavur	182	3
20.	Theni	18	NA
21.	The Nilgiris	NA	NA
22.	Tiruvallur	76	1
23.	Tiruvarur	9	NA
24.	Tiruvannamalai	70	1

25.	Thoothukudi	2889	49
26.	Tirupur	12	NA
27.	Tiruchi	41	1
28.	Tirunelveli	1159	20
29.	Vellore	15	NA
30.	Viluppuram	48	1
31.	Virudhunagar	366	6
	State Total	**10442**	**176**

Source: Tamil Nadu Agriculture Department; Cited by Krishnaveni et al., (2020)

Districts such as Ramanathapuram, Thoothukudi, Tirunelveli and Kanyakumari rank in the top position for production of Palmyra palm Neera. Therefore, a large number of communities depend on the tree for their livelihood.

4.10 Study Area



Note: Map not for scale

Figure: 4.1: Study Area

Source: Author

1. Ramanathapuram

The district Ramanathapuram was formed in the year 1910 by combining

parts of Madurai and Tirunelveli districts. Shri J.F. BRYANT I.C.S. was the first administrative officer of this district. The British called it as "*land as Ramnad".* Later the district was renamed as Ramanathapuram. Ramanathapuram is also known as Mugavai(face) marking the end point of the River Vaigai at Palk Strait (Britannica; Govt of Tamil Nadu).

This district lies between 90 05′ and 90 50′ Northern Latitude 780 10′ and 790 27′ Eastern Logitude. It shares its border with Virudhunagar and Tuticorin districts in the West and Sivagangai and Pudukottai districts in the North. The Palk Bay and the Gulf of Mannar on the East and South. The district has a dry, hot weather condition throughout the year except the North East monsoon season that comes in the month of November and December (Ramanathapuram district, Govt of Tamil Nadu). But the district has a diverse array of water bodies. Vagai and Gundar rivers are the major source of irrigation and drinking purposes. And 18 % of the geographical area is wetland coverage. This includes natural lakes, ponds and man-made tanks (India Stat Publication).

The district offers a tapestry of avian diversity across its wetlands, forests, islands and coastal habitats. From migratory species to resident birds, the region provides ample opportunities for bird watching throughout the year. Holy Island Beach located in Sangumall, Olaikuda, provides a diverse range of water activities such as scuba diving, jet sky, kayaking, banana ride, snorkeling and many more. Apart from these attractions the district has Ramanathaswamy Temple, a Jyotirlinga shrine dedicated to Lord Shiva has the longest temple corridor in India. Agni Theertham, Gandhamadhana Parvatham, and Dhanushkodi, APJ Abdul kalam house, Ramar Bridge, Kurusadai island and many more. Muslim traders and merchants such as Maravars, Maraikayars are also deep rooted with Tamil language and culture Keezhakarai (Ramanaathapuram) and kayalpattinam (Thoothukudi) are the twinning town established during Pandya period hold unique customs and practices. It is a Matrilineal Society where the groom lives with the bride along with her family after the wedding. Presently, the major occupation of the people is fishing, agriculture, Palmyra palm cultivation and related activity, salt production, seaweed collection and beedi (hand-rolled cigarette) rolling etc.

2. Thoothukudi

Thoothukudi, also known as Tuticorin, is a coastal district in the southern part of Tamil Nadu, India. It is renowned for its rich maritime history, vibrant economy, and diverse cultural heritage. Traditionally this district is known as "Pearl City" on account of the prevailing Pearl fish in the past. Historically, it was part of the Pandian kingdom between 7th and 9th Century A.D., Then with Cholas during the period between 9th and 12th century. Emergence of Thoothukudi as a maritime port attracted travelers, adventurers, and eventually colonizers. The Portuguese were the first to arrive in Thoothukudi in 1932 A.D., followed by the Dutch in 1658 A.D. The English captured Thoothukudi from the Dutch in 1782 and the East India Company established their control over Thoothukudi in the same year (District of Thoothukudi, Govt of India).

On the 20th, October 1986 a new district, carved out of Tirunelveli district was born in Tamil Nadu and named after V.O.Chidambaranar, a great national leader hailing from Ottapidaram who led the Swadeshi Movement in the South. This district has also been named after its headquarters town, Thoothukudi. The river Thamirabarani flows from Tirunelveli to Thoothukudi. Thoothukudi has many beach destinations and historical places to attract tourism. Thiruchendur, the temple dedicated to lord Muruga is the most visited location in the entire Thoothukudi district. Korkai, Our Lady of Snows Basilica, Kazhugu Malai Jain Koil, Vettuvaan Koil, Ettayarpuram palace are some of the important tourist destinations. Many shootings were taken in beaches and churches of Thoothukudi exclusively in Manapad. Kulasi festival celebrated during Dussehra attracts visitors across the globe (Thoothukudi district, Govt. of Tamil Nadu). The economy of the district is dependent on Thoothukudi port which is one of India's major ports, handling cargo, coal, and container traffic. Chemical, thermal power, fertilizers, and salt production industries, fishing, fish exporting and Aquaculture are vital occupations practiced by the community. Salt pans located in this district are largest producers of edible salt in Tamil Nadu.

3. Tirunelveli

Tirunelveli district, located in the southern part of Tamil Nadu, India having a long-rooted history is renowned for its rich cultural heritage and diverse natural landscapes, making it a significant destination for tourism. The district was officially formed on 1st September, 1790, by the British East India Company. Before British rule, it was under Pandyas, Cholas and Nayakas.

The district is a landmark to Nellaiappar temple, which has iconic musical pillars. Lord Shiva believed to perform the cosmic dance. Adichanallur is considered as one of the earliest and predominant archaeological sites in Tamil Nadu, traces Iron Age culture, Tamil-Brahmi inscriptions and diverse artifacts.

This is the only district of Tamil Nadu with mountain, forest, desert (sand dunes), coastal region and grassland. Manimuthar Dam, Kutralam (Spa of South India) presently in Tenkasi district. Kalakad Mundanthurai Tiger Reserve (KMTR), home to several species that mainly include Tiger and elephant and Theri Kaadu (red sand dunes) located in Thoothukudi and Tirunelveli district having unique biodiversity are prominent natural gems of the district. The district's economy is primarily from agriculture with rice, Palmyra palm, coconuts, bananas, and spices being the main crops. Tirunelveli is also known for its significant contribution to wind energy production in the state.

4. Kanyakumari

Kanyakumari, the district located in the southernmost tip of the Indian mainland. the Arabian Sea, the Bay of Bengal, and the Indian Ocean meet at *Mukkadal* (coast combining three oceans). Kanyakumari. During the colonial period it was known as Cape Comorin. The region holds immense geographical, historical, and cultural significance.

The history of Kanyakumari is deeply interwoven with South Indian dynasties. It was once a part of Pandya kingdom then under the rule of the Cholas, Venad, and the Travancore kingdom (Menon, 2007). It played a vital role in maritime trade and cultural exchanges with Sri Lanka and Southeast Asian countries.

The name "Kanyakumari" is derived from the goddess Devi Kanya Kumari, an incarnation of Parvati, who is believed to have performed penance in this coastal region. The area was a center for spiritual and intellectual learning, with both Hindu and Christian influences shaping its social fabric.

Geographically, Kanyakumari is located between 8° 03′ and 8° 35′ North latitude and 77° 05′ and 77° 35′ East longitude. It is bordered by the Western Ghats on the north and west, and by the sea on the other sides, giving it a tropical maritime climate. The terrain ranges from coastal plains to hilly terrains. The region receives rainfall from both the southwest and northeast monsoons, and keeps the land fertile (Singh, 2008).

Agriculture and fishing are the primary occupations in Kanyakumari. Crops such as paddy, banana, Palmyra palm, coconut, timber and rubber are cultivated. The fishing communities along the coast rely on traditional and mechanized fishing techniques. In recent decades, tourism and the textile industry have also emerged as important sources of income (Department of Economics and Statistics, Tamil Nadu, 2019). This district is India's most visited tourist destination for its sunrise and sunset views over the ocean, especially on full moon day. Major attractions include: Vivekananda Rock Memorial. Thiruvalluvar Statue: A 133-foot statue of the Tamil poet-saint Thiruvalluvar symbolizes the virtues of the Tirukkural. Kanyakumari Temple dedicated to Goddess Kanyakumari. Suchindram Temple known for its art, carvings and musical pillars. Padmanabhapuram Palace: showcases Travancore architecture, located near to Marthandam and Gandhi Memorial.

Previous chapter documents the Transdisciplinary Avenue of Palmyra palm that attempts to eradicate challenges of food security, unemployment and environmental degradation. In order to sustain the food, livelihood, history, culture and tradition tourism has to be adopted in these selected destinations to minimize the dependency and empower the community to live sustainably. Also, tourism lime lights the hidden gems related to Palmyra palm that are considered as trees of life and legacy by the community.

CHAPTER-5

RESULTS AND DISCUSSION

5.1 Introduction

The chapter Results and Discussion provides Maps and Interpretations of the potential locations that can draw attention to emerge and develop as a captivating tourism destination. Manual Thematic qualitative analysis is obtained from information collected from field visits and from various stakeholders through interviews and comments. These themes are also reflected in the Schedule as statements.

Quantitative Analysis is obtained using the Program for Statistical Analysis of Sampled Data (PSPP 2.0.1). Interpretation of the data and information provided in the chapter incorporates logical reasoning through evidence to avoid bias but out shows personal experiences and perspective.

5.2 Mapping Potential Palmyra Palm Locations

To map the potential locations of Palmyra palm in Southern Tamil Nadu for developing community based tourism destinations. Locations were simultaneously marked and mapped during the process of data collection. The Latitude and Longitude points are marked using Google maps and the output is generated using arcGis software. Each location visited to interact with the local community are segregated into different themes. The maps represent Tapping area, Handicraft villages, Market location and the Palmyra palm Tree veneration hotspots. These locations were chosen with the support of experts. Many local communities directed to locate new spots were also noted in the study. The major highlights of these locations and the insights from the local community are presented along with the maps. This further directed the study to design the research tool.

5.2.1 Tapping Hotspot Locations

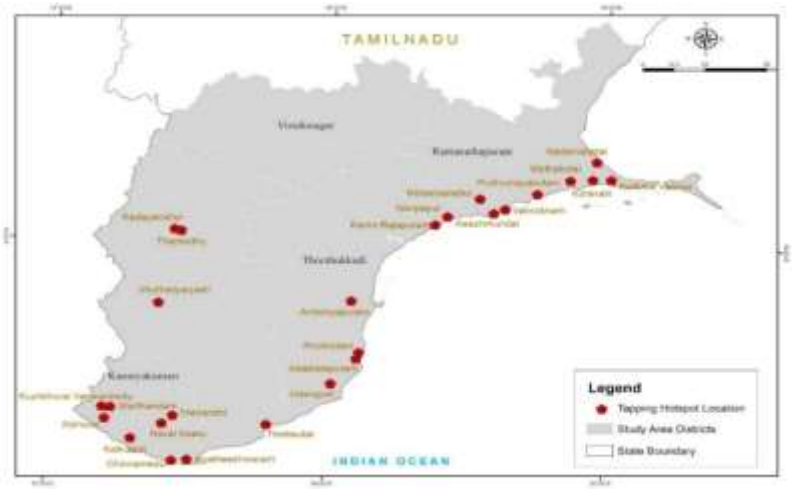


Figure 5.1: Map representing Palmyra Tapping Hotspot Location

Source: Author

This map represents major locations of tapping hotspots located in the Southern districts of Tamil Nadu. Keezhmundhal, Melselvavanallur, Methalodai, Kovalli, Puthumayakulam, Valinokkam, Kadukalvalasai, Nadarvalasai are the villages from Ramanathapuram districts. Kannirajapuram, Naripayur, Antoniyapuram, Poothotam, Adaikalapuram, Udangudi are the villages from Thoothukudi. Kadayanallur,Mudhaliyarpetti and Thottavilai are villages from Tirunelveli District and Thanoothu is from Tenkasi Districts. Kuzhithuraivalavankodu, Marthandam, Kizhioor, Kalkulam, Naaval Kaatu, Chinnamedu, Thellandhi, Agatheeswaram are villages from Kanyakumari districts. Majority of these villages are located in the coastal belt.

Tapping hotspot includes the location of men climbing the tree and the women collecting the Pathaneer (Neera) to make Karupatti. The Age group of Men climbing the tree may vary from Teenage to 100 Plus. The majority of the climbers are older than sixties but surprisingly there are some youngsters who are desperate to sustain their livelihood and safeguard the tree. Climbing trees is a difficult and risky job. The climber on an average a climber climbs 20 - 30 trees and taps 15 -20 liters

of Pathaneer on a day. Generally, he climbs twice a day early morning, when the sun rises and, in the evening, before the sun sets completely. Some climb even thrice a day. Tapping Pathaneer generally starts from the month of February to September. In Kanyakumari the season starts a bit later. Also, the climbers from Kanyakumari in addition to Palmyra palm trees are accustomed to climb other trees to yield additional income.

5.2.2 Palmyra Handicraft Locations

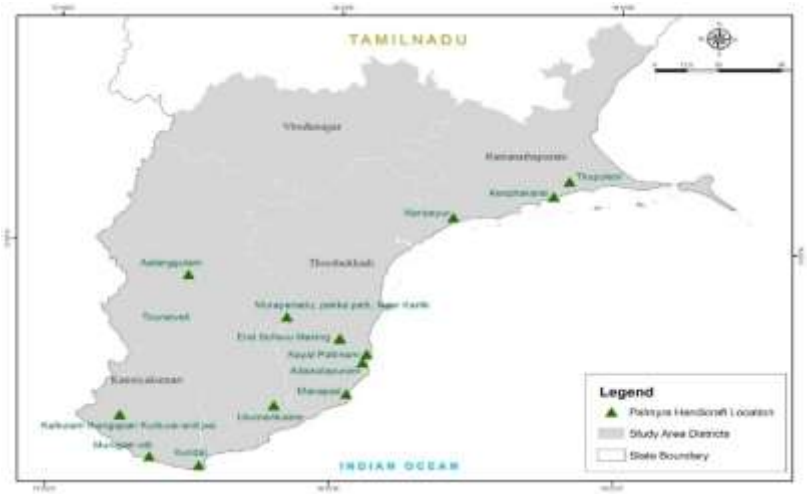


Figure 5.2: Map representing Palmyra Handicraft locations

Source: Author

The locations in this map represents Palmyra palm craft Villages. Some villages are rich in traditional and functional crafts whereas some villages are rich in decorative and value-added crafts that took shape in recent years. Manappad, Kundhal, Tirupullani, Radhapuram urumankulam are the villages where a large number of artisans especially women are engaged in making Palmyra based crafts. These villages are supported by Self Help Groups (SHGs) associated with Ramanathapuram District Forest Department, Tirunelveli District Collectorate department and Nellai Crafts, Thoothukudi Kaadhi Palmgur Cooperative Society, and Kanyakumari Poompuhar unit. Some of the Non-Government Organizations (NGOs) such as Palma Federation Kanyakumari and Rural Worker Development Society Ramanathapuram also support both individuals and groups of artisans.

This Map also shows disappearing Traditional crafts such as Sieve tray made from Palmyra palm leaves (*solavu)* can be found near Eral village located in Thoothukudi district. A limited number of people are skilled to make this craft in the entire state. Solavu is a functional craft used to remove weeds, sand and stones that are present in rice or any grains before sending it for grinding.

Palmyra palm coir cot (*Naar kattil)* is underrated art work and are gradually vanishing from usage. Many artisans exclaimed they were forced to leave their livelihood due to shortage of order and low wages. Pichumani, (69) years old man, from Murappanadu, Tirunelveli is the only artisan who knows how to make the cot in his village. He travels to Palayankottai, Valanadu and nearby villages if he receives a order for making the cot. Chitravel, a (74) years old man from Attur, Thoothukudi learnt to make the cot at the age of 11. Now Chiravel is working as a laborer in a shop located in Eral villages of Thoothukudi district. He receives ₹3500 - ₹4000 in a month. 10 years back there were 18 artisans engaged in making the cot but now only three are practicing. The artisans Shanmugavel (69), Perumal (66) and Periyasamy (72) are the remaining artisans who are safeguarding the artforms from Eral. Muniyasami (69) from Naripayur, practices dual livelihood, he is skilled to climb the tree and weave the cot.

The major occupation of Aramozhipu, Alangulam village is dependent on the Rice mill. At present there are seven artisans who weave a huge storage basket. The age group of these artisans are around 60- 80.

*"I collect the leaves and dry them for 1 or 2 days. To prepare a big box it requires 8 full leaves. It takes around two days to complete a basket. The cost of the basket is around ₹600 - ₹700. I used to receive orders from the mill owner. Either they come and collect it from me or I will send it through my son. I used to get only 5 to 7 orders in a month." (*Kuthaliam, 87 years old farmer).

In Kanyakumari, a Pot made from Palmyra palm leaves *(Kuduvai)* were used for tapping Pathaneer. Thangappa, 82 years old man from Marthandam learned this craft from his father and passed it to his son Jebaraj. Thangappa is now the only artisan who knew how to make this craft. He also weaves a thick *Kurutholapai*

(sleeping mat) from the young Palmyra leaves. To weave a mat, it takes around 4 to 5 days. The cost of the single mat may vary from ₹2000 to ₹3000. He sustains the technique by providing training to school and college students. Kala, Rama, Carmel and Ambika are the women aged around 45 to 55 who are empowered by the Palma Federation, Marthandam to make Palmyra hats that are exported in large quantities overseas. A hat costs around ₹30 to ₹60. *"Per day we are able to stitch 30 hats. Roughly we receive around ₹8,000 to ₹10,000 per month."* (Kala, Artisan).

In Keezhakarai, Ramanathapuram Umayanan 73 years old man from fishershermen community makes a (Fish trap) by intertwining Palmyra coir or root. *"This fish trap is tied with stone on the four sides and kept near the coast. The large fish enters this trap and wouldn't find a way to move out" (*Umayanan 73 years old). In the entire state this trap can be found only in Keezhakari. Umayanan is the left-out artisan who knew to create it.

In Kannirajapuram, only 10 people in the village know to weave *saala pai* (mat used to spread rice, package meat etc. 1 mat costs₹10. In the morning women are engaged to prepare Karupatti and in the evening they engage in weaving the mat.

5.2.3 Market Locations

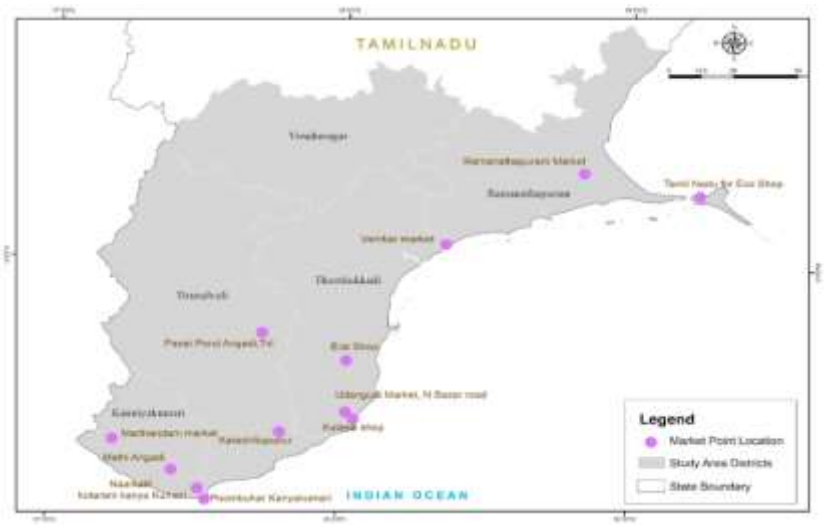


Figure 5.3: Map Representing Palmyra Market locations

Source: Author

Unique and decorative Palmyra crafts, value added edible products and Karupatti were sold in the marked location on the map. Tourist flow is found in the majority of these shops as they are located in the highway, broad roads, near to the bus stands or on prominent locations. In some shops, specific products are sold, for example Naarkatil Kotaram Kanyakumari and Eral shops sell only the cot made from Palmyra palm. Vembar Market and kulasai shops sell Karupatti in a large quantity. colourful crafts with unique pattern prepared by the Self-Help Group womens are sold exclusively in Mathi Angadi, Kanyakumari Poombhuhar Unit, Nellai craft Panai porul Angadi Tirunelveli, and Tamil Nadu Forest Eco shops located in Ramanathapuram. Marthandam Market, Udangudi Market, Ramanathapuram Market provide space to sell Palmyra crafts along with other crafts.

5.2.4 Palmyra Palm Association with God

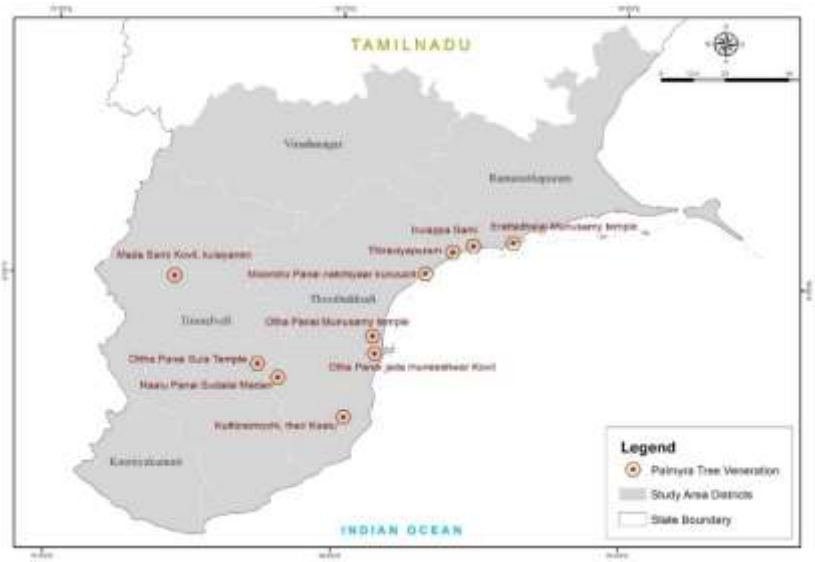


Figure 5.4: Map representing Palmyra Tree veneration locations

Source: Author

The map represents many Tutelary Gods (*Naataar Gods*) associated with the trees. Some communities worship the stand-alone tree; some believe the tree is associated with Tutelary Gods and some further believe the tree as an incarnation of specific Tutelary Gods. The study mapped some of the temples where these practices

are observed. They are Erattaithalai Munusamy, Irulappa Sami, Thiraviyapuram, Mundrupanai Natchiyaar Kurusadai, Othapanai Munusamy, Othapanai jada muneeshwarar koil, Madasamy temple kulayaneri, Othapanai sula temple, Nallupanai sudalai madan, Kuthiraimozhi therikudieruppu

Palmyra's binding with Banyan or Peepal explains their strong friendship or relationship. Both the trees produce milk. Therefore, the community ties it to rope and worship. The tree is worshipped in association with Sudalai, Kaala vasal Muneeswaran, Muniyandi, and a few Amman (Goddess). People in Tamil Nadu believe that God resides in the tree. Some exclusively believe the standalone tree as Goddess Kali and the Pathaneer from the tree as kali's milk.

"*Ezhuthani, a tool used for writing in Palmyra leaves. Palmyra based products along with other crops and fruits are offered to God"* (Veeman, 42 years Thottavila).

" *kudumba kovil, vadhai sami mottaivalai offer food to God in Palmyra leaf (olai) during temple festivals and in merkodu nagar amman kovil during panguni uthiram offer kanji to the devotees in Palmyra leaf (olai)".* (Shankar Ganesh, Palmyra climber).

"*In our village, unmarried women perform a ritual to get married. The tie a yellow rope (Tali/Mangal sutra) along with turmeric and women without children tie a cradle to the tree. The fertility ritual includes offering miniature wooden cots decorated with dolls, ribbons and string. Consumption of Palmyra palm fruit is a ritual intended to enhance fertility"* (Mangalam, Kizhioor).

"Several decades ago, we the natives of Puravar, Panangadu, worship Panangateeshwaran as Kula Dheivam. Later, we were taken away from stewardship and treated poorly by other dominating communities. We, then converted to Christianity. This conversion reserved self respect and dignity. Even after conversion we followed certain rituals, but we were not allowed inside by the temple premises to offer our yields to God. Many underprivileged communities in the village across Tamil Nadu face similar situation like us". (Pandiyan Palmyra climber).

*"When a groom visits the bride's home along with their relatives and friends to propose to her for marriage, they carry a pot full of toddy to offer it to her father. If he accepts the toddy, it is believed that he agreed their proposal; this practice is followed by Lambadi, a tribal community residing in Tiruvannamalai district of Tamil Nadu." (*Subhashini, Tamil Heritage Foundation International).

A. Usage of Palmyra palm Products

- **Pongal:** An important Tamil festival where community use palmyra palm leaves during the initial process of making Pongal**.**
- **Sacred Palmyra fan:** In many temples and monasteries, Palmyra fans and umbrellas are considered sacred. Saint Yogiram Surath Kumar, also called Visiri Samiyar, had a Palmyra fan in his hand. *"In Kanyakumari, a yatra to nine Shiva temples is organised. In order to relax, the Palmyra fan is used by the devotees and saints throughout their journey"* (Godson Samuel, Author).
- **Aadi perukku ritual:** This ritual includes kaadolai karugamani, which has Palmyra leaves as an important component.
- **Chitra Purnima fasting**: It is celebrated between April 15 and May 15 to commemorate Chitragupta's birthday. Chitra Gupta is believed to be associated with Yemen (The God of Death Art). The celebrations are grandly planned in Madurai Meenakshi Amman Temple and Tiruvannamalai Shiva Temple premises. "*At home, the devotees make pongal by adding Karupatti, offer Navadhaniyam (nine varieties of grains) in a winnowing basket made from Palmyra palm, and a Palmyra palm fan is also kept as offering.*
- **Panguni Uthiram:** *In Thiruchendur an ice apple is mixed with milk and served to all devotees during this festival"* (Medhadakshina moorthy, Priest).

B. Palmyra in Minority religions of Tamil Nadu

- **Islam**

"*The Islam community in Tamil Nadu used mats and caps made from Palmyra palm leaves during prayers. Palmyra palm mats and sticks were also used during the funeral ceremony to bury dead people"* (Salai Basheer, Author).

"*We, residents of Kayalpattinam, performed a ritual called "oddukathu pudhan" on the last Wednesday of suffer. Believing that Allah will bless and protect us from misfortune. On this day, we take Palmyra leaves and heat the rice till it gets black in colour. And then grind the rice into paste. We write important recitations of the Quran on Palmyra leaves using this rice ash paste. We kept it for a day. On the next day, we take this writing to a nearby water body. Add some water to it and apply it to our heads. By doing this, we believe that Allah prevents us from negativity. In our region, puttu, paavu, ponavam, and vattalapam are vernacular dishes made using Karupatti" (*Jariya, Abati).

"*We use Palmyra palm leaves or Palmyra leaf boxes to offer food to needy people. We serve nombu kanji in Palmyra leaf. In some Dargah, biriyani is packed using Palmyra palm leaves, and Hindus do serve temple prasadam in a similar packing method. In recent years, this eco-friendly packaging has been widely used by many food outlets. In our town, during the marriage ceremony, four people as a group sit together on a Palmyra mat to relish the marriage food." (*Informant: Architect Shahina, Keelakai).

- **Christianity**

Christmas: *"the Christmas tree and the hut beside the tree is decorated using Palmyra palm leaves"* (Anto Briton, Palmyra climber).

Palm Sunday: "*the holy cross is made from Palmyra palm. Hanging decorations (Thoranam) are made using Palmyra palm".* (Informant: Antony, Anthoniyarpuram Thoothukudi).

"In Kanyakumari during Good Friday, in a church. Kanji with chammanthi are offered to the devotees. Palmyra fans are used by the devotees during temple yatras" (Godson Samuel, Author)

Jainism and Buddhism saints use Palmyra umbrellas and fans in ritual events. Queen Victoria utilized a talipot palm fan. Even in Sri Lanka, the Buddhist and Christian communities use Palmyra fans for religious purposes. When other religions used animal skin, clay tablets, and for writing religious texts. Buddhism exclusively

used Palmyra leaves for writing their religious texts to accentuate non-killing.

5.2.5 Holistic Map

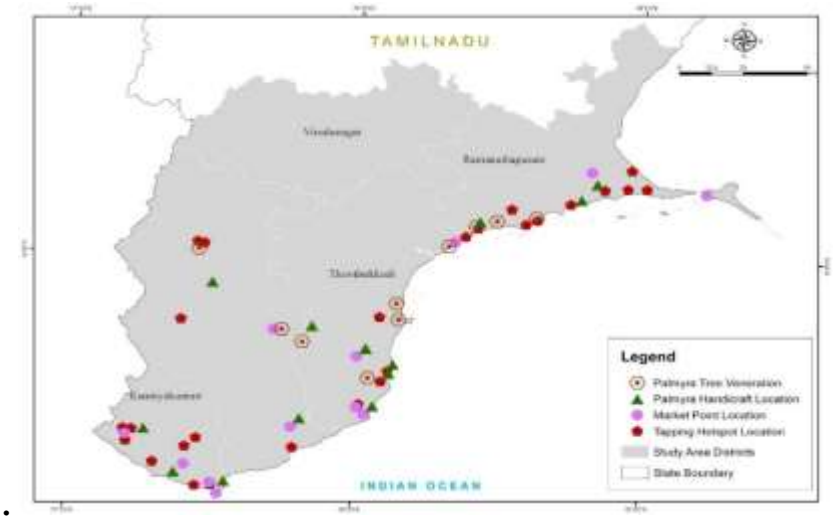


Figure 4.5: Map representing Combined locations

Source: Author

The combination of the maps representing locations of Palmyra palm tapping area, Handicraft location, Market area and Palmyra tree veneration hot spots are grouped for cluster mapping, The district wise spatial cluster maps This method helped to identify the potential tourism destinations such as Melselvanallur, Vembar, Thoothukudi town, Manapaad, Adaikadaikalapuram, Uvari, Thisanvilai, thanoothu (surandai) and Thelladhi village as major spots to connect other potential destinations.

5.3 Factors Influencing Conservation and Restoration of Palmyra Palm

The conservation and restoration of the Palmyra palm in Southern Tamil Nadu are influenced by various factors such as ecological, socio-cultural, economic, and policy related factors. Ecologically, the tree prevents soil erosion, and is planted in large numbers near the coast or any water bodies. Socio-culturally, the tree deeply holds traditional value in the customs, practices, rituals, and in crafts. Economically, the livelihood of the community largely depends on toddy/ Pathaneer tapping, Karuppati production, weaving, preparing value added edible products and designing

creative crafts. These livelihoods provide sustainable living opportunities among marginalized groups.

Previously along with the Potential maps of Palmyra palm, religious practices, rituals, dooming traditional crafts and important market locations are mentioned. Further in this section various insights and observations are drafted to understand the efforts taken to restore the count of Palmyra palm. The present scenario of the community depending on Palmyra palm, the efforts taken to sustain the livelihood and rights of Palmyra palm and policy related factors such as license and registration benefits are mentioned below.

5.3.1 Conservation and Restoration Efforts Taken by the Stakeholders

"Every year we plant 10,000 Palmyra palm seed saplings in the month of October to November. So far, we have planted in Kalimankundru, Puthumadam, Anjaneya Puram and Kalai Thoppu". (Saathaiya, Rural workers Development Society Ramanathapuram).

*"Every year forest department of Ramanathapuram district plant 2,000 Palmyra palm seed saplings largely in the Gulf of Mannar islands to prevent soil erosion of the island." (*Mahendren, Ranger Mandabam).

"The planting of Palmyra palm seed saplings was initially initiated during the Kamarajar period. Whereas I reinitiated it in 2018 - 2019. I dedicatedly aimed to create awareness for the spatial recovery of Palmyra Palm and to conserve the livelihood of the community. Along with the support of CSI tire church groups throughout Tamil Nadu, I have planted several lakhs of seed saplings. Most of the local communities are not involved in plantations due to the seasonality. Some climbers travel from one place to another in search of trees that provide Pathaneer *and some shift to construction or agriculture or other manual work. Very few are attached to the tree when it yields fruit". "Traditional crafts such as Pela petti (basket used by the Nadar community during weddings) and ommal (a big fish basket) are extinct. I have written and published some articles on extinct Palmyra crafts in Hindu newspapers. On the other hand, craft integrates artistic sense, improves income. I made some value-added crafts that can attract present*

*consumers. Some of my innovative crafts are cradles, school bags, hand bags, clerical collars, money boxes, stole, hats and wedding cards" (*Godson Samuel, Author Panai mara Salai).

"In the year 2019, along with the president of the agriculture union, we have initiated the plantation drive in Kannur, Needa Mangalam, Thiruvarur district. The administrative officer allotted the plantation work for hundred-day labors of the district. The news spread across social media. Many districts started to adopt the initiative. In the year 2020, we planted Palmyra palm in the highway of Needa Mangalam along with the support of the village administrative office. In the year 2022, we planted in the east coast of Tamil Nadu comprising 14 districts starting from Tiruvallur, Chennai, Chengalpattu, Villupuram, Kadalur, Nagapattinam, Mayiladuthurai, Thiruvarur, Thanjavur, Pudukottai, Ramanathapuram, Thoothukudi, Thirunelveli, and Kanyakumari. We aimed to plant one crore seed samplings but we could reach only 60,00,000 samplings in the stretch of 1076 km of the coastal line. Palmyra Palm workers welfare board and 100+ NGO's, schools and college management, administration officers extended their support. In the year 2024, we have planted the Palmyra seeds on the bank of Kaveri River from Hogenakkal to Poombuhar in a stretch of 416 km. In earlier days, there were around 50 crore Palmyra palm trees in Tamil Nadu. The purpose of these tree plantations is to recover the count. Water is the main source for agriculture. Palmyra increases the level and purifies the ground water. It acts as a barrier and reduces strain for cleaning or desilting of lakes. A single tree can produce a thousand seeds in a year. With the support of Students and Ngo members we collect these seeds in the month of August. Very few Palmyra climbers support this plantation majority do not support because they are desperate about their situation. Some climbers from Tirunelveli, Ramanathapuram and Thoothukkudi district have actively participated in collecting the seeds and plantation. We haven't focused on creating awareness to them, but our deeds will definitely support their livelihood. Last year, when I met the principal Secretary, IAS officer, Muruga Nandan. After our conversation he immediately informed every administrative officer in 38 districts of Tamil Nadu to extend their support for our plantation work. Next year we are aiming to plant in the Forest

*region to support wild animals and highways. We are finding huge difficulties to raise funds. It would be great if the government can allocate funds for this or if any organizations can volunteer to allocate their CSR fund like ONGC (Oil and Natural Gas Corporation) who have extended their support. Apart from the plantation work, we wish to improve the Palmyra economy. As far as now, we have trained women to do their basic crafts from the leaves" (*Rajavel, Green Needa Association).

"I have organized a cycling campaign across Tamil Nadu for about 90 days in the year 2022. The purpose of this tour is to create awareness, break taboos, and build confidence among Palmyra climbers. This campaign emphasized sustainable living and revival of Palmyra Palm products back to the practice. The campaign also highlighted the cultural ecological and economical significance of Palmyra Palm, such as the tree as a resistant to fight against drought and other calamities. It serves as a natural wind barrier. It was widely used in households, it is essential for vernacular construction and for other functional commodities. Young children also volunteered to participate in this campaign. Following this, our team with other volunteers organized the Palmyra dream festival. The festival to reconnect and rejuvenate multi-dimensional gems of Palmyra Palm. Unique Palmyra craft works were exhibited; awards and rewards were distributed to the deserving Palmyra Palm workers. Experts were invited to deliver talks. Visitors, volunteers, and community members were invited to spin maavuli, enjoy cultural shows, relish 100+ Palmyra palm-based food and to participate in Palmyra based sports. We have successfully organized the festival for the past four years." (Pandian, Activist and Palmyra climber).

"Thoram pallam lake is the biggest lake in thoothukudi surrounded by Anthoniapuram, thiraviyapuram villages. Around 3000 Palmyra palms protect the lake from soil erosion and provide livelihood opportunities to the community. Initially the school teachers were receiving the salary from the profit received from selling the Pathaneer . Vital use of Palmyra palm for livelihood emotionally connecting Palmyra palm and the tapper who maintains and protects the tree. In 2022 southern railways laid track by removing Palmyra palm. In Sakkalmapuram Palmyra trees were cut and land was utilized for residential purposes. On the other

hand, the local community along with kamarajar college organise a plantation drive." (Gio Shravan, Video documentary Artist).

5.3.2 Present Scenario of the Community Depending on Palmyra Palm

5.3.2.1 Stories and Struggles of Palmyra palm Climbers

Majority of the Palmyra palm climbers belong to the bordering villages of Ramanathapuram and Thoothukudi districts. Villages such as Kanirajapuram, Naripayur, Sayalkudi Vembar hold more than 300 tappers from a single village. They commonly live in the tapping location for six months and move to their home when there is off season. Unlike other locations, many climbers of these locations belong to the fishermen community. They practice fishing when there is off-season. Some climbers engage in doing craft works and some collect firewood during the half season. During climbing season, the land is taken for lease for six months. They temporarily built a beautiful hut in this land for resting and they used to climb the tree to tap the Pathaneer. The Pathaneer collected is used for making Karuppati. Majority of the members have signed an agreement to the lender who has given money for interest during the off season, for marriage or for any other personal use. These lenders play as middlemen. In return instead of interest they ask the climbers to provide several kgs of karupatti. The climbers agree to the bond and sign the agreement.

"*Every morning, we wake up at 4 A.M, we either eat koozh or drink* Pathaneer. *This keeps us active throughout the day. We never stepped inside the hospital. I used to climb 30 - 40 trees in a day. But recently I was not able to climb much because of knee pain. I am afraid of repaying the amount that I borrowed from the lender. Several times I stepped inside the bank to ask them regarding the loan. Nothing turned to be fruitful*."- (Anbazhagan 67 years old Climber, Naripayur)

"*We are seven brothers in the family. All of us climb the trees. We sometimes feel that let our struggle end with us. Let our next generation go to some other job instead of practicing this difficult task. Climbing is not just a difficult task; it makes our life difficult. We neither receive financial benefits nor societal respect. It mourns us to know that our livelihood is at extinction stage but we are left with no choice to*

safeguard without the support from government" (Muniyasamy 80 years old Kanirajapuram)

"I *am 62 years old and visually impaired. I started climbing the tree when I was 10, when my father left me alone and when there was no one to feed me. I had courage. I believed my two legs and hands that was enough to climb. I slowly started to climb small trees then big ones. I cut down the leaves and petioles from the tree and only then, I was able to afford a day meal for my family. When there is no season, I go for 100 days work offered by the Tamil Nadu government. Before the count of the tree was high but now it is drastically reduced. Scarcity of the tree hampers the opportunity and imperils our livelihood security. My wife Kaladevi is a great support to me. She married me knowing I'm visually impaired but believed I could take care of her*". (Murugandi, Palmyra climber from Ramanathapuram)

In the Village Adaikalapuram Anto Briton, 28 years old, B.Tech (IT) graduate, started climbing the tree quitting the bank job. He stands as a testament to the educated youngsters, those willing to climb the tree. He breaks the caste and social stereotypes behind climbing. He is selected as a member of Palmyra Palm Workers Welfare Board, Govt of Tamil Nadu. Today 150 climbers and 50 women artisans are empowered in his village.

"No *one forced me to quit the job; it was my own decision. Initially I had difficult times when I decided to climb. The work was tiring; the society was not respecting me when I wanted to pursue my livelihood and I was not getting sufficient money to support my family. But, my passion and perseverance along with my family support helped to overcome social and financial barriers. Now I can earn more than my previous salary. I am providing training to many youngsters across schools and college to climb and prepare value added edible products from the tree. Many women in our village learnt to make functional crafts and toys from the leaves. We youngsters support them in promotion, selling and exporting"* (Anto Briton, 28 years old Palmyra palm climber from Adaikalapuram village).

"*I graduated BA English, and I am climbing the tree quitting the supervisor job in a factory. Along with my father, I tap* Pathaneer, *collect Ice apples, and*

harvest Palmyra sprouts. My mother and wife are engaged in making Karuppati. Together we sell and export the edible products from the tree to different parts of the nation. Our major income depends on selling Nungu and Pathaneer. *I find happiness, pride and independence while climbing the tree and while practicing my livelihood. When I was a supervisor, even though I was at managerial level earning ₹40,000 per month I was not happy. I cannot take leave whenever required and I was staying far away from my family so I decided to quit. Now I'm happy with my family. We delegate responsibilities among us and do our work together. Education helped me in many ways especially to upskill our work and to take managerial actions. I will definitely disseminate our livelihood skills along with education to my children but it's their choice to choose their occupation"* (Sami, 31 years old, Palmyra palm climber from Thanoothu village).

"*I'm a 16 years old teenager. I live in Keezhmundhal, Ramanathapuram and climb trees to support my father. I am regularly going to school, I climb the tree in the morning and I climb again once I reach back to home*". (Divakar, Palmyra palm climber).

"*I'm a 32 years old B.A graduate living in I strived hard to become a police officer today but when I was 17, I started to climb the Palmyra palm tree to support my father. Many people of my age teased me but I was proud to climb and tell the world about my identity as a Palmyra climber."* (Gnana Raj, Palmyra palm climber and Police).

"*I am a 33 years old BE graduate, practicing climbing for the past seven years. I worked in other places and also tried to move abroad. But then I thought about pursuing my own livelihood. Climbing is monotonous work the more I climb I receive more money. When I observed the rapid decline of the Palmyra palm tree, I understood the cause may be due to the decline of climbers who contributed in the tree maintenance and growth. Then I decided to stand for creating awareness and empower young men to climb the tree. I have trained a few youngsters to climb. Climbing Palmyra palm is a form of self-employment and empowerment. We get control over our work. We can take care of our personal and financial growth.*

Purpose and passion are fulfilled. Our confidence level increases. It does not empower an individual; it also empowers our community". (Shankar Ganesh, Palmyra climber Kanyakumari).

"Even though I am a third generation Palmyra palm climber. I started to climb at the age of 38. I received organic farming training from Namaazhvaar. At one point, it was difficult for me to cultivate any crop due to the climatic change and drought. At that time cultivating Palmyra palm and tapping Pathaneer *was a relief. Now my entire family works is to revive the status of Palmyra toddy tappers and Palmyra palm workers. I have two daughters. My youngest daughter, Karishma. She learnt to climb the tree at the age of 12 and now she does all Palmyra palm related work. The tree is everything for us without the tree we are empty"* (Pandian, Activist and Palmyra climber).

5.3.2.2 Palmyra Palm Jaggery

*"*Karupatti (Palmyra Jaggery) *that is naturally prepared but considered as low quality due to some dust particles that stay in it. Fine filter Karuppati might cost a little higher than ₹400. It is difficult to identify adulterated Karupatti. sugarcane sucrose value and palm sugar sucrose value are same when tested. Even lab tests or FSSI could not find the adulteration trace. FSSI states Karupatti should contain around 92% of sugar brick value. The sweetness value differs from one area to another. Adaikalapuram Karupatti brick value is 76% while Udangudi brick value increases to 83%. So, it's important that FSSI should regulate its standard. The only way the government can trace adulteration is to witness some sugar bags in the manufacturing area and seal the factory. In many regions artificial colours and scents are added to Karuppati before selling. These Karuppati are priced low to attract many consumers. It is easy for me to market and sell my production due to my education background. But there are many Palmyra climbers who find difficulty in marketing their products and selling to the right customers".* (Anto Briton, Climber and Member of Palmyra Palm Workers welfare Board).

"After COVID-19 view on Karupatti *changed, people started seeing it as medicinal food. This improved our market and pricing. The count of climbers*

especially youngsters started to rise after COVID-19." (Shankar Ganesh, Palmyra climber Kanyakumari).

5.3.2.3 Toddy Tapping

Toddy was first banned during the period of Honorable CM M G Ramachandran, January 1, 1987. After the Independence, government was taken in charge to run the toddy shop. During the 1980s toddy was sent to the laboratory to test the level of adulteration. The result revealed that adulteration is more than 80%. At this time, the Toddy shop was run by the government. The lab testing was done by the government and it was banned again by the government. The concept of Toddy shop started in the year 1980. The shops were given for lease, it was benefited mostly by the politicians. After the ban, Former Chief Minister MG Ramachandran was initiated to provide tools and equipment to climb the tree for tapping Pathaneer. Most of the climbers in Southern Tamil Nadu were benefited by the scheme, they stopped protesting and started to tap Pathaneer and manufactured Karupatti. The government set up a factory to prepare Karupatti in Mattur. The expenditure cost was around 2 crores in 1987. In 2009 activist Nalla Sami organized a protest in Mount Road, Chennai for revocation of banned toddy around 3000 climbers gathered.

Section D, E, C. Tapping toddy on their own tree, tapping toddy on others tree, and holding tools and equipment for tapping toddy were the respective sections on which police can file a case and collect a fine amount but police mostly arrest the victim and filed a case under preparation of Arrack (illicit liqour) Tamil Nadu alcohol ban section capital 1A stating that the climbers have adulterated the toddy using drugs, cocaine, and similar products. None of the judges till now investigated why or how it is happening. Reporter Asha has quoted the government as a "mechanical government". In recent times, Palmyra dream festival, and conference on tapping independent toddy have resurrected the emotions tapper and encouraged them to fight for revival of tapping independent toddy.

"When toddy was sold in a shop far away from the village, it was not easily accessible to the women and children. Only men can enjoy drinking. It was slowly removed from the social customs and practices, and added to the alcoholic

beverages list. Gradually, tappers lost their respect among the community. Till today, police had threatened people who support the climbers (Deepan, Advocate Chennai High court).

The livelihood of the Palmyra community rapidly declined when the government banned toddy tapping. In the 1980s, several times we protested for revocation of banned toddy. Which was not heard by the government." (Anbaiya, Former President of Palmyra palm).

"On 26 February 2013, a public conference was held in this Ramanathapuram district the issues in tapping toddy and to protest against the ban" (Kalavathi, Palmyra Workers welfare board).

"My grandfather had respect among the society, but when the police arrived, he used to fall on his leg and request them to allow him to tap the Pathaneer. *This made me create antagonism towards toddy but when my daughter had skin disease at 6 years, we took her to multiple hospitals. It was not curable. I read the book Patharthagana sindhamani: un porul guna agarathi. This book is about food medicinal uses. It was mentioned that toddy cured seven fundamental tissues (dhadhu). We tried to experiment and we gave her 200 ML in the morning and 200 ML in the evening. Within 15 days, the skin disease was completely cured. In the last seven years. There was no record for the disease to repeat. Then I met Activist Nallasamy, Director of Tamil Nadu Today. In 2021 for the first time, we have conducted a protest for revocation of banned toddy with the support of Nallasamy. We ensure to produce 100% unadulterated toddy and we don't give commission to the police. In case they want to arrest us, we are ready to take up the case, but we ensure that the case is raised for toddy and not for arrack. Food Safety and Standards Authority of India (FSSAI) states a beverage with more than 5% and more is considered to be an alcoholic beverage. The toddy we tap is 5% or less, which is just an energetic beverage that was consumed by women, children at the level of communities since Sangam period in Tamil Nadu. It does not harm or attracts someone to get addicted. It just cools your body and removes the heat away from your body"* (Pandiyan, Palmyra climber).

5.3.2.4 Technology

"*Attarai, ladders are beautiful and technology can be effective to increase productivity but it's not easy to use like a coconut tree because in coconut trees the diameter of the trunk is equally distributed but in Palmyra the distribution is unequal. Some machines are invented for cutting leaves or Palmyra jelly. But for tapping it's not suitable. It is difficult to always fit and climb. It takes a huge time. The only solution is to fit machines in each tree or to use hydraulic machines which cost heavily. When machine cost increases, the rate of the product increases. It is better if the government can support us to export our products rather than improvising the technology."* (Shankar Ganesh, 33 years old Palmyra palm climber, Kusavankuzhi).

"Machines were introduced to climb at ₹1,50,000. They look like bikes but are not convenient and appropriate for Palmyra climbers. We climb 20 – 30 trees in a day fastly without using any technology." (Sudalai, Palmyra climber Kanirajapuram).

*"I crossed 60, I was so ill, a few weeks back but I couldn't stop climbing in spite of my illness. I wish to climb at least for the next 10 years" (*Susai muthu, Palmyra climber, Marthandam).

5.3.3 License and Registration

License is a vital document and a govt issued permission for tapping Neera. During the period of Honorable chief minister Kamaraj the license system was implemented and imposed on the tappers. License is given by the cooperative society. Beneficiaries with a license also receive tools for climbing. They can claim for accidental insurance and death insurance.

"Palmyra palm workers welfare board provides other benefits to the registered members. Tamil Nadu has reintroduced the regulation to become a member and to get benefit from the schemes in the year 2022. Tappers need to pay

Rs 275 and receive their registration card that is valid for 5 years. This initiative promotes sustainable livelihood of Palmyra climbers and provides financial support to them." (Jabaraj, Palmyra palm welfare board).

"We are licensed climbers; this license has to be renewed every year. The major benefit we get from this license is Pension, Accidental insurance and Death insurance. But there are many other problems that have to be addressed, especially medical facilities, financial assistance during the off season. Similar to the fishing community who receives special financial support during the off-season. Every political party listened to our problems; they promised us to bring the change but none of them were amended." (Sudalai Mani, 53 years old climber Kanirajapuram).

"Around 14,000 tappers were registered in Palmyra workers welfare board in Ramanathapuram district in the year 2006. In the year 2019 the tappers count reduced to 2000Apox. Many climbers found difficulty in travelling from their village to the District Workers welfare board for registration. After introduction of online registration in the year 2019 the registered members count started to decrease. Even though technology can ease the work, it is not applicable in this scenario as they find difficulty to operate computers. Therefore, we have appointed volunteers registered as workers union. Ramanathapuram district, as the highest registered climbers in the entire state. Most of them reside at Thirupulani, Mandapam, Kadaladi, Keezhakarai, Thiroduthanai, Paramakudi Perumal kovil regions" (Kalavathi, Member of Palmyra palm workers welfare society).

"*Many climbers do not have a license because to receive a license from the government they need to submit patta documents of their land. But climbers climb in the land with no ownership or patta or the land they have taken for lease.*

The license provided by the government should be renewed each year. Districts like Thoothukudi, Tirunelveli, Kanyakumari, government didn't have a control on license but it is strictly regulated in northern Tamil Nadu." "Climbers need to approach workers unions to join as registered Palmyra Palm Workers Welfare Board. Climbers need to receive a seal from the workers union. Workers unions are unfavorable to the climbers. They charge a huge amount as commission

from them. During the members meeting, I have several times asked to liberalize the procedure. It would be easy to increase the count of registration if we can directly register through an online portal." "Even though climbers depend on trees for their livelihood, some of them are involved in other livelihood activities during the season. The majority of them go for construction work and instead of becoming a registered member of the Palmyra palm workers welfare board, they are registered in the construction workers welfare board. Because benefits received by the construction workers are far better than the benefits received by Palmyra palm workers" (Anto Briton, Climber and Member of Palmyra Palm Workers welfare Board).

"*Throughout the state, 20,000 climbers are registered and benefited from the Palmyra Palm Workers Welfare Board. Along with the hike of accidental insurance, death, insurance and pension scheme, we have also recommended the government to sanction a special amount for the climbers during the off season, to find mitigation for reducing adulteration and middlemen. To include Palmyra palm artisans as a registered member of our board. To increase the duration of license renewal process from 5 years to 10 years" (*Jabaraj, Palmyra palm welfare board).

5.3.4 Role of Self Help Groups

*"In our village there are around 110 women empowered by a Magazheer Self-Help Groups under district collectorate office, Tirunelveli supported by Nellai crafts Tirunelveli. This initiative supports us in a great manner. Especially Nellai crafts promote our products, increasing the order and helps in setting up the stall. I am a third-generation practitioner in my family to make crafts from Palmyra leaves. The crafts evolve along with the time and demand. Nowadays people prefer these crafts with more colours. More than functional crafts, decorative crafts are highly sold among consumers. Comparatively Thisanvillai, near Uvari beach holds 48 artisans trained and supported by Nellai crafts and Magazheer self-help group" (*Uma, Nellai craft).

Similarly, Ramanathapuram Forest Department Magazheer Self Help Groups unit empowers women from Thinaikulam, Nallupanai and adjacent villages to make Palmyra palm decor items such as mala, hangings, keychains, dolls and functional

crafts.

"*I am a forest officer taking care of Thinaikulam self-help group unit. The forest department employs an external agent to teach them the craft from Palmyra palm leaves. The agent also supports in promotion and selling of the crafts. Our duty is to monitor the activities, arrange loans to the women who are engaged in making the craft works."* (Thilagavathi, Forest officer Ramnad District).

"*Manapad women workers palm leaf industrial cooperative society started in the year 1957. I have taken charge of this organization since 1985. 10 years back there were around 600 women who actively participated to weave Palmyra craft but now only 103 artisans are practicing and only 60 women are doing it on a regular basis. Most of them are aged above 45 around 10 to 15 artisans are aged above 70. In recent times we receive more orders but production rate has decreased due to shortage of the artisans and due to shortage of the raw material. The crafts made by the women are purse, handles, flower punch, tray*" (Felicta, Manapad women workers palm leaf industrial cooperative society).

"*We provide all Palmyra palm related skill development training and free equipment to sustain and promote the livelihood. We teach the enthusiast to climb, make brushes and sweeper from Palmyra palm fiber. Also provide training to prepare Palmyra palm candy and sugar by extracting the molasses from the sap. Some youngsters have shown interest and benefited from this program. We don't charge any amount for teaching, we also provide tools, equipment, drums, cans at free of cost. In addition to these programs, we have also taken them on a tour to South Tamil Nadu to see how tapping happens".* (Prabhakaran, Principal Central Palmgur Institute Madhavaram).

"I worked in the Palmyra Workers Development Society for about 40 years. During the 1980s we represented the request letter on considering some of the welfare schemes that benefited the community engaged with Palmyra palm. In the letter we mentioned about Improving the wage amount, monitoring the cutting of massive Palmyra palm tree for planting timber, specialized skill development

program to encourage an empower woman, fixing satisfactory selling price for karupati throughout the district, providing loan and subsidies for climbers, providing monetary benefits for child education, medical, construction of house. Creating awareness and reaching out the benefits of the Palmyra palm workers welfare board. Life insurance, pension benefits, and need for technology. The government has taken a minimum effort to fulfil our requirements". (Anbaiya, Former President of Palmyra palm).

"*To overcome the downfall and to sustain the livelihood we provide training to the youngsters to climb trees, make value added crafts and edible products. Some of our important products are jam squash prepared from Palmyra fruit. Flour prepared from Palmyra sprout. Cradle, handbag, purse, and other functional craft prepared from Palmyra leaves. Around 300 workers are benefited. They also provide old age, widow pension, children, nutrition support"* (Joseph, Palmyra Federation).

"*In 1980, I joined PA Davis to support and develop the livelihood of Palmyra workers. In the year 1989, I started a separate Sangam in the district Ramanathapuram. Until the year 2007, the major motive was to provide education, health, benefits, and women welfare benefits. In the Year 2007, rural workers development society, Ramanathapuram was registered as a full-fledged entity to support and improve the livelihood of the community, dependent on Palmyra palm. The Train women create unique crafts by updating their weaving skills. We are setting up a factory on 1 acre land. SIPCOT has extended their support to provide financial support for construction and machinery"* (Saathiya, Rural Workers Development Society Ramanathapuram).

"*We consistently curate wealth from natural waste and inspire the world to be responsible. This year 2023 the unique 16 feet Palmyra Christmas tree is made from 270 Palmyra stalks and 175 Palmyra leaves in ITC hotel Mahabalipuram."* (Umapathy, Art teacher, Padmabhushan Awardee).

"I prepare 100+ delicacies using Palmyra palm products. My signature dishes are Palmyra Palm Fruit Gulab Jamun, Palmyra Palm Fruit Ice Cream,

Palmyra Palm Fruit Palkova, Palmyra Palm Sprout Halwa and Ice Apple Pickle" (Chef Akila).

The bakery and confectionery products from Palmyra palm fruits or powdered sprouts are prepared by Chef Mahesh and Chef Aditya Krishna based in Chennai and offered to public in Palmyra Fruit Festival 2023.

"Infused Palmyra palm millet cake, Palmyra sprout cookies, Palmyra sprout Ladoo, Palmyra Semolina cake, refreshing and appetizing Palmyra palm fruit jelly and pudding, Karupatti Jellies, Palmyra biscotti, Ragi Karupatti Brownie, Palmyra Karupatti jamun, Karupatti choco cake pop are my signature cusines displayed in Palmyra fruit festival 2023 and Chennai sangaman (2024 & 2025)" (Chef Aditya Krishna, Wolfgangpuck & Member of Aetram Commune).

5.4 Experts Opinion on Tourism Initiative

"During the meeting among the members of Palmyra Palm welfare board in early 2023 we drafted certain "Need for Action" such as Introducing Karupatti in ration. Reintroducing 720 Palmyra cooperative society of the state to support Karupatti makers by marketing and selling. Monitor adulteration of Karupatti. Provide necessary loan, subsidy and additional benefits to the Palmyra climbers and the community. Setting up a specialized museum for Palmyra palm." (Antony Stephen, Member of Palmyra Palm Welfare Board).

"Tourism involving these communities will definitely improve their standard of living, economic condition and provide new experiences to the tourist. It enables tourists to explore local food, handicraft. Tourism will be a great support to empower women and provide confidence to overcome difficult times." (Deepan, Advocate Chennai High court).

"*I believe incorporating tourism will definitely improve their standard of living and support the youngsters to fight against unemployment. From KVIC, I wish to extend my support".* (Prabhakaran, Principal KVIC Central palmgur Institute Madhavaram).

"Promoting tourism is a must to identify different villages of different

districts, to show the diversity and potential of Palmyra palm. Each weaving pattern is like a unique script. These techniques can create wonderful experiences for tourists. Integrating tourism can recognize and reward traditional Artisans, empower local communities and eradicate a huge socio-economic issue. Developing Palmyra palm-based tourism corridor will be even more helpful to conserve and sustain Palmyra biodiversity and ecosystem." (Godson Samuel, Author Panai Mara Salai).

"*Tourism involving the Palmyra palm community definitely improves the status of the underprivileged community. This model is successful in Southeast Asian countries, especially in Thailand and Cambodia. Why not in our land where the maximum number of trees is present?* (Nalla Samy, Activist Tamil Nadu toddy Movement).

*"Tourism bridges the gap between climbers and consumers; without the middlemen. It can provide opportunities to the youngsters to facilitate tours and explain the making process of food, crafts to the tourists. Many pilgrimage tourists visit Tiruchendur stop at Adaikalapuram to relish the pathaneer, and more outlets emerged when they received more tourist flow. If the government or tour operator operate niche tours it will empower the community, reduce adulteration, provide employment to more people, and support spatial recovery of Palmyra palm." (*Anto Briton, Climber)

"*On the stretch between Kanyakumari and Kerala, tourists stop to relish the nungu (ice apple). The economy of these sellers purely depends on tourist flow. A few months back, I visited Thailand to understand their climbing techniques and tapping techniques. Thailand prepares many values added edible products, but like us, they don't have intricated artistic work with detailed workmanship. The tourism department of Thailand exclusively customizes the package for niche tourists to travel and explore the livelihood of the Palmyra palm community. Such a model in Tamil Nadu will definitely shape the economy of the community dependent on Palmyra palm for their livelihood."* (Shankar Ganesh, Palmyra climber Kanyakumari).

"We have received many travellers from neighbouring states and even from neighbouring countries to the Palmyra palm dream festival. This festival is organised by the people, and for the people, we don't charge them for food. For expenses, we receive crowd funding and invest our own money, but apart from this festival, we have organised a trail along with Aetram commune and Palmyra Mission to showcase our heritage and legacy. I visualise tourism as a force to connect our purpose with the place and people and to create meaningful change" (Pandiyan Palmyra climber villupuram).

"Tourism will definitely support the livelihood, with safety measures it will be great if camping can be arranged near Anthoniyapuram lake, during the season even tappers used to stay in this location. Tourists can observe and engage in the activities such as climbing, crafting and arranging seeds in the ground. I believe this will be the first step to bring awareness about the status and practices of Palmyra climbers. Example awareness about toddy created by Pandian panaieri through Palmyra Dream festival is very much appreciatable. Many are not even aware of the existence and the struggle of the climbers. Therefore, I started to document their stories, activities and products from Palmyra palm. My photo has been exhibited in the Neithal festival. When I started to post videos and documentaries on Palmyra palm many started to contact me for guidance to explore more about them. My reels have reached 5 million viewers but to reach them thoroughly, tourism has huge potential to feel the essence of their livelihood and treasure. Proper planning with government support will be a great success. It has a potential to provide Wow factor" (Gio Shravan, Video documentary Artist)

"*When I bought the property, I started to plant Palmyra palm inside. Now we have around 500 Palmyra trees that produce Neera. Initially we had some artisans who made dustbins from Palmyra palm leaves but now it's very difficult to find them. In the year 2020 I sowed around 3000 Palmyra seeds. My property is simple eco-friendly accommodation suitable for nature lovers. I don't promote or commercialize my property. People through word of mouth visit my property to enjoy the beach and bird watching inside the Palmyra forest. During Pathaneer season I provide free Pathaneer to the guests as a welcome drink to ensure everyone should taste it at least*

once in their lifetime. The majority of my guests are not aware of the Palmyra palm livelihood, but when they leave, they cherish it and provide valuable feedback" (Arun Prasad, Hidden paradise owner)

5.5 Demographic Profile of the Respondents

The table (5.1) display Demographic Profile of the Respondent. The table includes age, gender, marital status, occupation, monthly income, and educational qualification of the respondents that are crucial for research.

Gender Distribution

The number of female participants (58%) is slightly higher when compared to the male participants (42%). This reveals that women are more engaged and provided opportunities to participate in Palmyra palm activity in the study area.

Age Distribution

The Palmyra palm livelihood provides opportunity to different age groups starting from age 16 that falls in the range of 11-20 to 103 years old man. The least respondents are observed below the age group of 21 (0.3%) and the maximum respondents are between the age group 31 - 40. The highest number of respondents fall in the category between age group 31 - 60 (73.6%).

The number of elderly respondents who engage in the Palmyra palm livelihood activity falling in the category between the age group of 61 and above (23.2%) indicates that there is no age limit or retirement for this livelihood.

Location

The respondent's samples are geographically distributed across 30 villages located in Southern Tamil Nadu. Most of the villages are part of the Coromandel coastal regions.

The highest concentrated sample attainable from these villages are as follows: Thinaikulam (18.6%), Naripayur (11.1%) and Thoothukudi (8%). These villages exhibit strong community involvement in livelihood based on either edible or inedible products. Whereas, more than 50% of village samples are less than 5

respondents. This denotes the disappearing livelihood in rest of the villages.

Monthly Income

From the sample of respondents 40.9% people's income range is below ₹10,000. 31.1% of people's income range is between ₹11,000 - ₹20,000. 22% of people's income range is between ₹21,000- ₹30,000. 4% of people's income range is more than ₹31,000 - ₹40,000 and merely 2% of people's income range is more than ₹41,000 per month. Even though their production is high, their demands are high but they are unaware of marketing their products, selling them in a better value.

Marital Status

Among the respondents 97.4% of the respondents are married. This implicates that the majority are engaged in family-oriented livelihood activity and the responsibilities are mutually shared. This influences the community perseverance on environmental conservation and optimal usage of resources.

Educational Qualification

19.1% have no formal education. 40.3% have only Primary education and 30% respondents have chosen secondary education. Only 3.2% of the respondents hold a degree among them only 1 respondent hold a Postgraduation degree.

Occupation

The respondents are evenly distributed between livelihood based on edible products (Tappers, Karupatti Makers and Value-added edible product Manufacturers is 48.9%) and livelihood based on Inedible Products (Traditional and Modern Artisans, Exporters and sellers is 51.1%. Local communities constituting 73.15% are participating in Palmyra based livelihood activity as a primary occupant, remaining 26.85% either change their occupation with respect to the season or consider Palmyra based livelihood as secondary occupation. Notably, the majority of the female respondents have taken Palmyra palm related livelihood activities as a primary occupation. They are employed as handicraft makers in the small scale rural cottage industry supported by Self Help Groups. When men in the family tap the Pathaneer the women collect the Pathaneer to make Karupatti.

Table 5.1 Demographic Profile of the Respondent

Demographic variable	Category of Respondent	Frequency	Percentage (%)
Gender	Male	147	42.0
	Female	203	58.0
Age	11- 20	1	0.3
	21- 30	16	4.6
	31- 40	91	26.7
	41- 50	85	24.3
	51- 60	79	22.6
	61- 70	47	13.4
	71- 80	27	7.7
	81 and above	4	1.1
Location (Village Name)	Anthoniyapuram	10	2.9
	Udangudi	12	3.4
	Adaikalapuram	22	6.3
	Palaniappalpuram	4	1.1
	Thanoothu	8	2.3
	Nallur, Alankulam	2	0.6
	Thotavilai	10	2.9
	Mudhaliyarpetti	2	0.6
	Sothavilai	4	1.1
	Valavankode	10	2.9
	Marthandam	10	2.9
	Thellandhi	9	2.6
	Killiyoor	5	1.4
	Agastheeshwaram	1	0.3
	Kusavankuzhi	3	0.9
	Thikamkode	3	0.9
	Kanirajapuram	16	4.6
	Keezhmundhal	3	.9
	Vembar	13	3.7
	Naripayur	39	11.1
	Alankulam, Tenkasi	1	0.3
	Deverkulam	3	0.9
	Thisayanvilai	14	4.0
	Radhapuram	22	6.3
	Nallupanai	2	0.6
	Kundhal	1	0.3
	Ironiyapuram	1	0.3
	Kuzhithurai	5	1.4
	Sethukarai	28	8.0
	Thoothukudi	15	4.3

	Manapaad Keezhakarai Thinaikulam Sikkal	5 65 2	1.4 18.6 0.6
Monthly Income (in ₹)	1000 - 10,000 11,000 – 20,000 21,000- 30,000 31,000 – 40,000 41,000 – 50,000	143 109 77 14 7	40.8 31.1 22.0 4.0 2.0
Marital Status	Married Unmarried	341 9	97.4 2.6
Education qualification	No formal education Primary Secondary Diploma Graduate Above post graduate	67 141 105 26 10 1	19.1 40.3 30.0 7.4 2.9 0.3
Occupation	**Livelihood based on Edible Products** (Tappers, Karupatti Makers and Value-added edible product preparers) **Livelihood based on Inedible Products** (Traditional and Modern Artisans, Exporters and sellers)	171 179	48.9 51.1
	Primary occupation Secondary occupation	256 94	73.15 26.85

n ~ 350

5.6 Classification of Respondents

In the table (5.2) Nature of participation in Palmyra palm livelihood activity. The occupation was further divided into different segments. The first three segments listed belongs to livelihood based on edible products. They are Climbers (26.28%), Palmyra palm Jaggery makers (19.42%) and Chefs preparing traditional cuisines or Value added edible products (4.0%). Artisans crafting traditional, functional or decorative crafts (32.85%) are under the category of livelihood based on edible

products. Whereas, Shopkeepers and Exporters (17.42%) are depending on both edible and inedible products for their livelihood.

Table 5.2 Nature of Participation in Palmyra palm Livelihood Activity

Units	Frequency	Percentage%
Palmyra palm climber (Pathaneer tapper)	92	26.28
Palmyra palm jaggery (Karupatti) makers	68	19.42
Chefs (preparing traditional cuisines or Value-added edible products)	14	4.00
Artisans (Traditional, functional and decorative crafts)	115	32.85
Shopkeepers and Exporters of raw and finished goods (edible and inedible)	61	17.42
Total	**350**	**100**

5.7 Cross Tabulation of Demographic Profile

5.7.1 Age Cross Tabulation with Income

From the result of table (5.3) Age and Income cross tabulation it is observed that majority of the respondents earn less than or equal to ₹20,000 per month only the age group of 21 to 50 are able to earn above ₹30,000 and above per month. From the table it is evident that as age decreases the income rate also decreases. The underlying cause for low wages is mainly due to lack of skill in designing, marketing and selling their own products. Despite age factor majority of the respondents are depend on middle men for selling their products.

Table 5.3: Age Cross Tabulation with Income

Monthly Income (in ₹)						
Age	**1000-10,000**	**11,000-20,000**	**21,000-30,000**	**31,000-40,000**	**41,000-50,000**	**Total**
11- 20	1	0	0	0	0	1
21- 30	0	8	1	3	4	16
31- 40	58	16	11	5	1	91
41- 50	39	22	16	6	2	85
51- 60	21	34	24	0	0	79
61- 70	9	18	20	0	0	47
71 – 80	13	9	5	0	0	27
81 and above	2	2	0	0	0	4
Total	143	109	77	14	7	350

5.7.2 Age Cross Tabulation with Education

From the result of the table (5.4) Age and Education cross tabulation it is observed that among 350 respondents only 11 respondents completed their graduation. Among them one respondent has completed his post graduation. These respondents fall under the age group of 21 to 50. It is also observed that irrespective of their age more than 80% of the respondents have not even crossed secondary education. As age group decreases the standard of education increases.

Table 5.4: Age Cross Tabulation with Education

Education							
Age	**No Formal Education**	**Primary**	**Secondary**	**Diploma**	**Graduate**	**Post Graduate and Above**	**Total**
11- 20	0	0	1	0	0	0	1
21- 30	0	3	4	6	3	0	16
31- 40	12	29	35	8	6	1	91
41- 50	4	36	36	8	1	0	85
51- 60	16	40	19	4	0	0	79
61- 70	11	27	9	0	0	0	47
71 – 80	21	5	1	0	0	0	27
81 and above	3	1	0	0	0	0	4
Total	67	141	105	26	10	1	350

5.7.3 Age Cross Tabulation with Occupation

From the result of the table (5.4) Age Cross Tabulation with Occupation. It is evident that the number of respondents depend on the livelihood based on edible products and inedible products are almost equal. Except for the age group of 31- 50 the number of respondents dependent on the livelihood based on edible products is higher than inedible products. Majority of the members falling in the age group of 31 - 50 are Artisans who are engaged in making crafts from Palmyra palm leaves and stalks.

Table 5.5 Age Cross Tabulation with Occupation

Occupation			
Age	**Livelihood based on Edible Products**	**Livelihood based on Inedible Products**	**Total**
11- 20	1	0	**1**
21- 30	11	5	**16**
31- 40	26	65	**91**
41- 50	37	48	**85**
51- 60	45	34	**79**
61- 70	28	19	**47**
71 – 80	20	7	**27**
81 and above	3	1	**4**
Total	**171**	**179**	**350**

5.7.4 Gender Cross Tabulation with Income

Table (5.6) Portrays Gender Cross Tabulation with Income. The outcome states that Gender has no major role contributing to the Income factor. More than 60% of the female income range is between ₹1000 to ₹10,000 whereas 75% of male income range is between ₹11,000 to ₹30,000. 11 male rand 3 female are earning income between ₹31000 to ₹40,000. And only 5 male and 2 female earn income between ₹41,000 to ₹50,000.

Table 5.6: Gender Cross Tabulation with Income

Monthly Income (in ₹)						
Gender	**1000-10,000**	**11,000-20,000**	**21,000-30,000**	**31,000-40,000**	**41,000-50,000**	**Total**
Male	20	53	58	11	5	147
Female	123	56	19	3	2	203
Total	143	109	77	14	7	350

5.7.5 Gender Cross Tabulation with Education

In the table (5.7) Gender Cross Tabulation with Education. The Result reveals that among the 350 respondents only, nine males and two females have been graduated. The female ratio is more compared to the male ratio. Approximately the ratio of male to female is 2: 3. Even though the ratio of male respondent is less compared to female, 37 male respondents have not received any formal education whereas only 30 women have not received any formal education. Otherwise, both male and female have no major significant difference in education.

Table 5.7: Gender Cross Tabulation with Education

Education							
Gender	**No Formal Education**	**Primary**	**Secondary**	**Diploma**	**Graduate**	**Post Graduate**	**Total**
Male	37	54	37	10	8	1	**147**
Female	30	87	68	16	2	0	**203**
Total	**67**	**141**	**105**	**26**	**10**	**1**	**350**

5.7.6 Gender Cross Tabulation with Occupation

In the table (5.8) Gender Cross Tabulation with Occupation. More than 90% of male are depending on livelihood based on edible products. Among them majority are climbers. And 80% of females are depending on livelihood based on inedible products among them majority of the women are engaged in creating crafts supported by Self Help Groups.

Table 5.8: Gender Cross Tabulation with Occupation

Occupation			
Gender	**Livelihood based on Edible Products**	**Livelihood based on Inedible Products**	**Total**
Male	136	11	147
Female	35	168	203
Total	171	179	350

5.7.7 Income Cross Tabulation with Occupation

In the table (5.9) Income Cross Tabulation with Occupation. More than 90% of the respondents who are engaged in making edible products and inedible products earn around ₹1,000 to ₹30,000. Inedible products such as handicraft makers earn much lower wages compared to income earned through edible products. Most of the respondents engaged in making handicrafts are supported by Self help Groups. The receive financial support from these SHGs. Whereas traditional artisans face difficulty to sell their products in a reasonable rate. In case of Climbers and Karuppati makers, majority sell their product to middlemen and receive low price for their yield.

Table 5.9: Income Cross Tabulation with Occupation

Occupation			
Monthly Income (in ₹)	**Edible Production**	**Inedible Production**	**Total**
1000- 10,000	28	115	143
11,000- 20,000	65	44	109
21,000- 30,000	66	11	77
31,000- 40,000	10	4	14
41,000- 50,000	2	5	7
Total	**171**	**179**	**350**

5.8 Authority of fixing: Design, Price and Marketing strategy

Table 5.10: Authority of fixing: Design, Price and Marketing strategy

N ~ 350	Self %	Middlemen% (Agency / consultant)	Government%
Design	E: 39.71 I: 35.14	E: 47.42 I: 50.85	E: 12.85 I: 14
Pricing	E: 20 I:11.14	E: 57.25 I: 72.28	E:22.85 I:16.58
Marketing	E: 20 I:10	E: 58 I:70.85	E: 22 I:19.14

E: Edible Products

I: Inedible Products

The table (5.10) displays Authority of fixing Design, Pricing and Marketing of Edible and Inedible products prepared by the community. And it is found that the majority of participants who have chosen the livelihood for survival are not involved in designing their product or services. Also, they are not in the state to fix the price of the products prepared by them (on their own). Only 20% of the respondents involved in making edible products such as tapping Pathaneer, making Karupati or any other value-added products are able to fix the price for their product and market their product. Only 11.14% of respondents who are involved in making edible products like traditional and functional craft can fix their pricing and only 10% of them are able to market them on their own.

Overall, the maximum authority of fixing the design, price and Marketing ability irrespective of edible and inedible products is driven by Middlemen (Agency/ consultant). The values are between 47.42% to 72.28% Therefore, Agencies play a major role in deciding and designing the pattern and growth of the community's livelihood. The government intervention and support for the designing, fixing decent price for their products and supporting the community to market their products were

also found low. The values are only between 12.85 % - 22.85%.

5.9 Community Responses on Factors driving Conservation of Palmyra Palm

To identify the local community responses on conservation and restoration of Palmyra palm in Southern Tamil Nadu. Various dimensions were taken into account. The table (5.11) displays items under different categories such as Ecological Conservation and Restoration, Cultural and Historical Conservation, Socio Economic Conservation and Stakeholders Involvement in Conservation. These items also reflect strong factors that help to understand the scenario and the efforts taken for conservation of the tree and livelihood. These factors contribute to developing community based tourism in Southern Tamil Nadu.

The respondents were asked on a 5-point Likert Scale to choose their opinion on statements. For example, SD= Strongly Disagree, D= Disagree, N=Neither Agree nor Disagree, A=Agree, SD= Strongly Agree for 21 different activities. The most preferred option of the respondents shown in the table listed in the category of Cultural and Historical Conservation tops the list. That are “Festival associated with Palmyra palm” (M=4.40) as 51.1% of the respondents have chosen Strongly Agree and “Worship of Palmyra palm as God or association with Tutelary God” (M=4.39) as 48.6% of the respondents agreed with their belief system. This is followed by the “Protest for revocation of banned toddy” and “Willingness to engage in toddy tapping” (M= 4.36) as 46.6% of respondents Strongly Agree their participation in revocation meeting/ protest listed from the category of Socioeconomic Conservation. From the mean rank, it is also found that “Pension received from the government” from the category Stakeholders involvement in conservation (M= 1.78) as 48.6% Strongly Disagree is the least preferred statement chosen by the respondent. That is followed by Preservation of Palmyra palm manuscripts from the category Cultural and Historical Conservation (M =2.48) as 48.3% of respondents have chosen to disagree.

Table 5.11: Factors Influencing Conservation and Restoration of Palmyra Palm in Southern Tamil Nadu

N~ 350 Statements	M	SD	SD%	D%	N%	A%	SA%
Ecological Conservation and Restoration							
Awareness on Palmyra palm conservation	**4.35**	.757	1.1	2.0	4.3	45.7	46.9
Proactive involvement in sowing	3.55	.928	.9	11.4	35.7	35.4	16.6
Raising awareness on benefits of Palmyra palm	**4.28**	.780	.9	2.3	8.3	45.4	43.3
Conservation of Traditional Ecological Knowledge	**4.26**	.710	.3	2.9	5.1	53.7	38.0
Govt regulations on cutting Palmyra palm	2.65	.478	0	35.1	64.9	0	0
Cultural and Historical Conservation							
Worship of Palmyra palm as God or association with	**4.39**	.679	0	.9	6.6	48.6	44.0
Tutelary God	**4.35**	.752	0	2.9	8.3	40.0	48.9
Utilisation of Palmyra palm products and bi products for	**4.40**	.714	0	2.3	6.6	40.0	51.1
worship	**4.11**	.889	0	4.6	20.9	33.7	40.9
Festival associated with Palmyra palm	2.48	.534	1.7	48.3	50.0	0	0
Usage of Palmyra products and bi products in marriage	**4.18**	.719	0	.9	15.7	47.7	35.7
and events							
Preservation of Palmyra palm manuscripts							
Awareness on Artefacts and historical Palmyra palm	**4.18**	.784	0	3.7	12.0	46.6	37.7
location	2.88	.666	0	27.1	59.4	11.7	1.7
.	**4.36**	.678	0	.9	8.9	43.7	46.6
Socioeconomic Conservation	**4.41**	.690	0	.9	9.1	38.6	51.4
Value added Palmyra palm products	**4.36**	.686	0	1.1	8.6	43.7	46.6
power disparities or internal conflicts among							
communities							
Willingness to engage in toddy tapping	3.44	1.08	3.7	16.0	31.4	30.0	18.9
Variety of Palmyra craft activities	2.60	2	24.6	18.6	30.0	26.0	.9
Protest for revocation of banned toddy	1.78	1.14	48.6	24.9	26.6	0	0
	3.14	3	0	17.7	50.9	30.9	.6
Stakeholders' involvement in conservation	3.17	.840	0	15.4	53.1	30.3	1.1
Skill development training offered by government		.700					
/society/ NGO		.689					
Loans and subsidy received from the government							
Pension received from the government							

NPO / NGO plays a major role in sustaining livelihood NPO/ NGO / social activist plays a role in sustaining Peace in society							

5.10 Interest of Community in CBT Activity

To examine the interest of the local community associated with Palmyra palm for livelihood towards community based tourism activity and empowerment of the local community. In order to assess the responses were obtained through certain statements that are measured using Likert scale ranging from 1- 5. 1 indicates Strongly Disagree, 2 to Disagree, 3 to Neutral, 4 to Agree, 5 to Strongly Agree. There are 17 statements listed in table (5.12). These statements further help to integrate and design tourism products and services that can be offered by the local community without disturbing their livelihood. Further bringing community based tourism in this region yields additional income to the underprivileged communities and empowers them to run the show. The majority of the respondents have shown interest and willingness towards this approach. Among the statements, the highest score is for "Working in a group for collective wellbeing." (M = 4.23) as 56% of the respondents agreed to it and 34% strongly agreed to it. "Taking up initiative and leading the team." (M = 4.03) as 36.9% of the respondents agreed to it and 34.3 % strongly agreed. "Learning skills related to Palmyra palm." (M = 4.01) as 54.3% of the respondents agreed to it. "Exhibiting local culture and tradition to tourists." (M = 4.0) as 52% of the respondents agreed to it. The least score is for "Adapting climbing methods with new technology." (M = 2.73) as 34.6% of the respondents disagreed and 45.7 respondents have chosen neutral to the statement.

Table 5.12 Interest Parameter to Participate in Community based Tourism Activity

N~ 350 Statements	M	SD	SD%	D%	N%	A%	SA%
Participating in Tourism activity and receiving	3.65	.845	0	9.4	30.9	44.9	14.9
tourist	3.67	.862	0	10.0	29.1	44.9	16.0
Hosting tourists by providing Homestay.	3.61	.820	0	9.1	32.9	45.4	12.6
Providing exclusive Palmyra palm homemade	2.73	.776	4.0	34.6	45.7	15.4	.3
food.	3.43	.804	0	10.9	44.3	35.7	9.1
Adapting climbing methods with new	3.96	.656	0	2.3	16.9	63.7	17.1
technology.	**4.01**	.738	0	2.9	18.0	54.3	24.9
Guiding tourists for a nature trail	**4.00**	.765	0	3.4	18.9	52.0	25.7
Providing awareness to tourists	3.70	1.173	6.3	6.9	30.0	24.6	32.3
Learning skills related to Palmyra palm.	3.76	.836	0	6.9	29.1	45.1	18.9
Exhibiting local culture and tradition to tourists.	**4.03**	.848	0	2.9	26.0	36.9	34.3
Facilitating and guiding tourist/ historical trails	3.47	.926	.6	13.1	40.3	30.6	15.4
to our region.	**4.23**	.651	0	1.1	8.9	56.0	34.0
Planning tours based on Palmyra palm.	3.73	.809	0	6.3	30.6	46.6	16.6
Taking up initiative and leading the team.	3.39	.891	0	17.7	35.7	36.6	10.0
Organizing the Palmyra Palm plantation drive.	3.22	.842	.6	20.9	39.1	35.1	4.3
Working in a group for collective wellbeing.	3.96	.887	.3	6.6	18.9	45.1	29.1
Selling Palmyra product in a shop.							
Exporting.							
Managing an interpretation centre/ Museum							
Teaching climbing or craft techniques to							
tourists.							

5.11 Resources Available to Develop Community Based Tourism

To capture the available resources for supporting community based tourism in these locations. The table (5.13) displays 18 different statements that were asked on a 5-point Likert scale to record how strongly they agree or disagree. The weightage on the scale ranges from 1 indicating Strongly disagree, 2 to Disagree, 3 to Neutral, 4 to Agree, 5 to Strongly Agree.

Table 5.13 Local Community Responses on Available Resources to Develop Community Based Tourism

N~ 350 Statements	M	SD	SD %	D%	N%	A%	SA %
Palmyra artefacts are relatively common in our	3.86	.595	0	.6	23.7	64.6	11.1
village	3.84	.652	0	2.3	23.4	62.0	12.3
Pilgrimage Palmyra centres have advantages	**4.35**	.572	0	.6	3.1	56.6	39.7
Variety of historical Palmyra sites	**4.35**	.572	0	.6	3.1	56.6	39.7
Capacity for developing Palmyra theme-based	**4.37**	.608	0	.6	5.1	51.4	42.9
village	**4.35**	.624	0	1.1	4.6	52.0	42.3
Rich Palmyra biodiversity and species	3.67	.831	0	8.6	30.6	46.0	14.9
Well known tourist attractions.	3.69	.848	0	9.1	28.9	46.0	16.0
Palmyra cuisines are nutritious and to attract	3.78	.626	0	2.3	26.3	62.9	8.6
tourist	2.45	.498	0	54.9	45.1	0	0
Festival aids in promoting and developing	3.49	.998	0	19.4	30.3	32.6	17.7
tourism	2.36	.589	5.7	52.3	42.0	0	0
Palmyra palm craft stores.	2.37	.591	5.7	51.4	42.9	0	0
Homes constructed using Palmyra leaves,	2.79	.897	5.7	34.6	36.6	21.7	1.4
petioles, rafters.	2.17	.640	13.4	56.3	30.3	0	0
Women are empowered in this village.	2.25	.624	10.0	54.9	35.1	0	0
Favourable political condition.	3.28	.632	0	9.4	52.9	37.4	.3
Favourable legislative condition.	**4.36**	.643	0	.9	6.6	48.6	44.0
Collaboration and cooperation with various stakeholders.							
Police treating Palmyra climbers with respect.							
External agents play a passive role in decision making.							
The village has basic infrastructure amenities.							
Cleanliness and hygiene are prioritized.							

From the mean score the most accepted resources from the list were identified. Rich Palmyra biodiversity and species (M = 4.37) as 51.4% of the respondents agreed to the statement "Cleanliness and hygiene are prioritized" (M= 4.36) as 48.6% of the respondents agreed that they keep their surroundings clean and tidy. Following this "Variety of historical Palmyra sites" and "Capacity for developing a unique Palmyra theme-based village" together has the value (M = 4.35) as 56.6 % of the respondents have agreed to this potential resource of their village. Adding to it, "Well known tourist attractions" (M = 4.35) as 52.2% of the respondents agreed to the familiar nearby tourist locations. And the least chosen statements are "Police treating Palmyra climbers with respect" (M = 2.17) as 53.3% respondent disagreed with the statement and majority reveals that police treat the climbers with contempt. Similarly to the statement "External agents play a passive role in decision making" (M = 2.25) as 54.9% of the respondents disagreed with the statement. "Favorable political condition" (M = 2.36) as 52.3% of the respondents disagreed with the statement. "Favorable legislative condition" (M = 2.37) as 51.4% of the respondents disagreed with the statement. Following this "Homes constructed using Palmyra palm leaves, petioles, rafters." (M =2.45) 54.9% of the respondents disagreed with the statement.

Part II -Discussions

5.12 Discussion

This part of the thesis, discusses on the findings of the research. Findings include information gathered from review of literature, field visits, observations and responses from various stakeholders through interview and schedule. Discussion on developing community based tourism for conservation of Palmyra palm in southern Tamil Nadu includes four segments.

1. Creative Palmyra palm themed routes.
2. Factors influencing conservation of Palmyra palm: Ecological conservation and restoration, Cultural and historical conservation, Socio economic conservation, Stakeholders' involvement in conservation.

3. Interest: Interest of local community to participate in community based tourism activity.
4. Resources identified to support community based tourism.
5. Experts' opinion on developing community based tourism for conservation of Palmyra palm in Southern Tamil Nadu.

5.12.1 Creative Palmyra Palm Themed Routes

GIS mapping discovers hidden locations. It fosters strategic tourism destination planning by highlighting the importance of identifying optimal resources and appropriate routes for tourist flow. It further enhances infrastructure development, tourist experience and sustainable tourism practices (Amangeldi, et al., 2025). GIS is rapidly expanding in the field of tourism especially when combined with media. It can provide a digital map base like printed maps, internet mapping and mobile mapping and interactive mapping in websites (Jovanović & Njeguš, 2008).

The present study identifies potential locations of Palmyra palm. (26) Tapping hotspots, (13) Handicraft locations, (12) Market places and (10) Palmyra tree veneration hotspots are represented as different maps. The final output of these maps is combined together. Spatial concentrated clusters among the hotspots are identified from the combined map (Majewska, & Truskolaski, 2019).

From the GIS points, it is also identified that the majority of the tapping hotspot is located in the stretch of Ramanathapuram and Thoothukudi district. These two districts have tapping hotspot, market location, tree veneration location and market area. They mostly meet at bordering villages of Ramanathapuram and Thoothukudi districts that is from Melselvanallur to Thoothukudi town. Even though these villages can offer all Palmyra palm related activities, there are other important villages and routes that can attract tourists with its Unique Selling Propositions (USP). Some villages have the potential for its unique craft and some for its practices. Therefore, the study identifies Melselvanallur, Vembar, Anthoniyapuram (Thoothukudi town), Manapaad, Adaikalapuram, Uvari Thisanvilai, Thanoothu (Surandai) and Thelladhi villages as major spots to connect other potential destinations.

Routes of Ramanathapuram District

1. Melselvanallur (Tapper village)- Mundhal- Erataithailai Muniyasamy temple (Valinokkam) - Keezhakarai (Craft and Food)- Tirupulani (Craft village) - Pamban (Forest Department Eco shop) - Kurusadai Island.

Melselvanallur is a birding hotspot and the tapping area where people from Kannirajapuram and adjacent villages hire the land for 6-month lease to construct huts. They settle here for six months during the tapping season, the Karupatti also prepared in this location. Some men weave cot and women are also engaged in making basic functional crafts. Melselvanallur Keelselvanallur bird sanctuary is located in this location. It attracts thousands of birders and tourists during the month of December to April. Many birders have found birds resting on the Palmyra palm tree in this location. The climbers are also aware of the names of some birds. In Mudhal, tourists can explore the tapping near the coast.

Erataithailai Muniyasamy temple (Valinokkam) holds the sacred Palmyra palm tree along with the tutelary god (Munisami). The destination can offer rich cultural and religious practices as an attraction to tourist.

Keezhakarai, provides opportunity to explore the making of fish traps exclusively made by Umayan, a 73 years old man, explore the traditional way of serving food served in Palmyra leaves (olai), lothal, vaatlapam and other traditional cuisines prepared by Muslim women of Keezhakari are added avantages to attract culinary lovers.

Thirupullani (Craft village) can provide hands- on experience on making Palmyra palm decorative crafts from the self-help group women, supported by the forest department of the district.

Pamban (Forest Department Eco shop) holds crafts made by the women from nearby villages is a shopping location for tourist.

In Kurusadai Gulf of Mannar Island, Forest department can provide insights on ecological benefits of Palmyra palm especially on how palmyra palm serves as a protector of islands from soil erosion.

Routes of Ramanathapuram District

2. Vembar- Naripayur - Sayalkudi. (Ramanathapuram -Thoothukudi district)

Vembar a historic fisherfolk community dually practice Palmyra palm livelihood along with fishing. The village has a strong Christian heritage and prominent beach where the actual tapping is practiced. It is one among the rare left out destinations to see the Palmyra palm trees scattering in the shore. Narippaiyur is a village similar to Vembar with majority of Hindus. The Palmyra trade center is proposed to be set up at Sayalkudi by Kadhi in the year 2024. Through this initiative Kadhi ensured to support 3540 licensed Palmyra climbers and 10,000+ community members involved in manufacturing Karupatti and Palmyra candy. Unadulterated Karupatti at reasonable cost can be sold to all. Overall, in this route tourists can explore the combined practices of fishing and Palmyra climbing, Palmyra palm material used for fishing such as *Pari* (fishing basket), rope can be explored and sea foods can be served in Palmyra leaves to the tourist. Tourists can explore the making of Palmyra cot from Muniyasamy (69) at Narippaiyur.

3. Anthoniyapuram- Eral

Anthoniyarpuram is located in the Thoothukudi town. It has a Roman Catholic middle school that started in the year 1940. The Palmyra climbers decided not to wait for the fund to maintain the school. They set up a Kalvi Nidhi Kulu' (education fund committee) to generate money by selling Pathaneer and to contribute a portion of profit to the school. The committee president siluvai Antony and the church authority also shared the awareness program and events taking place associated with Palmyra palm that can attract more tourists. The climbers tap Pathaneer near to the lake can contribute to create an unique experience for tourists to watch, experience climbing, camp and relax near the large calm water surface reflecting the town's landscape.

Eral village provides an opportunity to explore the making of Palmyra cot from the remaining three artisans of the village.

4. Adaikalapuram - Kayalpattinam - Thiruchendur.

Adaikalapuram, a historical Christianity village. The large number of people depend on Palmyra Palm. The village excels in producing multiple products from Palmyra Palm, such as Pathaneer, Karupatti, Palmyra Honey and many more. 100 plus women engaged in making Palmyra crafts. Youngsters are very active in this village; there are more educated climbers. The rafters of the church are made from Palmyra wood. Pilgrim tourists visiting Thiruchendur Murugan Temple stop here to relish Pathaneer. The number of food outlets and craft outlets have increased in recent years due to the increase in the number of tourists. This village serves as a best example of sustainable living and as a beneficiary village from tourism.

Thiruchendur Murugan Temple holds a solitude tree in its premises.

Kayalpattinam, a beautiful coastal Muslim township located 7 km away from Adaikalapuram. The community makes a unique weaving pattern from Palmyra leaves and engaged in making and endemic cuisines from Palmyra palm such as *Vattalapam, Puttu, Paavu, and Ponavam.* Also, the community uses Palmyra palm in religious practices and customs.

5. Manapad - Udangudi - Theraikaadu

Manapad, the coastal village where magnificent Portuguese Churches attract film and niche tourists throughout the year, the livelihood of these communities mostly depends on fishing activity. 103 women are presently empowered in Manapad Women Workers Palm Leaf Industrial Cooperative Society that started in the year 1957 under Kadhi Unit. The society can produces exclusive crafts and opportunities for tourists to learn different weaving techniques.

Udangudi Palmyra saps is considered to have the highest brick value in Tamil Nadu. It received Geographical Indication (GI) certification for Karupatti on Oct 2023 (Intellectual Property India).

Therikaadu, the red sand dunes otherwise called as the red desert of Tamil Nadu has its unique biodiversity. Plethora of Palmyra palm and its dependent species are found here. For example, the distribution of endemic species like Madras

hedgehog is found in this region (Kumar et al., 2024)

Routes of Tirunelveli District.

6. Uvari - Thisayanvilai - Kalakaadu

Uvari is a coastal village with the hamlet of churches located between Thiruchendur and Kanyakumari. There are less people depending on tapping Pathaneer, in this location.

Thisayanvillai can offer learning of Palmyra craft from 48 artisans, trained and supported by Nellai crafts and Magazheer SHGs of Radhapuram. Kalakaadu can offers wildlife trail inside the forest associated with palmyra palm

7. Alangulam- Thanoothu (Thenkasi)

Alangulam village can offer experience on weaving huge storage baskets.

Thanoothu village is blessed with Pathaneer, around 10 months in a year. This location is close to cutralam, the spa of South India. During February to May the season for full bloom, bunches of ice apple (Nungu) dangle in the Palmyra Forest. The village exports lakhs of ice apples across the world.

Routes of Kanyakumari district.

8. Thellandhi Reserve Forest - Puthalam Church - Sothavilai beach- Marthandam

Thellandhi Reserve Forest, a large number of Palmyra palms are found in its foothills. Kanyakumari forest department states that wild life animals, especially wild boar and birds interact with the Palmyra ecosystem. The tappers from adjacent villages tap Pathaneer, in this location. There is an Amman (goddess) believed to live in the tree.

Puthalam Church of Kanyakumari district holds 200 years old giant Palmyra pillars. Majority of the Palmyra trees in the coast of Kanyakumari are replaced with coconut trees. Sothavilai beach has some of the remaining trees on the coast.

Marthandam Palma Federation provides training on value added crafts such

as suitcase, bag, handbag, pouch and edible products such as Palmyra palm squash, Palmyra palm jam and sprout powder. Tourist can explore making of these crafts and the edible products. Also, the members of federation are engaged in providing Palmyra tree climbing training to common public.

5.12.2 Factors influencing conservation of Palmyra Palm

Generally, endemic trees impacts on Socio, Economic, Cultural and Ecological perspective. For conservation and sustainable management of the tree, community perspective is essential. The mutualism is shared between the community and the tree (Dery, 2025). Over the past decades, several efforts have been made to conserve the Palmyra palm, its rich heritage and legacy, artistic work and the livelihood of the community. The tree benefits the human and other dependent species. Conservation of the tree can improve their livelihood and boost the involvement of the local community in tourism business (Islam & Nath, 2014). It supports destination planning in greater ways.

Below, the discussion highlights the efforts taken by the stakeholders on conservation and local community perspective on the factors influencing conservation of Palmyra palm. The factors are classified into four segments: Ecological conservation and restoration, Cultural and historical conservation, Socio economic conservation and Stakeholders' involvement in conservation.

1. Ecological Conservation

The majority of the Palmyra palm workers are awareness on the ecological and medicinal benefits of Palmyra palm. They pass on Traditional Ecological Knowledge to the next generation. They are aware of the change in seasonality and the role it plays to determine the quantity of the Pathaneer. They are aware of Palmyra palm dependent species. They do not disturb any nest or they do not abide any species from consuming Pathaneer. They believe Palmyra palm is a shelter for all and a factory to yield revenue. They are also aware of rapid depletion of Palmyra palm trees that are mostly cut for brick kilns, wind mills, solar power plants or for setting up factories. But very few are involved in sowing. There are many other NGOs, Organizations and Individual Activists, who are actively involved in sowing.

These discussions are presented in Stakeholders Involvement in Conservation. In the last few years, the Horticulture department and agriculture department have allocated funds Rs 1 cr - 3 cr. to increase Palmyra palm trees.

Government of Tamil Nadu initiated to regulate cutting of Palmyra trees in the year 2021. Agriculture Minister M.R.K. Panneerselvam declared in the Assembly that to cut any Palmyra palm prior permission from the district collector is required. The Revenue department declared cutting without permission is a criminal offense. In Thoothukudi, Green activists alleged the local police who refused to file FIRs despite the ban. In June 2024, A High Court plea requested the formation of district-level committees (involving forest, agriculture, and revenue departments) to monitor, maintain and prevent illegal cutting of Palmyra palm trees. Therefore, very recent initiatives have been taken by the government to spatially restore Palmyra palms.

2. Cultural and Historical Conservation.

Among the list, cultural and historical conservation is considered as the most preferable conservation by the community. “Festival associated with Palmyra palm” and "Palmyra palm as god or association with tutelary god” tops the overall list in conservation. Palmyra palm is revered and worshipped not just as Thala Maram but also with Tutelary God and folklore deity. Single standalone trees on the roadside are also found to be worshiped by the community. They offer some flowers and turmeric to the tree. Beyond considering it a folklore practice, we should overlook it as an autochthonous practice. Islam originated in the desert. Oasis and date palms were considered a “life or hope” to the people in that desert. When Islam spread in Tamil Nadu, Palmyra palm was considered as an alternative to date palm. Christianity has significantly spread among Dalits and fisherfolks in Tamil Nadu. Shannars, an underprivileged population traditionally climbing Palmyra palm trees. Majority were converted to Christians due caste-based oppression, humiliation, and social exclusion.

The dominating caste irrespective of the religions restricted Shannar women from covering their breasts. If they wanted to cover the breast, they were imposed to pay a breast tax (Mullakaram). Christianity promised social equality, protection,

upward mobility, access to education and empowerment (Hardgrave, 1968).

Irrespective of the religions, Palmyra palm is deep rooted in the celebrations and rituals of the community. It is a blessing to the state of Tamil Nadu to observe that the tree binds diverse religious groups. These cultures and ritual practices, oral history and tradition can enhance authenticated experiences to the tourist.

3. Socioeconomic Conservation

There were several measures taken by the community, government, NGO and the activist to resolve the socioeconomic condition of the community. Varieties of the crafts were introduced to women for empower. Value added edible products were taught to youngsters and women. The women are committed to learn new skills for survival. They believe these skills can empower their personal growth, provide entrepreneurial opportunities and improve their standard of living. These skill development programs were mostly benefited to single women (Separated/ Divorce/ Widow/ Unmarried), the breadwinner of the family.

Unlike today, it is noted that the large number of Palmyra workers were tappers. Toddy has been a symbol of hospitality, celebrations and victory since the Sangam era. Toddy heals several health hazards and cures skin diseases. Benefits of the toddy were understood properly in early days and accepted by the society. It was consumed by all age groups socially. Activist Pandiyan Palmyra climber states toddy was once part of offering in temple rituals, After the Bhakti Movement it was considered to be untouchable as it was prepared by the underprivileged community.

When former Honorable CM M G Ramachandran banned toddy in the year 1987. The image of toddy was misled. Tappers and the family were treated unfair. The majority of the climbers are aware of its benefits and expressed their interest to tap toddy but they are afraid to fight against the government. They have been tortured brutally by the police. The police usually manipulate the toddy case to arrack. The community therefore had no choice to continue their livelihood practices. They were forced to discontinue tapping toddy and many also shifted their livelihood practice. Many climbers moved to the northern part of Tamil Nadu. Activist Nallasamy, Padiyan Palmyra Climber Advocate Deepan and Politician Seeman

supports toddy tapping. Pandiyan organized a cycle rally to promote awareness among the climbers to tap toddy. For consequent four years Pandiyan along with other organizations and volunteers had successfully organized Palmyra palm dream festival to celebrate their heritage, legacy and to create awareness about their struggle to the public. Many media have extended their support to cover the happenings in this festival. Following this event he also organized a conference on independent toddy tapping. This conference is then followed in many other locations. The media and politicians have expressed their views on this controversial topic. Advocate Deepan expressed the need for the community to understand and familiarize the law behind tapping toddy

"*If the toddy ban is revoked, those women who cannot work hard to prepare* Karupatti *can be employed to sell toddy."* (George, 66 years, thellandi Palmyra climber).

Even before toddy, colonial intervention has contributed for the spread of white sugar that eventually took the place of Karupatti in the market. Therefore, political economy and colonial intervention have contributed as a major cause for decline of socioeconomic condition of palmyra palm.

The tapping location taken for lease by the climbers is sold to the solar company for a cheaper rate by the landlords. This highly affects their livelihood, forcing them to migrate from this land.

"We sometimes live as refugees despite living in our own nation." (Anthonysamy, 75 Vembar).

"*We are poorly treated in society, as grooms we do not get brides when we practice climbing. Middlemen intervention is considerably high, they don't pay reasonable prices for the karupatti" (*Sami, Thanoothu Palmyra climber).

This forced the community to produce adulterated products. Conservation and restoration of the tree is mutually dependent on livelihood conservation of climbers. In countries like Cambodia and Thailand, Palmyra palm tours are organized to encourage livelihood. That in turn helps in conservation of the tree, its

biodiversity and ecosystem.

4. Stakeholders Involvement in Conservation.

A Decade back several training programs were led by Palmgur, NGO's, Self-Help Groups to fund and empower communities. These initiatives increase more value-added products and productions. Palmgur provided training for climbing, preparation of by-products from Palmyra palm such as Palmyra palm candy, Palmyra palm sugar, Brush and many more. These programmes were later found to be partially inactive due to the shortage of participants. In fact, these training programs provide incentives to the participants. The majority of the self-help groups focused on empowering women through craft trainings. The women actively participate to receive the support from SHGs. While in some locations like Manapad Cooperative unit and Kanyakumari Poombhuhar unit, participation of women is considerably passive. This condition requires immediate measures to empower all community members at all age groups with appropriate skills that are required for developing community based tourism and to prevent dooming livelihood from decaying.

In the scenario of restoration of Palmyra palm, the role of community is passive. Even though the government has taken measures to increase the count of the tree. Activists like Godson Samuel, Rajavelu, Saathaiya and many other NGOs have taken immense effort to restore. These activists also create awareness about ecological benefits of Palmyra palm to the public.

5.12.3 Participatory Interest of Community in Tourism Activity

Interest and inclusion of the local community helps to understand the power relation within the community setting or the ability to own confidence or interest to take charge in managerial tasks. This can preclude middlemen or any form of collaboration. Sometimes collaboration interrupts community empowerment and participation of community at all levels. Especially during the decision-making process and planning process and during utilization of natural and social resources. Therefore, it is necessary to find cooperation and include the community at all levels of managerial and decision-making tasks (Reed, 1997). For tourism development, interest of the community related to built heritage and cultural values are also

considered as important aspects (Joppe, 1996).

Among the given statements in the questionnaire, the majority of them have expressed their high interest in following activities. The mean score ranges above 4.0.

1. Learning skills related to Palmyra palm

The majority of the tappers are settled together. The livelihood activities and the daily chaos are divided and shared among the family. It involves the active participation of all family members from different generations. The tapping requires skill to extract the Pathaneer therefore it is carried out by male, while processing of Karupatti in different forms is carried out by women. Women climbing the Palmyra palm tree are rarely found. There are some differently challenged men who climb the tree. This practice not only ensures sustainability but also the transmission of indigenous knowledge and skills to the younger generations. There are some volunteers who are interested in learning the climbing skills despite their traditional occupation. Palma Federation, Palmgur Kadhi craft train volunteers especially youngsters and women to prepare several value-added crafts and value-added edible products.

2. Exhibiting local culture and tradition to tourists

Palmyra is not just part of their livelihood. It is their lifestyle and legacy. They are immensely proud about their deep-rooted culture and tradition. Palmyra palm is an integral part of their worshipping, customs, tradition, rituals, food, craft, architecture, language, history and ethnicity. The majority of the respondents are willing to share their local culture and traditions to tourists and believe this might support in sustaining their livelihood.

3. Taking up initiative and leading the team

The community is interested to take part in tourism, initiate certain activities, share their knowledge and expertise to the tourist and willing to lead the team.

4. Working in a group for collective wellbeing

The cross generational activity fosters community identity and economic viability among them. The members of the family encourage and support others in the village considering them as their family members. The women who have jointly registered under a Self-Help Groups weave together in a hall. They share their food, emotions, thoughts, problems, suggestions and also technical skills to make different crafts. Therefore, they generally work in a group for collective wellbeing.

Among the statement majority have expressed their interest with mean scores ranging from 3.0 to 4 are:

Participating in Tourism activity and receiving tourists, Hosting tourists by providing Homestay, Providing exclusive Palmyra palm homemade food, Guiding tourists for a nature trail, Providing awareness to tourists on the significance of Palmyra palm, Facilitating and guiding tourist/ historical trails to our region, planning tours based on Palmyra palm, Organizing the Palmyra palm plantation drive, Selling Palmyra product in a shop, Exporting, Managing an Interpretation center/ Museum, Teaching climbing or craft techniques to tourists.

Even though the community is not aware of what tourism is? When explained, they expressed their willingness and joy. The community is presently in a state of euphoria; they consider tourism can bring recognition to their village. The tourist flow can increase the visibility of local traditions, livelihood opportunities and the status of the community. Festivals, rituals, heritage spot, story trails, nature camp and trail, cultural performances, climbing and crafting experiences, selling crafts, setting up interpretation center or museum can showcase Unique Selling Proposition (USP) of the destination and improve their economic status. This improves active community participation, fosters sustainable tourism development in an inclusive manner.

5. Adapting climbing methods with new technology

Adapting climbing methods with new technology is the least chosen statement with a mean score less than 3.0. The majority of the respondents stated that

they don't find difficulty in climbing. They don't even require a ladder to climb. “We cannot afford to carry the machinery from one place to another” (Susai Muthu, Palmyra climber Kanyakumari). “If the machines are installed in many trees permanently, it will be easy for many to climb, it can increase the production but it will ruin our livelihood. Moreover, the product will be exposed to high adulteration and commercialization” (Samy, Palmyra climber, Thanoothu). Rather than providing technology, the government should address our basic needs and problems (Mani, Palmyra climber Thanoothu).

5.12.4 Resources Fostering Community Based Tourism

Identifying the existing resource is a prior most important task for community based tourism planning. Resources increase potential for attracting tourists, and help the community to be creative and sustain their Traditional Ecological Knowledge. Therefore, it emphasizes community ownership and participation (Sugiarto et al., 2020). Resources are the key elements for success or failure of planning community based tourism. Further it is necessary to understand the community's perspective on the resource.

When the Respondents were asked to rank and discuss the 18 different statements under the existing resources. The most accepted resources from the list with mean ranging more than 4 are:

1. Rich Palmyra biodiversity and species

From the information collected through secondary records, field visits and experts opinions it is observed that Palmyra palm provides shelter to many species including mammals, reptiles, birds, insects, geckos, butterflies (Preethi & Ramasamy, 2023). “*specifically certain species like Asian palm swift, Asian palm civet, slender loris, Indian small swift, Indian roller, common quail, myna, kite, brahminy kite, baya weavers’ bird, owl, ferret, woodpecker, barn owl, little egret, kingsher, ibis commonly resides and weaves nest in Palmyra palm also species like Indian garden lizard, common garden lizard, eastern garden lizard and common green vine snake,daudin’s bronze back, squirrels, black Scorpio, spiders, yellow ant, honey bee comb, red ants, mice, rat jungle cat, peacock, porcupine, Madras*

hedgehog, vultures, eagle, stock, pelicans can also live in this ecosystem. Parrot, Parakeet resides in the trees with holes" (Ram, Founder Uyir Moochu Nursery; Ravinder, Founder Iragugal Amrita Nature Trust)

"At night I have also observed a swan nest with 15 swan chicks. The community believe sighting an Indian roller may provide fortune to their lives" (Ravinder, Founder Iraugal Amrita Nature Trust)

"Relationship between Palmyra palm and slender loris, a primitive species, are spotted in Dindigul district of Tamil Nadu in the year 2018" (Godson Samuel; Author).

The species depend on the tree supports in seed dispersal by consuming the fruit and excrete the seeds in different locations.

*"Palmyra palm generally provides shelter to parasitic trees such as banyan trees. The Palmyra inside the banyan tree provides nutrients and safeguards the tree, (*Godson Samuel, Author).

"Some wild animals like elephants and wild boar can depend on the Palmyra ecosystem. It is observed that they eat the fruit from Palmyra palm. When the wild animals attain their requirements inside the forest, they do not cross its boundary." (District Forest Officer, Mr. Illayaraja, Organiser).

2. Variety of historical Palmyra sites

Majority of the locations are termed after Panai Maram (Palmyra palm) such as Panai vilai, Panangudi, Nallu pannai, Panankadu, Panaiyur and many more. Some of the streets are also named after panai (Palmyra Palm). The prominent and heart core city of Chennai Nungambakkam (Nungu + Pakkam) refers to Nungu maram (another name for Palmyra palm tree in Tamil). Pakkam refers to the land near to the sea or any other water bodies.

Palmyra rafters are still found as part of the church's architecture. Palmyra palm manuscripts have not been preserved by the community but some remembered that they had seen them in almirah during their childhood. Some of historical buildings that are constructed using Palmyra palm woods for rafters and beams still

exist.

3. Cleanliness and hygiene are prioritized

In these villages, cleanliness and hygiene are monitored by the local community. The members of the community maintain clean surroundings, and public spaces are neat and free from litter. Regular cleaning of streets is carried out by villagers. The members are aware of cleanliness, hygiene, health and sanitation. Overall, the destination promotes a healthy living environment to develop tourism.

4. Tourist attractions

The district pools tourists to the well-known tourism attractions in the coastal regions of southern Tamil Nadu. Most happening spots nearby the villages are Kanyakumari Beach, Vivekananda Rock Memorial, Thiruvalluvar Statue, Suchindram Temple, Sanguthurai Beach and Vattakottai Fort in Kanyakumari district. Uvari coastal village, Kalakad Mundanthurai Tiger Reserve (KMTR) are some of the important tourist attractions in Tirunelveli districts. Thoothukudi Beach, Kulasai Dussehra festival and Punnaikayal Estuary, Manapad Beaches and churches, Our Lady of Snows Basilica, Harbour & Pearl Diving Areas, Ettaiyappar Heritage Area, Kalugumalai, buddhism and 156ainism spots Vembar coastal village and Islands of Gulf of Mannar Marine National Park, are the tourist destination that are located in thoothukudi districts. Ramanathaswamy jyotirlinga pilgrim site, Pamban bridge, Dhanushkodi, Ariyaman Beach, Devipattinam Navagraha temple and Gulf of Mannar Biosphere Reserve are the important tourism destinations located in thoothukudi districts near to the field locations.

5. Capacity for developing a unique Palmyra theme-based village

Each and every village has its own USP to develop it as a Palmyra theme based village.

The moderately chosen resources by the community with mean score between 3.0 to 3.9 are

6. Palmyra artefacts are relatively common in our village

Palmyra artefacts such as traditional and functional crafts are mostly found in every village. Storage boxes to keep rice or grains, tray, Palmyra cot, mat, hand fan, fencing material, rope, brooms, brush etc are found across rural villages of Tamil Nadu.

In Tamil Nadu, the utility of Palmyra palm was observed in everything. Many products such as Sambu (Raincoat), Solavu (The tray used to remove weeds from grains or carry products for Rituals), Kuduvai (Pot made from Palmyra leaves), Thondi (a Palmyra mug used to carry water from the well and pour it to land for irrigation) are diminished from utilisation. Most of the crafts are replaced by plastics. Palmyra woods and leaves that were largely used for architectural purposes are now replaced with concrete structures.

7. Pilgrimage Palmyra centers have advantages

Every village has a practice of worshipping Palmyra palm as God. Irrespective of religion even Christian climbers before climbing worship the tree. Many tutelary gods are associated with trees and revered as gods.

8. Palmyra cuisines are nutritious and delicious to attract tourist

Many women in the village are engaged in preparing Karupatti. Karuppati coffee, once considered a poor man's drink, is now the most demanded drink in the market. More franchises and outlets are opened for Karupatti coffee. After covid the demand for Karupatti increased when people started to consider it as medicine. Apart from Karupatti the people make exclusive traditional cuisines like Vattalappam, Panampazham paniyaram, Puttu, Paavu, Lothal and many more value-added foods having huge potential to attract tourists and provide employment opportunity to the chefs who prepare the food.

9. Festival aids in promoting and developing tourism

Every village taken for the study exhibits a festival or ritual associated with Palmyra palm. Christian Festivals such as Palm Sunday, Good Friday, Hindu rituals such as sokka panai, Karthi (Soonthu) are more associated with the tree and have the

potential to attract more pilgrim tourists to the village.

10. Palmyra palm craft stores

Not all villages are having their opportunity to sell their products in the shop. In Adaikalapuram many men started selling their products both edible and inedible. In Kanyakumari Poombhuhar unit and Mathi Angadi supports Self-Help Group women to sell their craft products. In Tirunelveli, Nelli crafts supports Self-help group women to sells their craft products. In Ramanathathpuram Forest department supports in training the self-help groups and in selling their craft products. Traditional artisans lack support in selling and marketing their products.

11. Women are empowered in this village

Even though the majority of the women are not educationally empowered. Women who are involved in Palmyra palm livelihood activity are technically empowered. Some are empowered to prepare Karupatti and value added edible products. Some are empowered as exclusive chefs and some are empowered as an artist to create unique and decorative crafts.

12. The village has basic infrastructure amenities

The village has good quality roads linking highways and other tourism spots. Frequency of the buses are moderate. Most of the village has nearby hotels or lodges to stay. The village has a facility to provide campsites especially in the tapping areas that are taken for lease by the people. Most of them ensure waste management practice. Some villages especially the stretch of village from Ramanathapuram to Thoothukudi district lack in public restroom facilities and electricity.

The statements with mean score less than 3.0 are considered as resources that are lacking or the resources that are considered to be vital for community based tourism planning and development and need to find mitigation measures.

13. Police treating Palmyra climbers with respect

The majority of the climbers for the past four decades have faced several challenges to practice their livelihood because of not receiving the support from the

police. The police who are supposed to safeguard the underprivileged community. Who are supposed to treat everyone equally before law have failed to provide justice.

"Police repeatedly create issues to the climbers, who tap Toddy and Pathaneer. They were assaulted physically, socially, economically and mentally. Police used to break the pot. File the wrong case instead of toddy, they raise it for arrack. Dharmapuri toddy tappers provide commission to the police for tapping. At one point, they were not able to afford commission. Police travelled 30 km to arrest climbers for tapping toddy. When one old lady came forward to explain their situation and crisis, police stamped on her chest. They also tried to manipulate to file a case circulating weed leaves. 15 years ago, in Erode an innocent man was punished. He was ordered to carry a pot full of toddy on his head and travelled across the village. Another man did not even know why he was sent to jail. Many climbers who tap Pathaneer were also affected" (Deepan, Advocate High court).

14. External agents play a passive role in decision making.

Even though the livelihood based on Palmyra palm promotes sustainable living. The pricing of the products is not fixed by the community. They face limitations over market dynamics. Middlemen intervention is to sell their products especially for selling Karupatti. Very few climbers are empowered to market their product and to fix the pricing. There is no proper policy or Minimum Support Price (MSP) to sell Palmyra based edible products. Traditional Artisans face difficulty to procure Palmyra leaves. In spite of spending significant labor, skill and time the profit is considerably low.

15. Favorable political conditions.

Corruption, Benefits are not governed or reached to the community. The issues faced by the underprivileged community are neglected. The community faces suppression.

16. Favorable legislative conditions

The community is not aware of the beneficiary schemes and policies. The laws are not administered properly. Lack of GI tag for safeguarding traditional food

and crafts.

17. Homes constructed using Palmyra palm leaves, petioles, rafters.

Palmyra palm leaves, petioles, and rafters were commonly used in both interior and exterior architecture. The practice that was followed fifty years ago is now a forgotten practice or considered as ancestral practice. Very few artisans are skilled to construct the house using the products. Some of them are found near the stretch of Ramanathapuram and Thoothukudi districts. During the six months seasonal time the community usually shifts their housing to the tapping location that is taken for lease. The period before the season they start to construct temporary huts using Palmyra leaves and rafters.

18. Collaboration and cooperation with various stakeholders.

There is minimal support received through collaboration or cooperation with various stakeholders. Ramanathapuram Forest Department and Tirunelveli Administrative Department Self Help Groups provide Palmyra craft skill training and also support them in marketing and sales.

5.12.5 Experts' Opinion on Developing Community Based Tourism

Experts have viewed tourism involving Palmyra palm community members as need for action especially for creating overall awareness about Palmyra palm and the community that eventually safeguards the tree. In this case experts believe tourism can monitor adulteration, support in marketing and selling of their products, improve their standard of living and provide new experiences to tourists. It can also provide confidence and empower women to fight against their social and economic problems. It can support youngsters to fight against unemployment, recognize and reward artisans. Palmyra based food trails can promote traditional cuisines and encourage innovative cuisines. Palmyra based nature trail can conserve and sustain Palmyra biodiversity and ecosystem. It can increase the number of food and craft outlets. From the community point of view, community representative and activist Pandian Palmyra climber believed tourism as a force to connect our purpose with the place and people and to create meaningful change. It can exhibit our community's

strong culture and legacy. Overall, this approach has a potential to engage and surprise tourist with the Wow factor.

5.12.6 Conclusion

It is necessary to understand that the potential hotspot locations are identified only through snowball technique and self exploration. Each district or village has to be studied separately to identify more potential locations. Each village has its own uniqueness to exhibit and attract tourism. Especially to receive self-driven tourists who are fond of experiencing new forms of tourism (Smith, 2006). Even though most of the respondents preferred a segment of Artisans (Handi craft makers) followed by Climbers and Karupatti makers. Palmyra palm provides employment opportunities to diverse communities especially to manufactures, seller and exporters, and to community involved in preparing value-added edible (food) and inedible products (Crafts and Raw material). However, from the respondents' comments, it is presumed that there are issues in channelizing and connecting all respondents under an umbrella. Tourism can bridge the gap, benefit all and result in livelihood sustainability. The resources also showcase uniqueness and authenticity of the location and the livelihood that are potential to attract niche tourists. For example, Artisans making traditional crafts (Solvu, Sambu, Fish trap, Ommal, Palmyra cot, Mat, Palmyra slipper), colourful functional and decorative crafts, traditional cuisines, value added edible products and innovative foods are prepared by local community, efforts taken by the Self-Help Groups, entrepreneurs and chefs in innovating new products can accelerate the process of tourism development. But, the community lacks awareness about tourism. Some interests are latent and unexpressed due to fear and exclusion. They need to be educated in order to create confidence and interest in tourism activity (Joppe, 1996). Several Ngo’s activists and Self-Help Groups have taken immense effort to conserve Palmyra palm and its livelihood. Tourism will further help to unite them for strengthening community participation and for revival of Palmyra palm. Experts of the field have also shared their positive note on developing tourism involving the Palmyra palm community. Tourism provides long term support for sustainable revival of transdisciplinary gems of Palmyra palm in these regions.

"*The one thing we need more than hope is action. Once we start to act, hope is everywhere"* - Greta Thunberg.

Therefore, the study has taken the next step to execute two itineraries from the proposed routes. Palmyra Safari in the varied landscapes of Kanyakumari district and the Palmyra Trail connecting diverse religions of Thoothukudi district. The trail resulted in an overwhelming response from the community and the tourists. Further showcasing the real image of the destination, the tourists were able to acquire knowledge on the trans disciplinary value of Palmyra palm, that supports the reduction of adulteration and middlemen. It also addresses their social problems, paves the way to ameliorate their present status, sustains livelihoods, generates revenue, and safeguards the Palmyra ecosystem (Preethi & Ramasamy, 2025). To support the study and the community we have also conducted Palmyra fruit festival 2023 for the first time in Tamil Nadu at Madras School of Social Work campus. Along with raw boiled and steamed fruit, many value added, bakery and confectionery foods were placed for tasting.

CHAPTER-6

FINDINGS, SUGGESTIONS, RECOMMENDATIONS AND CONCLUSION

6.1 Introduction

This chapter presents a summary of findings and includes suggestions,recommendations and conclusion of the study.

6.2 Summary of Major Findings

6.2.1 To Map the Potential Locations of Palmyra Palm in Southern Tamil Nadu

The potential locations of Palmyra palm in Southern Tamil Nadu for developing community based tourism destinations are mapped using google map and represented using ArcGIS. The maps are segregated into different themes representing Tapping Area, Handicraft villages, Market location and the Palmyra Palm Tree Veneration hotspots and are grouped into spatial clustering to form creative routes. These routes provide multiple experiences to the tourist especially on livelihood activities, cultural programs, religious activities, historical and nature trails.

The creative routes are:

1. Melselvanallur (Tapper village)- Mundhal- Erataithailai Muniyasamy temple (Valinokkam) - Keezhakarai (Craft and Food)- Tirupulani (Craft village) - Pamban (Forest Department Eco shop) - Kurusadai Island.
2. Vembar- Naripayur - Sayalkudi. (Ramanathapuram -Thoothukudi district).
3. Anthoniyapuram- Eral
4. Adaikalapuram - Kayalpattinam - Thiruchendur.
5. Manapad - Udangudi - Theraikaadu
6. Uvari - Thisayanvilai - Kalakaadu
7. Alangulam- Thanoothu (Thenkasi)
8. Thellandhi Reserve Forest - Puthalam Church - Sothavilai beach- Marthandam

6.2.2 Nature of Participation in Palmyra Palm Livelihood

Participation in Palmyra palm livelihood is more active in handicraft activity compared to climbing. Some respondents along with Palmyra palm share dual occupations such as Fishing or Construction work as a primary occupation. Palmyra palm livelihoods are practiced for generations.

6.2.3 Conservation Efforts

The study found that there are several measures taken by all the stakeholders towards conservation of Palmyra palm and its livelihood. The conservation factors are further classified into ecological conservation, socioeconomic conservation, cultural and historical conservation and stakeholders' involvement in conservation.

1. Ecological Conservation

To restore or to spatially recover the Palmyra palm several plantation drives were taken place in Tamil Nadu involving all the stakeholders since the year 2019. Community and stakeholders are aware of the ecological importance of Palmyra palm. Community members further its rich biodiversity and the Traditional Ecological Knowledge received from their ancestors. But very few participate in sowing. In June 2024, A High Court plea requested the formation of district-level committees to prevent illegal cutting of Palmyra palm trees. This can boast nature-based trail and voluntourism concepts.

2. Cultural and Historical Conservation

Palmyra palm is revered as God. The tree is also associated with folklore and Tutelary God. Many festivals and rituals are associated with the tree. The products from Palmyra palm are widely used in many temples as prasad or any other offerings. Local communities are aware of their rich history and tales of the historical location. Historians like Vareedhaiya, Godsonson Samuel shared several interesting stories. Whereas Palmyra Manuscripts, an important document once found in common people almirah are completely removed from their belongings.

3. Socioeconomic Conservation

People considered the tree with "*full of life*" as "*life of hope*". Previously the climbers were called as shanars, a caste oppressed community, they were socially excluded and humiliated. Women were even opposed to paying breast tax *(Mulakaram).* When Christianity promised social equality, protection, upward mobility, access to education and empowerment, the majority got converted to sustain dignity. Toddy has been a symbol of hospitality, celebrations and victory since the Sangam era. Many climbers are interested in tapping in spite of the ban. They believe toddy as food, tapping as their rights and as a driving force to strengthen sustainable living. Advocate Deepan creates awareness to the climbers on the law relating to toddy tapping. Palmyra climbers and their family are poorly treated and assaulted by the police. Several measures were taken to revoke the toddy ban. Toddy is still part of many rituals and rights across south and south east Asian countries. If the toddy ban is revoked it can provide more employment opportunities to women. Conservation and restoration of the tree is mutually dependent on livelihood conservation of climbers.

4. Stakeholders Involvement in Conservation

Palma Mission and Green Needs Organisation are the two important pillars involved in active participation in sowing of Palmyra palm across Tamil Nadu. To resolve the socio-economic condition of the community Government, NGO and Activists empower women to create craft and value-added edible products. This especially encourages and supports women who are breadwinners of the family. Palma offers climbing workshops to exclusively attract youngsters from all social groups. Governments provide policies and welfare schemes that are not percolated to the community at grass root level. Pandian, a Palmyra climber gathered enthusiastic climbers and volunteers to fight for the human rights issues related to Palmyra palm especially toddy tapping and organised a cycle rally from Chennai to Kanyakumari and back to Chennai to create awareness among climbers following this he has organised Palmyra palm dream festival to celebrate the heritage, legacy and to create awareness about their struggle to the public.

Palmyra Palm manuscripts are collected, preserved, catalogued in UV Swaminathan Iyer Library, Chennai. Saraswathi Mahal Library, Thanjavur. Tamil Nadu University, Thanjavur. Theosophical Society International, Chennai. The French Institute Pondicherry and Chennai Government Museum. Tamil Heritage Foundation International and Tamil Virtual academies have played a major role in digitalization of these manuscripts.

6.2.4 Interest of Local community to participate in Tourism Activity

With regards to participation in tourism activities, the local community poses high interest with mean score 4.0 & above are: Learning skills related to Palmyra palm, exhibiting local culture and tradition to tourists, taking up initiative and leading the team and working in a group for collective wellbeing.

The local community poses average interest with mean score between 3.0 to 4.0 are: Participating in Tourism activity and receiving tourists, hosting tourists by providing Homestay, providing exclusive Palmyra palm homemade food, guiding tourists for a nature trail, providing awareness to tourists on the significance of Palmyra palm, facilitating and guiding tourist/ historical trails to our region, planning tours based on Palmyra palm, organizing the Palmyra palm plantation drive, selling Palmyra products in a shop, exporting, managing an Interpretation centre/ Museum and teaching climbing or craft techniques to tourists.

The local community poses least interest with mean score lesser than 3.0 are:

Adapting climbing methods with new technology as they might find difficulties to carry the machinery from one place to another. And afraid if it would affect their livelihood by exposing the product to high adulteration and commercialisation

6.2.5 Resources Fostering Development of Community Based Tourism

1. Rich Palmyra biodiversity and species

Palmyra palm provides shelter to all species including mammals, reptiles, birds, insects, geckos, butterflies etc. specifically certain species like Asian palm swift, Asian palm civet, slender loris, Indian small swift, Indian roller, common quail,

myna, kite, brahminy kite, baya weavers' bird, owl, ferret, woodpecker, barn owl, little egret, kingsher, ibis commonly resides and weaves nest in Palmyra palm also species like Indian garden lizard, common garden lizard, eastern garden lizard and common green vine snake, daudin's bronze back, squirrels, black Scorpio, spiders, yellow ant, honey bee comb, red ants, mice, rat jungle cat, peacock, porcupine, Madras hedgehog, vultures, eagle, stock, pelicans can also live in this ecosystem.

a. Parrot, Parakeet resides in the trees with holes. Slender loris, a primitive species, are spotted on Palmyra palm in Dindigul district
b. Palmyra palm provides shelter to parasitic trees such as banyan trees. The Palmyra inside the banyan tree provides nutrients and safeguards the tree.
c. Some wild animals like elephants and wild boar can depend on the Palmyra ecosystem. It is observed that they eat the fruit from Palmyra palm.

d. Variety of historical Palmyra sites

a. The names of the locations are termed after Panai Maram (Palmyra palm) such as Panai vilai, Panangudi, Nallu pannai, Panankadu, Panaiyur and many more. Some of the streets are also named after panai (Palmyra Palm).
b. Many historical buildings are constructed using Palmyra palm woods, rafters and beams.

2. Cleanliness and hygiene

The members of the community maintain clean surroundings, and public spaces are neat and free from litter. The members are aware of cleanliness, hygiene, health and sanitation. Overall, the destination promotes a healthy living environment to develop tourism.

3. Nearby Tourist attractions

There are several well-known attractions located near the tapping area or handicraft village. Therefore, the village has potential to pull the tourist flow to their destination. Adaikalapuram receives tourists visiting Thiruchendur Murugan temple.

4. Capacity for developing a unique Palmyra theme-based village

Each and every village has its own Unique Selling Proposition (USP) to develop it as a Palmyra theme-based village.

5. **Palmyra artefacts are relatively common in our village**

a. Storage boxes to keep rice or grains, tray, Palmyra cot, mat, hand fan, fencing material, rope, brooms, brush etc are found across rural villages of Tamil Nadu.
b. Products such as Sambu (Raincoat), Solavu (The tray used to remove weeds from grains or carry products for Rituals), Kuduvai (Pot made from Palmyra leaves), Thondi (a Palmyra mug used to carry water from the well and pour it to land for irrigation) are diminished from utilisation.
c. Most of the crafts are replaced by plastics. Palmyra woods and leaves that were largely used for architectural purposes are now replaced with concrete structures.

6. **Pilgrimage Palmyra Centres**

Every village has a practice of worshipping Palmyra palm as God. Irrespective of religion even Christian climbers before climbing worship the tree. Many tutelary gods are associated with trees and revered as gods. And Palmyra has strong incorporation in temple architecture.

7. **Palmyra cuisines are nutritious and delicious to attract tourist**

a. Karupatti coffee, once considered a poor man's drink, is now the most demanded drink in the market because people started to consider it as medicine.
b. Traditional cuisines like Vattalappam, Panampazham paniyaram, Puttu, Paavu, Lothal and many more value-added foods have huge potential to attract tourists and provide employment opportunities to the chefs who prepare the food.

8. Festival aids in promoting and developing tourism

Sokkapanai, Maavuli, Kadholai Karugumani, Madal Eruthal, Oddukuputhan, Good Friday and Palm Sunday have the potential to attract more pilgrim tourists to the village.

9. **Palmyra palm craft stores**

Palmyra crafts stores are largely supported by self-help groups. Such as Nellai crafts, Poombhuar unit kanyakumari, Tamil Nadu Forest Department Eco Shop. Not all villages are having their opportunity to sell their products in the shop.

Especially Traditional artisans lack support in selling and marketing their products.

10. Women are empowered in this village

Some are empowered to prepare Karupatti and value-added edible products. Some are empowered as exclusive chefs and some are empowered as an artisan.

11. **The village has basic infrastructure amenities**

a. The village has good quality roads linking highways and other tourism spots. Frequency of the buses are moderate.

b. Most of the village has nearby hotels or lodges to stay.

c. The village has a facility to provide campsites especially in the tapping areas that are taken for lease by the people.

d. Most of them ensure waste management practices.

e. Some villages especially in the stretch of village from Ramanathapuram to Thoothukudi district lack in public restroom facilities and electricity.

f. Resources that are considered to be vital for community based tourism planning and development and need to find mitigation measures.

12. **Police treating Palmyra climbers with respect**

The majority of the climbers for the past four decades have faced several challenges to practice their livelihood. The police who are supposed to safeguard the underprivileged community. Who are supposed to treat everyone equally before law have failed to provide justice. The Community, Activist and Advocate have shared many brutal incidents.

13. **External agents play a passive role in decision making**

The pricing of the products is not fixed by the community. They face limitations over market dynamics. Middlemen intervention is to sell their products especially for selling Karupatti. Very few climbers are empowered to market their product and to fix the pricing.

14. **Favourable political conditions**

Corruption, Benefits are not governed or reached to the community. The issues faced by the underprivileged community are neglected. The community faces

suppression.

15. **Favourable legislative conditions**

The community is not aware of the beneficiary schemes and policies. The laws are not administered properly. Lack of GI tag for safeguarding traditional food and crafts.

16. **Homes constructed using Palmyra palm leaves, petioles, rafters**

Palmyra palm leaves, petioles, and rafters were commonly used in both interior and exterior architecture. The practice that was followed fifty years ago is now a forgotten practice.

17. **Collaboration and cooperation with various stakeholders**

There is minimal support received through collaboration or cooperation with various stakeholders. The organisation supports women on craft skill training and also supports them in marketing and sales.

6.2.6 Experts' Opinion on Developing Community Based Tourism

1. Experts have viewed tourism involving Palmyra palm community members as an urgent "Need for Action." especially for creating overall awareness about Palmyra palm and the community that eventually safeguards the tree.
2. In this case experts believe tourism can monitor adulteration, support in marketing and selling of their products, improve their standard of living and provide new experiences to tourists.
3. It can also provide confidence and empower women to fight against their social and economic problems.
4. It can support youngsters to fight against unemployment, recognise and reward artisans.
5. Palmyra based food trails can promote traditional cuisines and encourage innovative cuisines.
6. Palmyra based nature trail can conserve and sustain Palmyra biodiversity and ecosystem.
7. It can increase the number of food and craft outlets.
8. It has a force to connect community purpose with the place and people and to create meaningful change.

9. It can exhibit our community's strong culture and legacy. Overall, this approach has a potential to engage and surprise tourists with the Wow factor.

6.3 Recommendations

The information about the place, people and process will be helpful and crucial to design community based tourism activity. That supports increased community participation and engagement of community at all levels. Awareness about tourism opportunities has to be disseminated to all community members especially to the youngsters and women. (About youth and women participation in tourism). In many developing countries like India, Tourism is often seen as benefit sharing, economic catalyst and inclusive growth. Mostly, tourists visiting developing countries will prefer to visit natural, cultural and community oriented destination rather than leisure or luxury. Yet it is very important to provide them comfortable accommodation, hygienic food and surrounded with basic amenities and accessibility facilities. For a long run the local community has to be empowered to run the show. It is important that the community needs to understand what the tourism industry is? How can they benefit from tourism? How can they sustain their livelihood, culture and identity through tourism? How can tourism alleviate their poverty and improve their social and economic status? These issues are commonly addressed in developing countries.

The study observes that the local community lacks skills to sustain their livelihood and enhance their business. They face multiple challenges to run a decent life. They have neither power to decide their pricing of the product they manufacture nor market and directly sell them to consumers. The majority of them surrendered themselves as labour to middlemen when they failed to earn from their livelihood. During the offseason they lend money from the middlemen, sign the agreement to provide their maximum production to them instead of interest. They are trapped to be a debtor. In early days the climber climbing the tree was considered a stakeholder.

Landlords plant Palmyra palm; the yields are generally shared between the landowners and climbers. Such practices can improve their economy and nurture respectful life. But the present situation drops the rate of climbers. Forces them to

shift their livelihood. Many men and women work in factories for survival. Overall, they face problems due to *"Class struggle" "Industrialisation" and "Exploitation". "Workers of the world, unite! You have nothing to lose but your chains"* - Karl Marx.

Several activists within the community and outside have emerged in recent times. Their calls for revolution stressed their human rights and equal rights. Therefore, there is an immediate "need for interventions" from concerned authorities to disseminate knowledge about the existing schemes and benefits, skill development for improving their business.

The study has remarked the need for Community based Tourism as an intervention to play a transformative role in empowering Palmyra palm communities by strengthening their economic stability, social advantages, and cultural pride. It creates sustainable livelihood opportunities to the underprivileged communities. It provides additional job opportunities through homestay, tour facilitation, hospitality, handicrafts, export and import business, interpretation centre, food outlet and other tourism related services. The Communities indigenous cultural programs like Villupaattu, Therukoothu in form of tourism inclusivity fosters respect and recognition to the artisan. Tourists visiting the destination prevent structural damage of Palmyra palm-based heritage building and protect intangible heritage, such as Traditional Ecological Knowledge, folklore, and artisanal practices. Tourism promotes biodiversity conservation of Palmyra palm and species dependent on the tree through nature walk, camping and ecotourism activities. Tourism further preserves traditional crafts, vernacular artistic expressions and entrepreneurial talents, strengthening business skills and self-reliance. Overall, tourism involving the Palmyra palm community has become an appropriate approach for empowerment, sustainability and inclusive growth.

6.3.1 Awareness Camps on Available Schemes and Benefits

Government and organisations such as Kaadhi craft, Palmgur, Palmyra workers welfare board and Palmyra workers cooperative society have to create awareness about schemes and policies to all members of the village. In some cases, these middlemen who form a Sangam and lead the Sangam also take bribes from the people. Instead, a detailed video explanation and interpretation in local dialect for clear understanding of the local community can be recorded and screened in every village or the meetings of the middle men (Sangam head) has to be recorded and administered by the concern department. Only then schemes can reach the maximum members of people at the grass root level. Training, workshops and capacity building programs related to palm skills require massive marketing techniques to grab more participants. Disbursement of financial assistance, rewards and awards should reach out to the beneficiaries without any bias.

6.3.2 Skill Development Training and Capacity Buildings Programs

Skill development Training and capacity building programs related to Palmyra palm business and tourism need to be implemented among the local community in order to empower them as a stakeholder in tourism activity. Through tourism women can receive opportunities as craft artisan, culinary artisan, homestay operators and many more. Youngsters can be involved in managerial tasks such as facilitating tour, marketing and sales, coordinating with tour operators and tourists, operating tours and accommodation services. The community basically lacks in communication, tourism services and managerial skills. All these training needs to be provided by the government, NGO and Self-Help Groups.

6.3.3 Stakeholders Involvement

Community based tourism can involve NGOs, Activists, Self Help groups, Researchers, Central and State government, Rural Administrative officers, Village Administrative officers, Panchayat officers, local leaders. For developing tourism destinations, tourism entrepreneurship and active tourist flow several identified resources of the study have to be enhanced and maintained at proper intervals. The stakeholder’s cooperation and involvement are essential from planning stage to the

control stage to avoid decline stage of the destination as mentioned in Butler TALC Model.

Various stakeholders of the tourism industry consider the local community to be the biggest beneficiary with the benefits that accrue through infrastructure (Yaja, 2021). Need for community participation and empowerment of the local community as active stakeholders are discussed in chapter II. The ladder of citizen participation by Arnstein reinforces partnership, delegated power and citizenship control to avoid exclusion, encouraging genuine participation and generating social capital (Arnstein, 1969)

Even though local communities contribute Active involvement to showcase their culture, identity and practices, create unique experiences to the tourist in the form of creative tourism opportunities. Other Stakeholders can passively play a major role.

1. Service operators can be consultant.
2. Experts and Researchers can be invited to address the tourists during heritage or nature walk to disseminate their expertise.
3. Skill development training can be focused by Government and NGOs and Self-help groups.
4. Exclusive schemes and policies for developing tourism in these regions can be formulated by special departments.
5. Horticulture department and Rural development board: Can sign a Mou with College, NGO and Village administration for plantation and maintenance of Palmyra palm.
6. Kaadhi Crafts: Palmgur, a unit of Kaadhi craft, can identify unique artisans and fund them to learn new techniques from other states and countries. Also award or reward them publicly in the village to encourage similar artisans. These unique crafts can also be proposed for GI tags aggregation.
7. Palmyra workers welfare board should be able to voice out for Palmyra climbers with regards to their social and economic constraints.
8. The tourism department along with the housing department can design schemes

to support the construction of traditional Palmyra style architecture buildings and empower women of the community in running home stay, craft outlets and food outlets.

9. The tourism department can also promote the unique Palmyra palm routes as a circuit tourism route.

6.3.4 Tourism Infrastructure

The state had concentrated much on basic infrastructure and road transportation. Schemes such as Chief Minister road development scheme, Tamil Nadu road development improvement scheme and Chief Minister solar powered greenhouse schemes are the existing schemes that can scale up the tourism industry in rural villages. Further the rural villages lack toilet facilities, sanitation facilities and waste management facilities. If these issues are addressed the village can be designed to attract international tourists and would be standing as a testament to receive awards and recognition.

6.3.5 Community Based Rural Tourism Policy

The study reveals social, cultural and environmental resources relating to Palmyra palm are not enough to plan a community based tourism destination. The required facilities and amenities are essential to run tourism smoothly. Therefore, the tourism department should form an exclusive committee to work on community based rural tourism policy through understanding the people and place. These policies should limelight disappearing livelihood, artforms, crafts and ecosystem of Palmyra palm. Educational tourism and excursions can be encouraged in these villages. Palmyra tree connects countries of South and South East Asia. Cultural exchange program, comparative or collaborative research between countries can be added to the policy for a positive change. Tourism Policy (2023) have included Rural and Plantation tourism. Exotic plants like tea and coffee plantation are included in this policy but not native Palmyra palm.

6.3.6 Tourism Governance

For tourism to operate in the long run, the destination should ensure peaceful political and legislative conditions. Destination with political instability is less persuasive to develop tourism and to attract investors for investments. Tourism is deeply connected with power relations. Stories play a major role in creating the image of a tourism destination. Power relations can influence the creation and negligence of a story. Even though the state's political and legislative conditions are considerably better they do not favour the Palmyra palm community. Experts viewed their condition similar to the Irular community as shown in the film Jai Bheem. Therefore, tourists are unfortunate to rejoice toddy (natural beverage obtained from Palmyra palm) but their heritage stories, struggles and benefits can be highlighted to create awareness about the community and the rich beverage. Apart from these issues the destination will not face any hindrance for tourism development.

6.3.7 Actions Suggested for Development of Community Based Tourism

1. **Enhance Awareness on Policy Access**: Conduct village level workshops to educate local communities on existing government schemes (Namakul Namme Thittam: Self-reliant Scheme, Samathuvapuram Housing Scheme, MGNREGS, Indira Awas Yojana, License and Registration for Palmyra climbers) that improves livelihoods with financial and infrastructure development.
2. **Themed Tourism Circuits**: Design *Palmyra Creative Routes* aligned with schemes like Swadesh Darshan, PRASAD, and ODOP, connecting potential palmyra villages, artisans, Monuments, intangible heritage and natural landscapes. Create themed routes such as *Palmyra Palm & Coastal Heritage Trail/ Palmyra Sacred Route/ Palmyra palm Route Connecting Varied Landscapes/ Palmyra Circuit* Connecting Diverse Religions.
3. **Brand Awareness Campaigns**: Organise exclusive promotional drives showcasing *Palmyra Villages* as unique community based tourism destinations through storytelling, social media campaign, and roadshows. Obtain GI tagging and develop a USP for Palmyra tourism to reach it in national and international markets.

4. **Skill Development (Hunar se Rozgar)**: Empower community on skills related to hospitality, making and marketing handicraft, culinary arts, especially women and youth. Train community as tourism facilitators, homestays and transport providers and event managers.
5. **Palmyra Census**: Mapping tree populations, census of climbers and artisans to create a baseline for conservation.
6. **Palmyra Themed Homestays**: Design and construct artistic and ecofriendly homestays using palm products in interiors and exterior architecture, offering tourists authentic experiences.
7. **Community Government Partnerships**: Collaboration and partnership activity for tourism planning, revenue sharing, and conservation monitoring.
8. **Experiential tourism activity**: Demonstrate climbing technique, Karupatti making, Palmyra palm craft and value added edible products making sessions for visitors.
9. **Revive Cooperative Outlets**: Many cooperative outlets across the selling Karupati or Palmyra palm crafts are inactive. So, it is vital that these cooperative shops need to be reintroduced in modernised versions to benefit both local communities and tourists.
10. **Karupatti in Ration Shops**: Introducing Karupatti in the Public Distribution System (Ration Shops) will support the women engaged in making Karupatti, expand the market demand and raise awareness of its health benefits.
11. **Cultural Showcases**: Organising cultural programs such as Therukoothu(Street play), Madal erudhal, Spinning Maavuli, Villupaatu, Sports related to Palmyra palm and storytelling that are themed around Palmyra boosts tourist flow.
12. **Digital Documentation**: Archives traditional recipes, traditional cultural programs, traditional craft techniques, Palmyra ecosystem and relationship of species depend on the tree, traditional ecological knowledge, manuscripts, rare photos, sacred groves, songs, short stories and oral histories are needed to be documented to preserve palmyra legacy and to boost tourism interpretations.
13. **Films & Media**: Short documentaries on transdisciplinary benefits of Palmyra palm and a feature film on the struggles, skills, and heritage of Palmyra workers attracts niche tourism.

14. **Coffee Table Book**: Publish a high-quality visual book on *The Palmyra Palm: Heritage, Crafts & Communities*.
15. **Encourage Academic Writing**: Support researchers, travel writers, bloggers and cultural historians to publish work on Palmyra heritage, crafts and community.
16. **Palmyra palm App**: Develop a multi-stakeholder app with maps, booking services, product catalogues, academic connect, program happening details and cultural content.
17. **Human Rights Advocacy**: Address occupational hazards, fair wages, and social dignity of Palmyra workers within tourism narratives.
18. **Youth & Student Trails**: Organize *Palmyra Nature & Heritage Trails* for schools and colleges to build early awareness.
19. **Community Plantation Drives**: Involve tourists, NGOs, and schools in plantation drives.
20. **Voluntourism & Internships**: Offer social work, anthropology and tourism students hands-on projects in Palmyra conservation and tourism.
21. **Palmyra Interpretation Centre**: Develop a museum or Intrepretation centre showcasing products, tools, photographs and video documentation of transdisciplinary stories of palmyra palm and its legacy.
22. **Fruit Festival**: Celebrate a *Palmyra Palm Fruit Festival* with seasonal tasting, contests, and cultural performances to encourage innovative culinary artisans.
23. **Accessibility Measures**: Arrange transport shuttles connecting Palmyra themed tourism villages and other tourist hotspots.
24. **Vocal for Local**: Prioritize use and sale of locally made Palmyra products in all tourism destinations and in airports. Crafts from bamboo in interiors of Gauhati airport and crafts from Palmyra palm in interiors of Bali airport attract tourists and support local artisans. Tamil Nadu Airport interior can be considered for palmyra interiors.
25. **Cultural Exchange Programs**: Across the world South East Asian countries mainly, Indonesia, Thailand, Cambodia promote palmyra tourism. Products such as Tilang (Palmyra Hat), Sosande (Palmyra Musical instrument) are attracted by niche tourists. In India Raghurajpur Pattachitra painting, Tarpa (Musical

instrument of Warli tribes) are from Palmyra palm. Similarly, the study highlights unique crafts and practices that can attract niche groups. It is vital that cultural exchange programs between artisans, students, and researchers across states and countries with similar interests will integrate development of the community and preservation of its rich heritage.

26. **Memorandum of Understanding:** Memorandum of Understanding between South and South East Asian countries for comparative or collaborative research between countries involving Palmyra palm is essential for holistic development between the community and countries. Also, it may support integrated research and development.

6.4 Research Contributions

The philosophers have only interpreted the world in various ways; the point however is to change it - Karl Marx.

The Study aims to point out various discussions and interpretations as an outcome but not to end there. Analysing and findings of the study attempts to enable laymen and the government to understand the prospects and deprived conditions of the community. The maps, routes designed and the resources identified reduces the challenges for planning community based tourism in these villages. The opinion of the experts and the interest of the local community confirms their support. Several efforts, barriers and challenges are discussed in the study to conserve the tree, livelihood, socio economic conditions, cultural identity, tangible and intangible heritage associated with the tree supports the policy makers to effectively address and frame an appropriate one. This research suggests that community based tourism firmly supports their livelihood, eliminates discrimination and supports inclusivity of the destination.

To design a tourist destination basic infrastructure is vital (Drosos & Skordoulis, 2018; Yaja 2021). Many villages lack their basic infrastructure. Policymakers should critically look at these issues. Climbers and Artisans require recognition to improve social standards. Many of them do not fall under first generation practitioners but there is a high chance for them to be in the last

generation. Tourism may be their last opportunity to sustain their livelihood, legacy and landscape. Therefore, the study can lead to create awareness about tourism among communities, establish networks among stakeholders, initiate tourism projects and schemes, ensure standardisation of the products and services, assure spatial recovery of Palmyra palm, explore more value creation and authenticity.

6.5 Researcher's Note

There were some difficulties while collecting data during field visit due to remote destination. The distances between one destination to another was more and reaching the location was not possible without the support of the local community. Many forest department officers, NGO members and other volunteers have supported to reach these locations. Further seasonality played a major role during data collection. During seasonal time some climbers settle in different locations along with their family. The period of February to July is appropriate for identifying communities in their tapping location. But it is essential for a researcher to make arrangements for travel and accommodation beforehand.

6.6 Suggestions for Future Research

The finding of the study observed the need for several other researches that support tourism involvement in the destination. The study covered transdisciplinary topics of Palmyra palm briefly that are required for community based tourism development in these villages. The artisans, information, practices and routes identified are limited to the time phase. Each notion and dimensions of the study can lead to a separate study. The present study is explorative in nature. There is no actual tourism existing in the locations relating to Palmyra palm. Therefore, the study lacks to find tourist perception. The study approach can also be adopted for similar destinations in developing countries to sustain the livelihood and biodiversity of Palmyra palm.

Some of the topics underscored the vitality of the future studies are:

a. Case study of Palmyra palm tours: Stakeholders perception and opinion.
b. Tourist satisfaction on any designed Palmyra based circuit route.
c. Creative tourism and participation in Palmyra based activity.
d. Interaction between any species (Palm civet, Slender loris, Madras hedgehog, elephant, wild boar etc) in the Palmyra ecosystem.
e. Parasitic trees and Palmyra palm: Challenges for sustainable livelihood management.
f. Sentimental Analysis of Toddy tapping: A view of various stakeholders.
g. Integrating Palmyra palm in urban exterior architecture.
h. Disappearing Palmyra palm crafts and artisans.
i. Role of Palmyra palm in indigenous architecture and art forms of Tamil Nadu.
j. Integrating Palmyra crafts in interior architecture.
k. Incorporating Palmyra palm into modern confectionery and bakery products.
l. Commercialisation and Standardization of Palmyra palm products.
m. Palmyra palm products in traditional cuisines.
n. Study on Innovative value-added edible and inedible Palmyra palm products (Health care, Textile, Beverages, Sweets, Crafts, Interiors and Furniture).
o. Palmyra palm plantation and ecological sustainability.

6.7 Conclusion

Tourism being one of the prominent industry that achieve Sustainable Development Goals, still lacks the ability to involve the community to actively participate in tourism activity. In recent years concepts, schemes and policies like *Inclusive tourism, Tourism for all, Vocal for Local, Make in India, Swadesh Darshan, Heal in India* and so on were introduced to strengthen community involvement and inclusive growth. Many critics have brought to the forefront the crucial need for community based tourism. Community based tourism is necessary to involve and reward them for their socio-cultural stewardship. The experience of the tourist received from the community cannot be commodified or purchased in another destination. Each community and their practices are unique to their location. The present study aimed at documenting the living heritage of Palmyra palm and its belonging community. Several literatures served as supportive material to understand about the transdisciplinary avenues of the Palmyra palm. The community viewed the tree as "*Sanction of solace" "god" "brother*" "one among my family" "*child."* Fascinatingly some even named the tree. The community shared many inspirational stories that turned their pain into power. Therefore, the study approaches tourism as a catalyst to play a role in transforming the standard of community. It aims to empower communities from margin to mainstream by creating equal opportunity in tourism.

Firstly, the study identifies potential locations of Palmyra palm. The locations are classified as tapping location, craft villages, Market place where the products are sold and tree veneration locations. The most concentrated locations were identified as clusters which support the design of the routes. Among the routes two routes were practically executed. Many activists and NGO groups are working along with support of government and volunteer groups to recover the count of Palmyra palm and support the community to overcome poverty. They provide financial benefits for education, health care and other basic needs but they do not find any alternative solution to overcome their living conditions. When the approach of community based tourism is discussed, experts have viewed it as a need for action to uplift the community, reduce social barriers and inequality, create additional livelihood opportunities, develop skills and build capacity to provide tourism services and

safeguard Palmyra biodiversity and ecosystem. Therefore, the study witnessed to satisfy the Sustainable Development Goal no: 5,6,10 & 15.

The study employs local communities to rate their conservation efforts, identify their resources to develop tourism in their village and express their interest in participating in tourism activity. The study observed overwhelming responses from the community and the community expressed their interest in participating in the majority of the tourism activities as service providers. That includes social entrepreneurship and grass root level involvement of the community to create identity. The new opportunities developed through tourism can prevent exploitation of the tree and the community. The community's local economy is closely related to their traditional climbing skills, traditional artistic skills, preparation and preservation of local food and preservation of tangible and intangible heritage. These are the attractive factors to drive tourists and engage the community. The design and services cannot separate the community. Therefore, the community has the potential to become a brand, landmark and Unique selling proposition of the district. This influences not just the visibility of the village image but also the community across the country. This approach requires support from various stakeholders of the region like NGOs, SHGs, volunteer groups, Palmyra palm welfare board, Palmgur, Forest department, Horticulture department and other government organizations. It is now the task of policymakers and supporters to improve and upgrade the standard of the community, social fabric, sustainable livelihood and Palmyra palm ecosystem

Dear Palmyra,

You are not just a tree

you let our fear free

You are an emotion

The blessing to our nation

You are a factory

sowing you is mandatory

You saved us from disaster

leaving humans with laughter

You provide shelter to species

that nest, eat and flees

You are believed as a god

To save you the community nod

Your deeds are plenty

without you we are empty

You're enjoyed by many

to replace you, is there any?

- Preethi Hari Babu

APPENDIX- I
SCHEDULE

Community Based Tourism for Conservation of Palmyra Palm in Southern Tamil Nadu

This study is undertaken as a part of the Doctor of Philosophy (PhD) research. The study intends to know about the community empowerment and conservation of native tree Palmyra palm through Community Based Tourism (CBT) in Southern Tamil Nadu. The information provided by you will be strictly used for academic purposes and will not be shared with others or not be used for commercial purposes. Your participation in this project will involve answering a set of questions in the survey form with a time estimation is approximately 20– 30 minutes. Your kind cooperation is highly solicited.

Thanks and Regards,

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Profile of Respondent

a) Age:
b) Gender: Male Female Other
c) Location (Village Name):
d) Marital Status: Married/ Unmarried/ Separated/ Divorce
e) Monthly Income (In INR):
f) Education qualification:

□ No Formal Education
□ Primary
□ Secondary
□ Diploma
□ Graduate
□ Post Graduate
□ Above Post Graduate

g) Duration of tourist visiting the destination

□ Day visitor
□ 2 Days
□ 3 Days
□ More than 3 Days.

h) Type of tourist

□ Regional
□ Domestic
□ Foreigner

i) Activity involved by tourist

□ Interaction with the community
□ Purchasing local products from the community.
□ Volunteering
□ Visiting as a transit destination
□ Any other specify_____

Section B

Kindly rate the conservation efforts taken to conserve Palmyra palm in your community.

Please indicate your response; (1= Strongly Disagree, 2= Disagree, 3= Neutral, 4=Agree 5= Strongly Agree).

Sl.No	**Activities**	**1**	**2**	**3**	**4**	**5**
1.	In our area, we are aware of the conservation of Palmyra palm.					
2.	In our area, we are proactively involved in sowing of Palmyra seeds.					

Sl.No	Activities	1	2	3	4	5
3.	We raise awareness on the benefits of the Palmyra palm in our area.					
4.	We conserve Traditional Ecological Knowledge					
5.	Government in our region regulate and monitor cutting of Palmyra trees					
6.	In our village, we worship the Palmyra palm as a God or association with the Tutelary God.					
7.	In our village, we use products from Palmyra palm for worshiping.					
8.	In our village, we celebrate festivals associated with Palmyra palm.					
9.	In our village, we use products/ bi-products made from Palmyra in marriage/ events to showcase our culture.					
10.	In our village, we preserve Palmyra leaf manuscripts					
11.	In our village, we are aware of artifacts and historical locations associated with Palmyra palm					
12.	We produce value-added Palmyra palm products in our region.					
13.	Power disparities and internal conflicts among communities are found in our region					
14.	Local communities in our region are willing to engage in toddy tapping.					
15.	Local communities in our region engage in a variety of Palmyra craft activities.					

Sl.No	Activities	1	2	3	4	5
16.	In our region tappers protested for revocation of banned toddy.					
17.	Local community in our region engages in skill development training offered by Government/ Society/ NGO.					
18.	Palmyra climbers or Palmyra artisans in our region receive a loan/ subsidy provided by the government.					
19.	Palmyra climbers or Palmyra artisans aged above 60 in our region receives pension provide by government.					
20.	NGO / NPO play a major role in sustaining livelihood of Palmyra palm community.					
21.	NGO / NPO / social activists play a major role in sustaining societal problems of Palmyra community.					

Authority of fixing: Design, Price and Marketing strategy

Sl.no	Items	Self	Consultant / Agent	Government
1.	Who designed the products/ bi products/ bi- products made from Palmyra palm?			
2.	Who markets the products/ bi products/ bi- products made from Palmyra palms that you sell?			
3.	Who sells the products/ bi- products made from Palmyra palm for you?			

If you sell your products made from Palmyra palms through a consultant, agency, or agent, state the following: _____

Section C

Kindly share your responses on resources available at your destination for development of community based tourism.

Please indicate your response; (1= Strongly Disagree, 2= Disagree, 3= Neutral, 4=Agree 5=Strongly Agree).

Sl. No	Questions	1	2	3	4	5
1.	Palmyra artefacts are relatively common in our village.					
2	Pilgrimage Palmyra centres have advantages.					
3	Variety of historical Palmyra sites.					
4	Capacity for developing unique Palmyra theme-based village.					
5	Rich Palmyra Biodiversity and Species.					
6	Well known tourist attractions.					
7	Palmyra cuisines are nutritious and delicious to attract tourist.					
8	Festival aids in promoting and developing tourism.					
9	Palmyra palm craft stores.					
10	Homes constructed using Palmyra palm leaves, petioles, rafters.					
11.	Women are empowered in this village.					
12	Favourable political conditions.					
13	Favourable legislative conditions.					
14	Collaboration and cooperation with various stakeholders.					
15	Police treating Palmyra climbers with respect.					
16.	External agents play a passive role in decision making.					
17.	The village has basic infrastructure amenities.					

Sl.No	Activities	1	2	3	4	5
18	Cleanliness and hygiene are prioritized.					
19	External agents play a passive role in decision making.					

Section D

Kindly share your interest on developing Community based tourism approach involving local community participation and

Please indicate your response; (1= Strongly Disagree, 2= Disagree, 3= Neutral, 4=Agree 5= Strongly Agree).

Sl.No	**Activities**	**1**	**2**	**3**	**4**	**5**
1.	Local communities are interested in participating in tourism and receiving tourists to our village.					
2.	Local communities are interested in hosting tourists by providing Homestay.					
3.	Local communities are interested in providing exclusive Palmyra palm home-made food to tourist.					
4.	Local communities are interested in teaching tourists about Palmyra palm craft/ Palm climbing / Products made from Palmyra Palm.					
5.	Local communities are interested in taking tourists for a nature trail and explain about the Palmyra biodiversity.					
6.	Local communities are interested in providing awareness on palmyra palm to the tourists.					
7.	Local communities are interested in learning skills related to Palmyra palm.					
8.	Local communities are interested in exhibiting local culture and tradition to tourists.					
9.	Local communities are interested in facilitating and guiding tourist/ historical trail to our region					

Sl.No	Activities	1	2	3	4	5
10.	Local communities are interested in organizing and planning tours based on Palmyra palm.					
11.	Local communities are interested in taking up initiative and leading the team.					
12.	Local communities are interested in organizing the Palmyra Palm plantation drive.					
13.	Local communities are interested in working in a group for collective wellbeing.					
14.	Local communities are interested in looking after and selling Palmyra product in a shop					
15.	Local communities are interested in exporting.					
16.	Local communities are interested in managing a Interpretation Centre/ Museum					
17.	Local communities are interested in teaching climbing methods or craft techniques to the tourist.					

Interview questions to the local community.

1. What is your opinion on toddy?
2. What are the species found in Palmyra biodiversity?
3. What are the special rituals associated with Palmyra palm?
4. How significant your destination is associated with Palmyra palm.
5. How long have you been involved in palm related work _____.
6. Did your ancestors engage in Palmyra palm based work? (Yes/ No)
7. How many members in your community are involved in Palmyra palm based work_____.
8. Do you impart knowledge of Palmyra palm work to the next generation? (Yes /No).
9. What are all the raw materials you export?
10. What products do you make from the raw Palmyra palm?
11. Do you belong to any associations or groups? If so, state the name of the organization or group _____.
12. Do you possess a license to climb Palmyra palm trees?

13. Share some insight of Traditional Ecological Knowledge on Palmyra palm.
14. What is your view on tourism?

Thank you for taking the time to complete the survey!
We appreciate your time and willingness to share your opinions.

APPENDIX–II
SCHEDULE INTERVIEW

Community Based Tourism for Conservation of Palmyra Palm in Southern Tamil Nadu

This study is undertaken as a part of the Doctor of Philosophy (PhD) research. The study intends to know about the community empowerment and conservation of native tree Palmyra palm through Community Based Tourism (CBT) in Southern Tamil Nadu. The information provided by you will be strictly used for academic purposes and will not be shared with others or not be used for commercial purposes. Your participation in this project will involve answering a set of questions in the survey form with a time estimation is approximately 20– 30 minutes. Your kind cooperation is highly solicited.

Thanks and Regards.

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Designation: **Date:**

Nature of Work:

Experts Opinion on Developing Community Based Tourism

Interview questions asked to the Experts

1. What are the prominent locations of Palmyra palm?
2. What is the unique offering of these locations to promote tourism?
3. Have you organized any plantation drives? Are there any initiatives taken for spatial recovery of Palmyra palm?
4. Are there any existing policies or Government Order to regulate Palmyra palm count?
5. What is the role played by your organization/ as an individual to conserve and restore Palmyra palm?
6. What are the steps taken to eradicate the social issues of the community depend on Palmyra palm for livelihoods?
7. Do you provide any support to the community depend on Palmyra palm for livelihoods. i.e. (promotional support, machines, pension, benefits from license etc)?
8. Do you provide any financial assistance to the community depend on Palmyra palm for livelihood?
9. Were there any steps taken to revoke the toddy ban?
10. Were there any initiatives taken to uplift women of the community?
11. What are the steps taken by your organization to support the Palmyra palm community to sell their products (food and handicrafts)?
12. What is the step taken to minimize adulteration?
13. Are you interested in participating in tourism?
14. What are the barriers faced during empowerment of the local community?
15. What are steps taken to export Palmyra products?
16. Suggest required steps to curate Palmyra palm tourism involving local communities in your region.
17. Suggest required steps to develop community based tourism destinations to sustain livelihood of Palmyra trails.
18. Suggest required steps to engage and empower local community in Community based tourism activity.

APPENDIX–III
PHOTOS TAKEN DURING THE STUDY

1. Palmyra Safari organised in Kanyakumari on 29 Jan 2023, and Thinathandhi News article reflecting the event.

2. Photos taken during Palmyra Safari: Tourist, food served in Palmyra palm leaves, Thadagai forest cover, Puthalam Church and Nungu vandi (Ice apple trolley)

Photo courtesy – Gio Shravan

3. Palmyra Trail organised in Kanyakumari on 15 April 2023, and Express News Service article reflecting the event

Home › States › Tamil Nadu

'Palmyra trees plays pivotal role in binding communities'

Palm tree workers welfare board members Godson Samuel and Anto Brighton, palmyra-tourism research scholar Preethi, and a few other activists were part of the tour.

By S Godson Wisely Dass
Express News Service

THOOTHUKUDI: In a country as diverse as ours, the steadfast unity among communities stems from various factors. Going by findings of a recent tour through the district by activists, the unassuming but dense palmyra groves also play a part in ensuring harmony among communities.

4. Photos taken during Palmyra Safari: Tourist, recitations of the Quran on Palmyra leaves, Intricated art work, Pot Karupatti, Karuppati making area and Testing brick value

5. Palmyra Fruit Festival 2022, organised by Aetram Commune, Palmyra Mission and Madras School of Social Work

6. Palmyra Palm Functional, Decorative and Value-added Crafts

7. Palmyra Palm Association with God: Along with Tutelary God, Inside the temple premises as Thala Maram and single standalone tree.

8. Festivals associated with Palmyra Palm: Maavuli, Christmas and Pongal

9. Palmyra Palm biodiversity: Parrot, White bellied Sea eagle, Nest of Baya weaver, Palm Swift

Photo courtesy – Raveendran Natarajan

10. Products from Palmyra palm: Nungu (Ice apple), Panankilangu (Roasted Sprout)

11. Palmyra Community: Climbers, Traditional Artisans and Self Help Groups

12. Invited to Present a Talk on Palmyra palm in Makkal Tv

13. Comparative research between India and Indonesia with respective to the community depend on Palmyra palm for their Livelihood

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BIO DATA

1. Personal Information

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Nationality: Indian
Languages Known: Tamil, English, Hindi

2. Professional Summary

Experienced academic professional with three years of teaching experience across various colleges in Tamil Nadu and four years of research experience. Specialized in environmental conservation, sustainable tourism, and community-based biodiversity preservation. Collaborated with multiple organizations to design and lead Natural and Heritage Trails.
Currently pursuing doctoral research on conserving the biodiversity of the Palmyra palm and supporting local communities in Tamil Nadu through rural tourism. Previous research explored the role of sacred groves in cultural and ecological conservation. Recognized for innovative ideas, cross-sector collaboration, and a deep commitment to sustainable development and Indigenous knowledge preservation.

3. Work History

Position & Department	Institution	Duration	Location
Ph.D. Research Scholar,Dept. of Tourism & Hospitality Management	Mizoram University	Aug 2021 – Present	Aizawl, India
Assistant Professor Dept. of Tourism &	SDNB Vaishnav College for Women	Jun 2021 –Aug 2021	Chennai, India

Travel Management

Assistant Professor Dept. of Tourism & Travel Management	D.G. Vaishnav College	Dec 2019 – May 2021	Chennai, India
Visiting Faculty – Dept. of Culinary Arts, Hotel Management, De-Novo Courses	Dr. MGR Educational & Research Institute	Oct 2019 – Dec 2019; Sep 2020 – Dec 2020; Aug 2021	Chennai, India

4. Educational Qualifications

Ph.D. (Tourism and Hospitality Management) – Pursuing, Mizoram University.
M.B.A. (Tourism), Pondicherry University, 2019
B.A. (Tourism and Travel Management) | University of Madras | 2017

5. Additional Qualifications

Qualified National Eligibility Test (UGC NET) – June 2019
Qualified National Eligibility Test (UGC NET) – December 2019
Qualified National Ability Test for Architecture (NATA) – May 2014

6. Research Interests

Sustainable Tourism Development
Community-Based Tourism for Conservation
Cultural Heritage & Indigenous Knowledge Systems
Biodiversity Preservation (Focus on Palmyra Palm Ecosystem)
Sacred Groves & Ecological Conservation

7. Skills

Academic Research & Field Studies
Curriculum Development & Teaching
Heritage Trail & Ecotourism Program Design
Stakeholder Collaboration & Community Engagement
Data Collection & Analysis
Public Speaking & Academic Writing

8. Achievements & Contributions

Organized Palmyra Safari in Kanyakumari in along with the District Forest Department.
Conducted Palmyra Trail in Thoothukudi district with Abati and Palmyra Mission.
Coordinated Palmyra Fruit Festival, involving the local community of Panangad, Palmyra Mission, and MSSW Chennai.
Organized Palmyra Dream Festival in 2023 & 2024 as part of the core committee.
Designed and led Natural and Heritage Trails with NGOs and government bodies.
Published research on Sacred Groves and Cultural Conservation.
Presented papers at national and international conferences.
Contributed to projects integrating sustainable tourism practices with community welfare.

9. Awards & Recognition

Best Research Paper Award – Second Place, National Seminar, Department of Tourism and Travel Management, JBAS College, Chennai, 27 Dec 2024.
Best Outgoing Student (2017) – Department of History, Tourism and Travel Management, Ethiraj College for Women, Chennai.

10. Publications

Heritage Trail Involving Palmyra Palm Community in Tamil Nadu – Atna (UGC CARE list), January 2025.
Tree worship and conservation practice in temple ecosystem: Reference to Palmyra palms. -International Journal of Current Humanities and Social Science Researches, August 2025
Sacred Grove of Keelputhupet and Thenambakkam – IGI Global (SCOPUS listed), 2023.
Kazhuveli Wetland – Yatra Magazine, Pondicherry University, 2019.
Sacred Groves – Poem in Yatra Magazine, Pondicherry University, 2020.

11. Papers Presented

Vernacular Architecture and Mural Art of Aranmula – National Student Seminar, Ethiraj College, 10 Mar 2025.
Heritage Trail Routes Involving Palmyra Palm Community of Tamil Nadu – National Seminar, JBAS College, 27 Dec 2024.
Palmyra Palm Temples and Stand-Alone Trees of Tamil Nadu – International Seminar, Mizoram University, 10 Mar 2024.
Augmenting Circuit Tourism Routes Involving Palmyra Palm Community – International Conference, Mizoram University, 5 May 2023.
Palmyra Palm Dream Festival – National Conference, Mizoram University, Mar 2023.
Indigenous Architecture and Art Marvel of Kerala – International Conference, Alagappa University, Aug 2019.

12. Invited Talks & Workshops

Workshop on Zine Making – Yuva Tourism Club, 25 Jan 2025.
Lecture: Sustainable Business Opportunities in Hospitality Industry – Dr. MGR University, 24 Dec 2024.
Talk: Sustainable Community-Based Tourism – Yuva Tourism Club, SDNB Vaishnav College, 25 Jan 2024.
Talk: World Tourism Day – Ottiyambakkam Government School, 27 Sep 2023.
Talk: Palmyra Palm Heritage – Thisaikoodal THFi, 2022.
Workshop: Resource Mapping – Heritage Club, SDNB Vaishnav College, Oct 2022.
Talk: Responsible Tourism – Iragugal Amrita Nature Trust (IANT), 2022.
Lecture: Livelihood Opportunity through Palmyra Handicrafts – Women's Christian College.
Talk: Sacred Groves – Museum Day Celebration, THFi, 2021.

13. Travel Profile

India: Visited 16 States/UTs including Manipur, Mizoram, Assam, Sikkim, and Meghalaya.
International: Visited Indonesia for a cultural exchange and research program supported by East Nusa Tenggara Tourism Department, Universitas Nusa Cendana, and World Christian Council.
Research Focus: Studied livelihoods and cultural similarities of Palmyra Palm communities in Bali, Kupaung, Rote, Sabu, and Jakarta.
Outcome: Shared findings with UNDP officers in Jakarta.

ALAGAPPA UNIVERSITY

:redited with A+ Grade by NAAC (CGPA:3.64) in the Third cycle, Graded as Category - I University and Granted autonomy by MHRD-UGC,
2021: NIRF-33, 2022: QS India Rank – 20, QS Asia Rank - 220
Karaikudi – 630 003, Tamil Nadu, India

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Certificate of Participation

This is to certify that Ms.PREETHI H, Research Scholar, Tourism And Hospitality Management, Mizoram University has participated in **"TWO DAY ONLINE NATIONAL WORKSHOP ON DATA ANALYSIS USING AMOS, PLS-SEM & E-VIEWS"** sponsored by ICSSR-SRC, Hyderabad and organized by Alagappa Institute of Management, Alagappa University held on 19th & 20th December, 2022.

Dr. M. AYISHA MILLATH
Workshop Director

Prof. S. RAJAMOHAN
Registrar i/c

International Journal of Current Humanities and Social Science Researches (IJCHSSR), [S.l.], v. 9, n. 2, Jun 2025. ISSN 2456-7205. Available at: <http://www.indiancommunities.org/journal/index.php/ijchssr/article/view/262>.

Tree Worship and Conservation Practice in Temple Ecosystem: Reference to Palmyra Palms.

Preethi H[i] & Rajesh Ramasamy[ii]

Abstract

In Tamil Nadu, palmyra palm is being worshipped by the local community in association with the concepts of tree veneration, sthala vriksham and in connection with tutelary god or local deities (demigods). The related literature has been collected from different key variables on topics such as sacred grove around the globe, myths, taboos and religious beliefs, conservation of sacred grove, importance of palmyra palm, palmyra palm sacred groves, role of wellness tourism circuit and stakeholders' involvement to sustain and improve the state of sacred grove and local communities. This paper strives to bridge the gap between the concept of palmyra palm sacred grove and misconception of beliefs and practices through detailed Participatory Research Approach. Qualitative data have been collected through unstructured interviews and are analyzed through thematic content analysis tools. The analysis reveals a map portraying potential palmyra palm sacred groves. Subsequently, the study suggests the roles of stakeholders to sustain, conserve and promote palmyra sacred grove as a wellness tourism circuit. Further, the significance of palmyra palm sacred grove, the problems and prospects of promoting palmyra palm sacred grove as a wellness tourism circuit through stakeholder participation are traced to design a framework model.

Keywords: Palmyra Palm, Tree Veneration, Cultural Practices, Scientific Benefits, Religious studies.

Introduction

Tamil Nadu has Tropical Dry Evergreen Forest with humid rainfall covering 1.10% of tribal population (Indian State of Forest Report, 2019). Worshipping Sacred Groves and Tree veneration found its existence all over the world. Sacred Grove or sacred tree is considered as God or abode of a particular deity. As with most cases, the folklore includes myths and taboos associated with these groves along with the rich stories and tradition. In many sacred groves the natural forces like rain, sunshine and agriculture are envisioned as divine power (God) and worshiped in the form of Animism. The statue looks ferocious and some have weapons in their hands. Several animals' statues were also erected paving way for the local community to live in discipline. (Krishnan, 2004).

These groves provide shelter to animals, reptiles, birds, geckos, mammals, butterflies and other species and also to several endemic species that are in the endangered list. Sacred Groves are generally undisturbed by human interaction. IUCN red list species are closely related with Sacred groves species (Woods et al., 2020).

In addition to the mythological aspects, these forests have great social, cultural and economic importance. People depend on these forests for their livelihood and most of their customs and traditions revolve around it. Forests also greatly promote folk arts/lore. The role of Sacred Groves lies in shaping up the local culture/ traditions/ lifestyle, it is imperative at this point of time to safeguard these forests for a variety of reasons like protecting biodiversity, cultural ecology, medicinal reasons and also to protect ourselves from several disasters (Singh et al., 2017; Preethi & Rajesh, 2023).

But today, urbanization and commercialization of temple property have taken a toll on these Sacred Groves. Today, people mainly visit these forests just to offer their prayers.At this time, we are in the stage of degrading such forests and also have lost the rich heritage associated with them. Thus, this study portrays fast disappearing Palmyra sacred Groves being worshipped as a sacred tree, also serves as a sthala vriksham in many shiva temples and traces its associated with other local deities. In addition to this Palmyra palm products are also offered for worshipping (Samuel, 2019).

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On the other hand, Global wellness institute (2013) defines wellness as a "modern word with ancient roots." And wellness tourism as "travel associated with the pursuit of maintaining or enhancing one's personal well-being". Smith (2022) defines wellness as "the path to achieving well-being, a path that includes physical, mental, and spiritual health, self-responsibility, social harmony, environmental sensitivity, intellectual development, emotional well-being, and occupational satisfaction". Frances (2016) describes wellness tourism as "the need of spirituality to counter materialism" and "experiencing a revival in modern life".

Amirthalingam (2016) proclaims that many Sacred Groves with cultural and biological and medicinal value are now in greater distress. The study focuses on the importance of worshipping the Palmyra palm sacred grove. Promotion of these groves as a wellness tourism circuit involves local community participation to witness the result of increased green cover along with the restoration of declining cultural heritage.

Rationale Of The Study

The two main propositions of tourism that have high potential in Tamil Nadu are its rich cultural heritage and immense natural beauty. Tamil Nadu is a country with different ethnic groups each with their distinctive lifestyles and enchanting traditions. There are certain communities associated with Palmyra palm and still reverentially believe that the groves or a Palmyra tree is divine and worship them. In fact, modern research has also been carried out in them for advancements in various realms of science like medicine, geology, etc. On the other hand, most of these groves are at the verge of extinction.

Yet, scant attention is given to its preservation, mainly because of the lack of awareness. In this backdrop, this research brings out the extraordinary potential of the selected Palmyra palm Sacred Groves in Tamil Nadu that has the potential to be developed as a wellness tourism circuit targeting nature and culture enthusiasts, researchers, pilgrims, food lovers etc.

Objectives Of The Study

- To map potential palmyra palm sacred groves in Tamil Nadu
- To identify the significance of the palmyra palm sacred groves in Tamil Nadu
- To develop a framework/ model for establishing and promoting palmyra palm sacred groves as a wellness tourism circuit in Tamil Nadu.

Review of Literature

Sacred Grove- overview

Sacred groves have been in existence since the paleolithic stage (Gadgil and Vartak, 1976). Sacred grove worshipping is traced in many continents of the world like Asia, Africa, Europe, Australia and America. Totally 14,000 sacred groves are recorded in India by C.P.R Foundation (Amirthalingam, 2012) WWF, Andhra Pradesh (1996) identifies 677 sacred groves among 13 districts. Sharma et. al. (2014) reports 60 sacred groves in Jammu and Kashmir. C.P.R. Environmental Education Centre (2016) stated 1476 in Karnataka. Sathe et.al. (2017) observes 2808 sacred groves in Maharashtra. Amirthalingam (2012) reports 1275 sacred groves in 31 districts of Tamil Nadu. In Tamil Nadu every community god is associated with the tree.

Myths, Taboos, beliefs and Religious Practices

Local deities have been installed having rude and ferocious faces carrying weapons; there were no artificial boundaries or fences (Ramanujam and Cyril, 2003). Cutting trees or killing an animal in that sacred area or disrespecting the deity are strictly banned, grazing animal is prohibited, gender restrictions are practiced, generally women are debarred entering grove but in Europe confines men from entering some grove, social divides are followed, some weapons, footwears are also restricted (Krishnan, 2004). On the other hand (Manjula & Norman, 2017) states that cultural aspects of sacred groves, the belief system, traditional practices and taboos play an important role in protecting and sustaining the grove, people believe that if a sacred grove is ruined it will result in causing disease or disaster.

Some festivals are described in epigraphy. Thiruvettai (sacred hunt) and "VasanthaThoppu" Divine Forest Festival have been celebrated between March and June since the 16th century by the Tuluva Dynasty. "Thi-

ru Thoppu" is a festival celebrated by the Vijayanagara empire to preserve the respect towards the groves. Similarly, "they attam", "pambu thullal" the late-night dance is commonly performed by women in Kerala (Ramanujam and Cyril, 2003; Krishnan, 2004). It is also observed that medicinal plants are identified along with religious beliefs. Importantly, some species are considered to be animist. (Kandari & Bhardwaj, 2016).

Tree veneration and Sthala vriksha

Tree veneration is closely associated with sacred grove as a practice of considering trees as divine or sacred. In many parts of the country, trees are connected with sacred graveyards, tombs or shrines and believed to have super power to heal their disease and also to punish humans when they repeat mistakes (Dafni, 2011). Gooty Bailu Village of Anantapur district dedicates sacred grove to a woman who committed sati and worshipped as goddess Thimmamma Mari in the form of banyan tree (Rao, 1996). The word Sthala vriksha derived from Sanskrit word 'Sthala' refers to location and 'Vriksha' refers to tree. Trees that have medicinal values gained spiritual importance thus statues are erected for worshipping along with the statues, trees are also worshipped. If a tree dies it will be replaced by a sapling. (Prabhakaran & Lakshmi, 2017).

Sthala vriksha is considered as a monumental tree that belongs to a specific historical temple in India. Sthala vriksha provides social, economic, medical and environmental benefits. Residents believe that worshipping such trees heals them from disease. Thus, the concept of sthala vriksha and tree veneration helps in sustaining the grove or species (Raja et al., 2021). Aanmeegam (2020) reports Palmyra palm is found to be sthala vriksha in nine shiva temple that are located in Thiruppanandal, Tiruppurawar panangatur, Tiruppanayur, Thirumalabadi, Thiruvothur, Thiruvanparthan panangattoor, Thiruvalampuram, Tiruppalaithura, Thirukannapuram. These hotspots are chosen by saints, siddhars considering its rich medicinal benefits.

Importance of Palmyra Palm Sacred grove

Palmyra Palm trees trace its existence along with humans. 801 benefits of Palmyra palm are described in the book Tala Vilasam written by Arunachalam. Palmyra palm is considered to be Panjam Pokki, Karpaga Tharu believing the tree is sacred and worshipped by many communities of Tamil Nadu (Krishnaveni et al., 2020). Palmyra tree is divided into male and female trees in equal ratio and edible products like immature endosperm, mesocarp pulp, and tuberous seedling are witnessed only in female trees (Panda et al., 2021).

Palmyra fruit is rich in anthelmintic, diuretic, antioxidant and antibacterial, immunomodulatory, and antimalarial properties. Neera is a rich anti oxidising agent. Leaves contain phytochemicals. Other parts of palmyra are used to treat heart burns, skin disease liver and spleen, indigestion etc. (Jerry, 2018). Polymeric compounds such as "pectin, cellulose, hemicelluloses, pentosan polysulfate, polyphenols, and lignin" (Selvakumar, 2021). Palmyra palm is also used to treat diabetes.

Several species reside in Palmyra palm; interestingly, Slender Loris, a primitive species of Tamil Nadu, is listed as endangered species by IUCN, commonly found in Erode and Dindigul region observed to be residing in Palmyra Palm. Thus, joint initiative was taken to plant Palmyra palm trees on 8th October 2018 by Seeds Trust, Palmyra Nation, Arulagam and Tamil Nadu Forest department aiming to protect vulnerable slender loris (Samuel, 2018). In India, Thailand and Cambodia palmyra palm is cultivated near to agriculture land, riverbeds and to the border of water bodies to avoid soil erosion. Palmyra palm gains cultural, social, medical, economic, environmental and historical importance. It further endows its reputation to be the National Tree of Cambodia, and the State tree of Tamil Nadu. (Nagarajan, 2015; Shrikumar, 2018).

Transformation of Sacred Grove

The process, transformation of sacred grove to huge temple complexes is further classified the stages as (1) a huge idol was kept uncovered which is open to sky and (2) sanctum (shield) is constructed then the other idols are erected (Hughes and Chandran, 1998).Religious beliefs and taboos which helped in protection of the grove could not sustain these groves and trees in recent era due to human disturbance, change in social setup, attitude of the people and modern education system (Rao, 1996). Changing attitude is the main cause for attrition of traditional beliefs (Gadgil etal., 1998). Amirthalingam (2016) strongly believes modernization as a cause of drastic transformation from unstructured stone to a temple structure leading to destruction of several indigenous species and the forests are observed in sacred groves of Tamil Nadu.

Conservation of sacred grove

Sacred groves or sanctuaries are considered as the first worship place of God along with vernacular conservation in the tribal belt enjoying its rituals and rituals (Malhotra et.al. 2000). Sacred groves are helpful for conservation of living organisms as it serves as a shelter for several birds and mammals to nest, breed, and rest (Krishan, 2004). Ray et.al (2014) laid the foundation for conservation of sacred groves addressing its ecology and ecosystem.

Ramanujam and Kumar (2003) proclaim conservation as an integral part of culture that results in aboriginal people worshipping nature throughout the world. Today conservation is much needed as man is out of his need and greed wiping out the forest completely. Thus, sacred groves are also considered as a tool for protecting and conserving nature and medicinal plants (khan et al., 2008).

Role of tourism and stakeholders' involvement

Sacred grove tourism drives biodiversity conservation by providing recognition to Aboriginal communities. Also, it engages local communities to plan and develop community-based ecotourism within the grove, promotes grove as a unique tourism product without degrading and protects traditional knowledge (Adeyanju et.al. 2021).

Ezenagu et.al. (2022) designs a faith-based tourism product from selected sacred space of south western Nigeria that fosters visitors to experience the efficacy of pilgrimage activities and r
itual performance also finds challenges to promote tourism due to overcrowding, insufficient infrastructure, increase crime rate, poor maintenance of heritage place, commercializing sacredness and seasonality further suggests ways to overcome challenges and generate positive impact through active stakeholders participation.

Pandey et.al. (2021) manifest the best practice of sacred grove conservation and restoration to sustain its originality are achieved through involving stakeholders at all levels.It is absolutely necessary to adopt integrated sustainable practices involving the local community to conserve flora, fauna, medicinal plants, traditional culture and biological heritage of sacred groves (Manna & Roy, 2021). The Ministry of Tourism, Government of India (2022) launched the scheme "Swadesh darshan" in the year 2014-15, An Integrated Development of Tourist Circuits around Specific Themes. Wellness and spiritual circuits are one of the listed themes.

Scope of the Study

This research helps to understand the historical, ecological cultural and medical importance of the Palmyra palm sacred grove as well as the need for preserving the same for posterity by gauging how far tourism can play a proactive role in ensuring its protection also to enhance the awareness levels of the various stakeholders configuring the public sector, NGOs, local population, historians, and ecologists. Palmyra palm sacred groves are associated with rich medicinal value and are shelters to several species that are now on the verge of extinction.

The practice of worshipping palmyra palm is observed in Tamil Nadu along with Lord Shiva and other the local deities or tutelary god. There are very few studies found on palmyra palm sacred grove and study found missing connecting palmyra palm sacred grove and tourism that supports local communities. Thus, the study aims to map potential palmyra palm sacred groves, identifies its cultural, ecological, environmental, medical, economic and historical significance and develop a framework model to promote palmyra palm sacred grove wellness tourism circuit through active stakeholders' participation.

Research Methodology

This study employs qualitative techniques. The interviews that are primarily unstructured. Participatory research approach is carried out employing face to face interviews to collect primary data from sixteen respondents comprising two government officials, four academicians, one wildlife photographer, seven researchers, two residents (adapted from Rajamanickam et.al., 2018). Secondary data are collected from the CPR organization website, thesis, journals, articles, brochures, pamphlets, magazines and published research papers. Data has been analyzed through thematic content analysis tools.

Result and Discussion

Potential Palmyra Palm Sacred Grove Destinations:

Sthala Vriksha

Palmyra sacred grove is recorded to be sthala vriksham for 9 Shiva temples in Tamilnadu such as: Thiruppananthal located near to Tanjore. Saint kungiliya kalaya nayanar attained jeeva samadhi. Shiva is in the form of aruna jadeshwar also called thaalavaneeshwar who is the main deity of the temple. Thirupuravaar panangattoor the main deity's name is panagateeshwarar located in Villupuram district.Thiruvethoor is located in Kanchipuram district the deities are named as vedapureeswarar and balambikai, nandi face the similar direction to the deity. Shiva is seen in the form of five elements. Thiruvaanparthaan Thirupanangadu near Kanchipuram the deity's name is thalapureeshwarar few portions of devaram were sung by sundarar in this temple. Thirupanaiyoor among 274 Thevaram 136th Thevaram was sung by in this spot.The deity is named as soundraeshwarar and periya nayaki also believed that shiva is in the form of swayambhu (self-erected). Thirumazhapadi the deity's name is sri vaidyanatha swamy it is believed that the god cures disease the temple is located near to Tanjore.Thiruvallampuram, Melaperumpallam located near to poompuhar the main deity is named as valampurinathar also eranda munivar attained jeeva samadhi. All three saints sung thevaram in this temple thus this temple gained the name Paada petra sthalam. Thirukandrapoor is located near to thiruvarur. The main deity is named as naduthariappar (linga in the form of loom wedge). 10 divisions of thevaram are scripted in the temple wall.Thirupaalaithurai located near papanasam the main deity is named as palai nathar the construction of this temple is circular cylinder with 36ft height in bottom and conical at the top.

Tree veneration and along with local deity

Palmyra palm is found to be worshipped with Naatrar (Local Deity/ tutelary/folklore god) believing God or goddess reside in palmyra palm. In many places some deities are also named after palmyra as panaiveri amman (kali), thaalavasini (Parvathi) and thaalavaneeshwarar (shiva) Panaimuneeshwarar. Road side of Ervadi (Ramanad), thakkalai, Aasaripalam, kothaadi, valliyur, nanguneri, udangudi sudalai temples, (madurai) and many other parts of southern tamilnadu palmyra palm is found worshipping along with local deity. Respondent No (1, 3-12).

Significance of Palmyra palm:

Medicinal Significance

It is believed that saints were residing in Palmyra palm grove due to its incredible medical significance jeeva samadhi of siddhars and saints are found along with these groves (Respondent No 1,2)

Products and Medicinal benefits

Neera has anti phlegmatic drugs used to treat inflammatory, infections and dropsy, tonic to asthma anemic and leprosy treatment. Palmyra Toddy is a fermented drink rich in bacteria and yeast considered to be the perfect drink for summer as it reduces the heat generated in a body and helps one to relax after a tedious work. Palmyra jaggery increases potassium, iron, Vitamin B12 and Vitamin C and carbohydrates in the body, cures diabetic acidosis and gives energy to the body. Palmyra Sugar contains calcium, mineral, phosphorus, iron, nicotinic and riboflavin. Palmyra candy is a crystalized form of palmyra Neera and toddy helps in cleansing respiratory tract, intestine and alleviating constipation. Improves skin and hair. Palmyra tender fruit (Nungu) has sodium, potassium and rehydrates the body. Palmyra palm fruit pulp is rich in vitamin B & C, Zinc, Iron, Potassium, Calcium, Phosphorus, Thiamine and riboflavin treated as external applications to cure affected areas. Palmyra sprout strengthens bones and teeth. (Respondent No 15,16)

Historical Significance

Palmyra is considered to be symbolic representation of shiva and Parvathi also records songs sung by nyanmaars (shiva devotees who rested there) during 7th – 10th century.Palmyra, Palmyra toddy consumption is recorded in Tamil Sangam. It is recorded that before the war, palmyra toddy is consumed in order to boost the warriors and after the victory it is consumed to celebrate and some warriors wore palmyra flower garland to celebrate the victory. women who don't consume toddy add it to many dishes to get the benefits of toddy. Consuming toddy relieves heat from the body considering it to be the prime cause for several other diseases. (Respondent number 1 & 4). In many temples and madams palmyra fan and umbrella is used and considered

to be sacred. Saint yogiram surath kumar also called as visiri samiyar always address people having palmyra fan in his hand. In Kanyakumari regularly a yatra to 9 shiva temples is organised. In order to relax, the Palmyra fan is used by the devotees and saints throughout their journey. Tanjore Aadi perukku rituals include kaadolai karugamani having palmyra leaves as an important component. Jains saints do use Palmyra umbrellas and fans. Talipot fan is also used by Queen Victoria. Even in Sri lanka Buddhism and Christianity communities use palmyra fan for religious purposes. (Respondent number 1,6,7)

Cultural Significance

Palmyra leaf or Talipot palm leaf has been used for writing since the 1st century. Palmyra manuscripts contain several historical data, medicinal value, poems, literature, personal diary, official documents etc. (Respondent No 12,13). In Kanyakumari during a Christian occasion kurutholai nayiru kanji (rejuvenating drink) is served in palmyra leaf, Muslims also serve nombu kanji in palmyra leaf. In some dargah biriyani is packed using palmyra palm leaves and hindu do serve temple prasadam in a similar packing method. Hanging decorations (Thoranam) are made using palmyra palm on the occasion of Palm Sunday, marriages and other festivals. Muslims make hat using palmyra palm for worshipping. (Respondent No 1)Madurai has a village with no doors believing that muneershwaran (God) stays in the palmyra tree and protects them. Palmyra palm is worshipped in association with Community gods such as Sudalai, kalavasal muneeshwaran. it is believed that near Kanyakumari, Tirunelveli and other southern Tamil Nadu region local deities like muniyandi, amman reside in palmyra tree. In some regions of east coast India Palmyra palm is found to be an incarnation of goddess kali. Palmyra fruit is used as offering during worship in Maharashtra and east coast of India. In some parts of Tamil Nadu neera and palmyra toddy were also offered. (Respondent No 1, 13 & 16). Maavuli, an eco-friendly lightening enjoyed by people of Tamil Nadu during karthigai month is also made from palmyra palm. (Respondent No 15). Kozhukattai, a traditional steamed food with high nutrients offered to God, is made using palmyra leaf containing millets from different terrains of Tamilnadu such as marudham, neithal, mullai, paalai and kurunji. (Respondent No 1)

Ecological Significance

Palmyra palm Prevents land from soil erosion, stores rainwater, improves the quality of water, protects humans from disaster and also prevents hunger and disease.Palmyra palm Provides shelter to all species including mammals, reptiles, birds, insects, geckos, butterflies etc. Asian palm swift, Asian palm civet, slender loris, Indian small swift, Indian roller, common quail, myna, kite, brahminy kite, baya weavers' bird, owl, ferret, , woodpecker, barn owl, little egret, kingfisher, ibis commonly resides and weaves nest in palmyra palm also, Indian garden lizard, common garden lizard, eastern garden lizard and common green vine snake, daudin's bronze back, squirrels, black Scorpio, spiders, yellow ant, honey bee comb, red ants, mice, rat jungle cat, frogs resides in palmyra palm in addition to this peacock takes rest in the shadow of palmyra palm tree and sometimes in night reaches the top of the tree. Parrot, Parakeet resides in a certain tree which has hole. a swan nest with 15 swam chicks were also observed. Flying foxes small and big are recorded in palmyra leaves at night. It is also believed by the local community that when one sights an Indian roller it is considered to be fortune and they can escape from hunger.

Relationship between palmyra palm and slender loris a primitive species is identified in dindigul district thus palmyra palm Joint initiative taken to plant palmyra palm tree on 8th October 2018 by Seeds trust, Palmyra Nation, Arulagam and Tamilnadu forest. department. (Respondent No 12,14 & 16)

Economic Significance

Several eco-friendly non-hazardous toys are made from Palmyra palm leaves, wood and seed generate economic benefits to the local community especially women that do not affect the children by toys close to their mouth. Palmyra palm-based food is an integral part of indigenous Tamil cuisines. Palmyra palm jaggery is in huge demand from consumers perspective. Neera is tapped by men and Palmyra jaggery from neera is made by women. Palmyra neera and palmyra palm jaggery is a seasonal product that can be produced only during 6-7 months of the year differing from district – district of Tamilnadu there are several other value-added products are made such as Palmyra palm sugar, bakery items, sweets, Palm palmyra fruit juice syrup, palmyra fruit jam, soaps etc.

The trunk of the Palmyra palm is used to make pillars, beams, rafters, cots, Tables, chairs in traditional architecture styles using the trunk of palmyra palm. Using palmyra leaves hats, mats, baskets, boxes, stage decors, cap, hat curdle, bags, huge baskets for hen, Fishing Traps, box, umbrella, fan, etc are made. Also, food is wrapped and served hot in folded Palmyra palm leaves. Petioles of Palmyra palm are converted as handles, fencing, stalks, stirrers. Weave meshes, chairs, baskets, brush, and some handmade crafts are made from peeled cordage. Earlier days premium sandals were made from leaf base cordage. Certain musical instruments like tarpa, drum were also made using palmyra palm. The fiber of palmyra palm is used to make brooms, ropes and winnow. (Respondent No 1,7,8 & 9).

Problem faced to protect Palmyra sacred grove:

Eesan sangu village of Kanyakumari celebrates two important festivals during Tamil month Panguni (March mid – April mid) and Karthigai (November mid -Dec mid). Kanyakumari also receives neera during Karthigai. This month local community people celebrate deepa thiruvizha associated with sokka panai. A family provides a high quality palmyra tree for sacrificing to God. Priest cuts the tree and people gather to drag the tree like dragging a boat for about 20 km. palmyra leaves are covered with it and then they ignite. (Respondent 1).

Commonly, the temple receives more visitor during fairs and festival that are promoted by the temple management. Also, some temples were accumulating more garbage catastrophe. Community was removed from its stewardship; roads were built to facilitate mass tourism and rubbish and plastic trash started to pile up in some groves. There is not much measure taken to protect the grove. Priests and devotees are involved in misconception of practices leading them blind towards science. Modernization and migration are also considered to be a problem to protect and conserve the grove thereby losing control on commercialization and cutting trees. (Respondent 4,5.13,14).

Stakeholders' Involvement towards protection and promotion of Palmyra palm sacred grove as a circuit tourism:

Kanyakumari easan sangu has a practice of cutting trees every year in this case it is necessary that the temple management should take necessary steps to have a control on tree count. All the stakeholders know about responsible practices to balance ecology and take act towards it. (Respondent No 1). Story trails and heritage walks can be promoted to avoid over toning of religion, and to educate young minds in the right direction. Knowledge has to be disseminated, thus involving stakeholders several edutainment programs can be organized. Collaborative works for mapping, research and development, policy making are found vital to safeguard sacred groves. (Respondent No 8,9)

Control on mass tourism during festivals is essential. Concepts like wellness tourism, recreational tourism, voluntourism, Story trail, trekking spotting different species can be promoted with the support of local communities. Theme based trails such as muniyandi trail, Ayyanar trail shiva trail, kali trail can be organised separately and tours involving other components such as the visit to palmyra craftsmen village, experiencing palmyra based food can be added thus local community can be empowered through tourism. (Respondent No 2,3,11). Responsible tourism can be promoted as best practices among the stakeholders and improve the destination image. Awareness programs plantation drive, workshop, training and conservation programs can be implemented involving stakeholders. Usage of more palmyra palm-based products in temple activity generates employment opportunities for the women of that village. (Respondent No 1,4)

Recommendations

To sustain and conserve palmyra sacred grove and promote it as a special interest tourism product. Requires active stakeholders' involvement to practice five E's (Explore, Explain, Educated, Experience and finally Enhance). Niche concepts such as Voluntourism for planting palmyra trees, Story trail, heritage walk trekking spotting, birds, animals, mammals, reptiles and butterfly, preaching medicinal value exclusively for young minds can be implemented.

Academician

Academicians can research and identify the potential palmyra sacred grove to sensitize them as eco

zones, work along with the government on sustainable development practices involving the local community, collaborate with local communities with traditional knowledge, especially palm climbers and artisans to get authenticated details about their status (livelihood), demands (request to the government) and to know more about the ecosystem and organize awareness programs to bridge a gap between stakeholders.

Government

The government can provide financial assistance to maintain the temple and engage the local community in taking care of temple maintenance, preparing policies and schemes to enhance the status of biodiversity and the local community. Hindu Religious and Charitable Endowments Department (HRCE) can engage in organizing knowledge temple management to the temple employees to get knowledge on temple history. It also can provide licenses and involve poachers with skills and knowledge in facilitating the tours to nearby palmyra sacred grove. Further, it can pass a Government Order to stop cutting palmyra palm trees and to make mandatory use of palmyra based products in temple activities and offerings.

NGOs

NGO can organize Edutainment (Education and Entertainment) programs, collaborate with academics to educate the local communities, document the successful stories of local communities, palmyra palm climbers, handicraft makers and poachers associated with the palmyra palm sacred grove premises and engage them in tourism activity. It will map the more potential Palmyra sacred grove and highlight its importance, install pluck cards and dustbins for maintenance and organize more palmyra palm plantation drives to regenerate the area.

Tour Operator

Tour operators can design a creative special tour package on palmyra sacred groves including a walk inside the forest to learn about biodiversity. Also can develop a story trail, heritage walk, bird watching and reptile walk at night also by visiting the local artisans nearby can experience making of craft.

Conclusion

The world is a place for all living organisms to live in harmony. But, today in the race towards modernization we have lost a sizable portion of natural resources. According to the World Health Organisation (WHO) “Health is a state of complete physical, mental and social well-being”. In this context, along with potential Palmyra palm sacred groves the study encounters incredible historical, cultural, medical, environmental and economic benefits that are unnoticed. In order to save our biodiversity, sustain the mental and physical and social wellbeing of people we need to get closer and take steps to understand scientific practices beyond superstitious beliefs.

Tourism circuits involving stakeholders can be a sharp tool to revitalize Palmyra palm Sacred Groves on the urge of spreading awareness, promoting theme-based circuits, empowering local communities and employing sustainable and responsible practices among stakeholders thereby enjoying the benefits. Thus, in this study the data is collected from diverse respondents through participatory approach and recommendations to safeguard and protect Palmyra sacred groves are recorded. Palmyra palm sacred groves are mapped to form a wellness tourism circuit and a framework model is proposed to foster activities that rejuvenate the status of palmyra palm sacred groves and its belonging communities.

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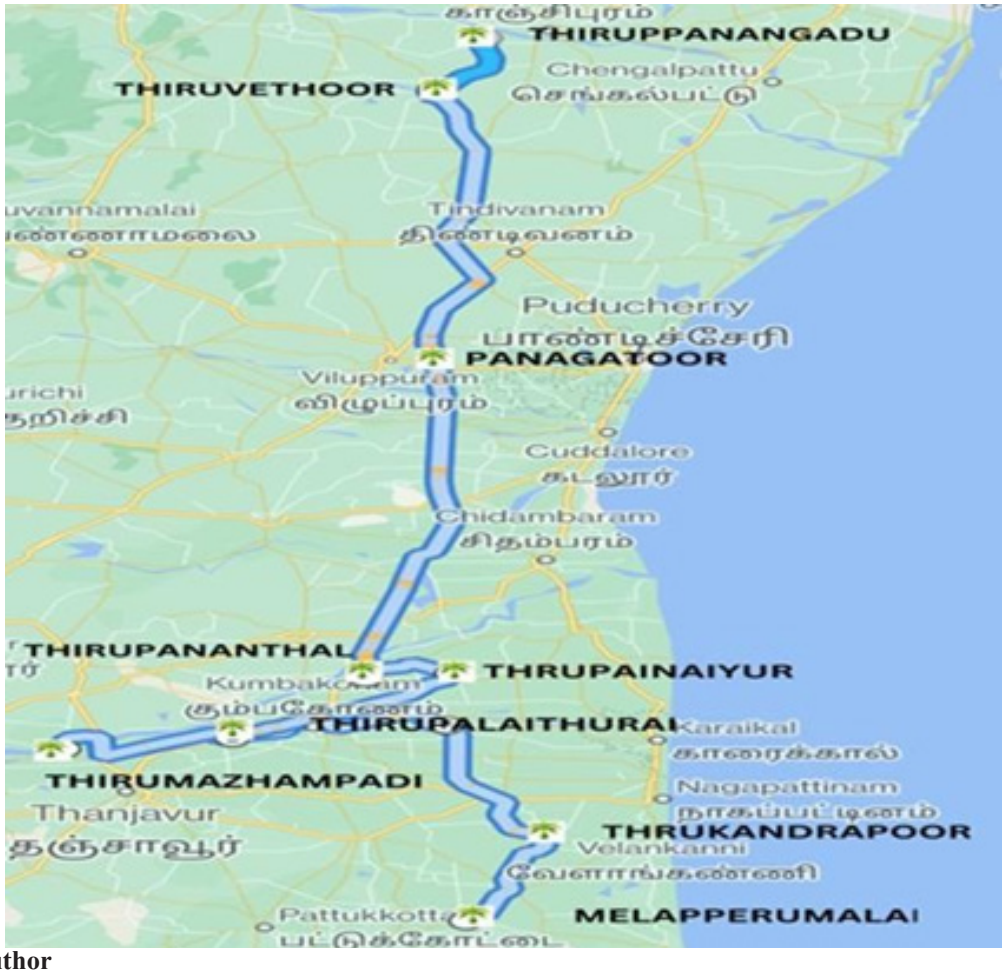
Annexure

Table 1 : Demographic Profile of Respondents

Name	Age	Gender	Location	Occupation
Rev. Godson Samuel	47	Male	Martha dam, Tamil Nadu.	Member, Palmyra workers society. Author, Panai mara salai.
Dr. Ravichandran	52	Male	Tirunelveli.	Professor, Manonmani Sudaresan University
Dr.Antony Stephen	46	Male	Chennai.	Professor, Madras School of Social Work
Mr.Ram kothandapanai	31	Male	Pondicherry.	Founder, Indigenous Biodiversity Foundation.
Dr.Subhashini	47	Female	Germany.	Founder, Tamil Heritage Foundation International
Mr.Ravinder	48	Male	Madurai.	Founder, Iragugal Amirtha Nature Trust
Dr.V.Krishnan	52	Male	Pondicherry	Researcher, Sacred groves of Tamil nadu.
Dr.Lakshmi	43	Female	Pondicherry	Asst.Professor, Dept of Tamil, Pondicherry University
Dr.Rajan	58	Male	Pondicherry	Professor & Head Dept of History, Pondicherry University
Dr. Uma mageshwari	26	Female	Chennai	Head of the Department, Clinical Nutrition. SDNB Vaishnav college,
Mr. Deepan	31	Male	Chennai.	Madras High court Advocate, Chennai.
Ms. Thilagavathi	26	Female	Ramanathapuram	Forest Ranger, Ramanathapuram
Mr. Shravan	26	Male	Thoothukudi	Photographer & Researcher, Thoothukudi.
Mr. Aravind	31	Male	Pondicherry	Wildlife Photographer, Pondicherry
Mr. Pandiyan	46	Male	Villupuram	Palmyra Palm climber, local community, Panangadu, Villupuram.
Mr. Raman	48	Male	Ervadi	Local community member, Ervadi, Ramanthapuram.

Figure I: Map of sthala maram



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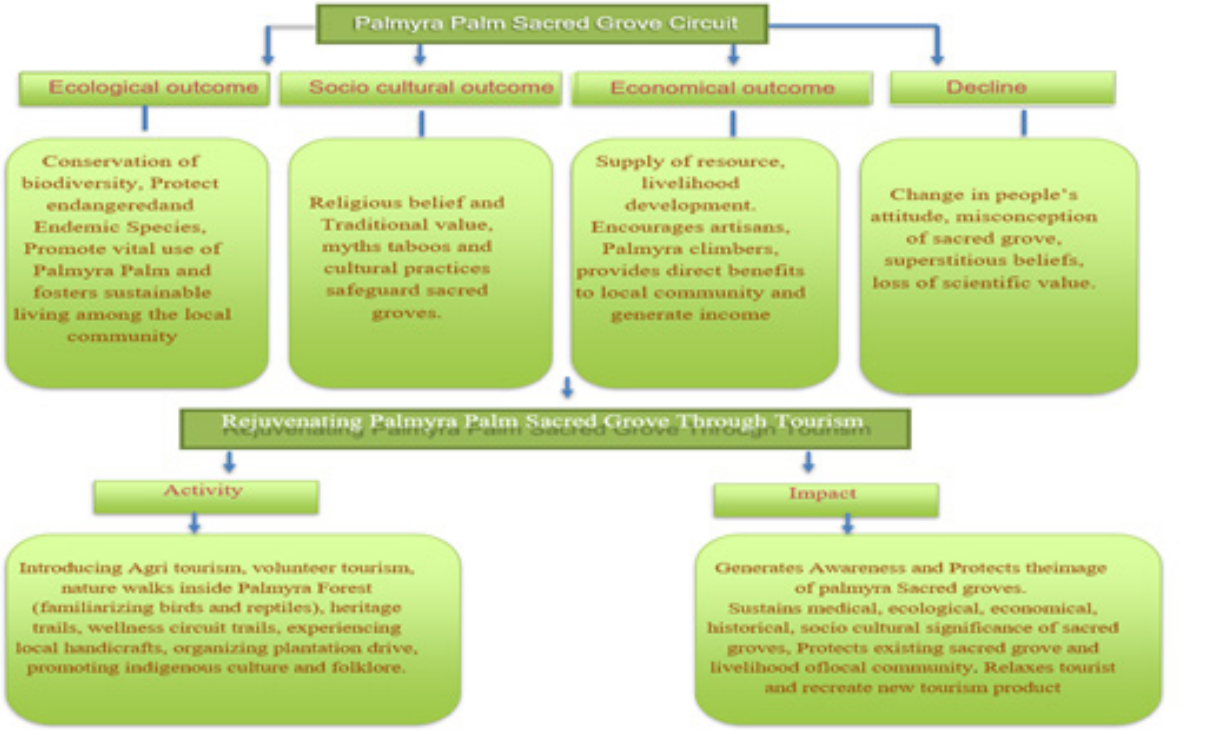
Place Figure II : Model palmyra palm sacred grove circuit



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Heritage Trail will revitalise the livelihood of Palmyra Palm-based rural communities in Tamil Nadu, India

Preethi H* and Rajesh Ramasamy*

Abstract

The Palmyra palm tree, called the Tree of Life, provides numerous edible and inedible benefits. It Provides livelihood opportunities for large, underprivileged communities. The present study explores two heritage walk routes, the Palmyra Safari, connecting distinct landscapes of the Kanyakumari district. Moreover, The Palmyra Trail connects diverse religious groups in the Thoothukudi district. These trails were developed in collaboration with government organisations and local communities to attract tourists with special interests. The techniques used to gather primary data, design the itinerary, and document stakeholders' opinions and experiences on the Heritage Trail routes include the Delphi technique, field observation, interviews with the local community, and familiarisation trips. The findings reveal that local communities, tourists, and experts have positive experiences with the trail. The practical implications highlighting the revitalisation of the local community's socio-economic status, reduction of Palmyra-based product adulteration, and creation of authentic experiences and awareness among tourists were established through the itinerary model. The results suggest that the model's success lies in its ability to engage local communities, provide them with a sustainable source of income, and preserve their cultural heritage. By offering genuine experiences to tourists, the model fosters a deeper understanding and appreciation of Palmyra's significance. The findings support the model's improvement and recommendation to the Tamil Nadu State Forest Department and the Tamil Nadu Tourism Development Corporation working committee for further development and promotion.

Keywords: Heritage tourism, Heritage Routes, Palmyra Palm, Livelihood opportunity, Special Interest and experiential Tourism, Walking trails.

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1. Introduction

The paradigm shift in tourist choice and present needs has evoked several new forms of tourism. However, heritage tourism and trails have become indispensable over the centuries. Throughout history, humans have followed trails for various purposes, such as hunting, trading, pilgrimage, route establishment, and later touring. Heritage routes and trails are linear pathways with grounded roots, abstracted to modern circuits, which can provoke nations' sentiments and identity (Timothy & Boyd, 2015). Heritage tourism allows visitors to immerse themselves in the past. It includes tangible and intangible heritage products. It draws in specialised travellers eager to immerse themselves in diverse cultures and artistic expressions (Thomas, 2010). Given this context, Vorasiha (2019) developed an itinerary model spanning two days, focusing on five distinct Palmyra palm routes in Thailand to attract both foreign individual tourists (FIT) and notable interest tourists (SIT). These routes identify the Palmyra vernacular culinary, Palmyra palm artisans, Palmyra palm climbers, tappers, and Palmyra farming communities. The itinerary promotes the engagement of tourists to experience the local culture and learn the making of traditional cuisine, climbing techniques, and weaving from the community. Adapting this idea, the present study explores potential destinations to develop heritage trail routes involving communities dependent on Palmyra palm for their livelihood in Tamil Nadu. Palmyra palm, scientifically called Borassus Flabellifer, provides immense edible and inedible benefits to the community (Govindaraj et al., 2024). The community regards the tree as divine and refers to it as the "tree of life". Unfortunately, the tree's vitality has diminished in recent years, depriving the community of its presence (Davis & Johnson, 1984). We conducted the two trails, "Palmyra Safari in varied landscapes" and "Palmyra Trail connecting diverse religions," in Kanyakumari and Thoothukudi districts, respectively. The study aims to address, understand, and resolve the struggle of Palmyra-dependent communities. It encourages community engagement, decision-making, and empowerment through tourism, as well as reconciling stakeholder involvement to uplift the community and the living heritage. Therefore, we have endeavoured to design and formulate the heritage trail routes with the aim of raising awareness, creating additional livelihood opportunities, enhancing the standard of living, preserving the environment, local culture, history, traditions, and performing arts, and empowering the underprivileged community associated with the tree. It attracts niche tourists and provokes their perception and interest towards the transdisciplinary benefits of Palmyra palm, enhances creative and sustainable experiences for the tourist, and builds sentiments and connection among host and tourist through promoting this successful working model. Further, this study aims to stand as a testament to transfigure the rural community of Tamil Nadu who were sceptical about tourism. It enables them as an active player to sustain and protect their livelihood and identity through tourism. In

addition, the study addresses the stakeholders' perspectives and experiences for future alteration and improvement in itineraries and execution and proposes them to the government of Tamil Nadu for further policymaking and implementation.

1.1. Heritage Trails and Routes

The scholars have conducted extensive research on purposeful trails that combine cultural and natural significance in the past. Timothy and Boyd (2015)'. The Heritage Trail or Route serves as an interpretive tool for storytelling. Heritage storytelling is a collective memory that includes narrative, anecdote, and personal experience. To engage and satisfy tourists, we co-create these memories emotionally, cognitively, and intellectually (Leong et al., 2024). In the process of storytelling, tourists perceive their own connections and experiences in space, landscapes, and communities (Boyd, 2017). These immersive experiences are vital to understanding the essence of the destination and its rooted values (Peng et al., 2023; Sneha & Nagarjun, 2023). Storytelling capability enhances authenticity or the destination's sense of uniqueness (Park et al., 2022; Palombini, 2017). Globally organised agriculture and wine routes aim to educate tourists about the methods used in cultivation practices. As the number of wine trails increased, so did the number of food trails. These purposeful trails benefited mostly micro-business operators. They have augmented a specialised itinerary and marketing mechanism as the destination's unique selling proposition as a new tourism product (Timothy & Boyd, 2015). The conceptual model of heritage trails and routes, the nested hierarchy designed by Timothy and Boyd (2015), explains the experiential dimension of tourists. He explains that the supply, rationale, and scales involved shape tourist engagement, with administrative structures and marketing strategy further influencing it. Trails or route development plays a part in constructing macro-policy environments for tourism at local, regional, and national levels. To bring themes into play and generate community engagement with linear tourism spaces, the model conceptualises routes and trails. Similar to other forms of tourism, heritage trails have a positive ecological, social, and economic impact on the destination and foster sustainable tourism goals (Duda, 2024). An ecological perspective often views nature-heritage trails, while a socio-economic perspective views community-involved craft heritage trails (Boyd, 2017).

1.2. Community Engagement in Heritage Tourism Planning

The relationship between community engagement and tourism receives an overwhelming response in the industry, both in academic and practical terms. Developing countries, in particular, evidently view shifts towards community engagement and the creation of unique experiences

as a responsible approach (Akdemir et al., 2023). Among stakeholder engagements, community engagement plays a prominent role in heritage management. They preserve local culture, heritage, and natural resources, as well as disseminate traditional knowledge to tourists (vanKnippenberg et al., 2021). "Community participation," "capacity building," "skills development," and "decision-making" are mandatory to engage the community (Ginting et al., 2023). Majorities of the communities lack the business and financial assistance that is required for them to play decision-making roles (Boyd, 2017). Biju and Tantiya, (2023) consider self-help groups as "powerful resilient solutions to reduce household financial vulnerability." It fulfils basic requirements such as food, medicines, and education. It empowers marginal communities by promoting inclusive livelihood activity and developing capacity-building programs (Kurniyanti et al., 2023).

Heritage trails are constructive models aimed at promoting social justice and equity in society. It eliminates "racism, supremacy, sexism, misogyny, heterosexism, and xenophobia that have an effect on marginalised and underprivileged communities (Spencer-wood, 2021). Purposive heritage trail routes necessitate cooperation from multiple levels of government, community groups, tourism business organisations, and local community support. Eventually, these routes may increase in popularity, provide multiple business opportunities, and provide leadership opportunities to the community at different levels (Lemky, 2016). The collaboration and common goals of these stakeholders may provide long-term sustainable solutions and revitalize the socioeconomic status of the community (Lemky, 2016; Towner, 2018). Although stakeholders' engagement prospers, heritage management and tourism activities conflict among the groups. Often, it is necessary to draw on stakeholder experience or perception to minimize conflicts of interest. The stakeholders include local tourist communities, service providers, and the government. Sustainable tourism goals validate community perception as a priority (Zhong et al., 2019; Byrd et al., 2009). Arkarapotiwong & Chindapol (2022) classify the experiences of tourists into three categories: expectations, which include basic infrastructure facilities and amenities, impressions and perceptions, which include feedback about the place, process, people, and physical evidence, and demand, which encompasses destination authenticity and uniqueness. Local community experience and perception assist in determining their relationship and attitude toward planning and developing the destination image. Recommendations from all the stakeholders can dignify the destination image and improve the community's quality of life and the local economy (Byrd et al., 2009; Lawton & Weaver, 2015).

1.3. Palm Tourism across Globe

The study involving oil palm and tourism reveals that tourism can sustain natural heritage zones and bring dozens of opportunities to transform the

socio-political status of communities dependent on oil palm in Australia (Butler et al., 2022). Wijaya et. al. (2024) narrates how palm wine, a popular beverage across the world with significant cultural and nutritional value, has become a tourism commodity in Indonesia. The Ministry of Tourism has framed exclusive policies to support the inclusive livelihood of poor communities involved in the preparation of palm wine called tuak. In the Caribbean, palm tourism has the potential for regional value chain integration to support the community's traditional, ecological, and technical knowledge. Indigenous communities in Cambodia have been participating in hatching activities on the northern beaches for thousands of years, providing assistance to tourists. Around 57% of palm groves in this region are public and for commercial tourism purposes (Erazo et al., 2020). In the Okavango Delta of Botswana, tourism activities revitalize the livelihood and indigenous knowledge of women engaged in weaving baskets from palm leaves. This activity aims to achieve sustainable tourism. Goal 8: promote sustained inclusive and sustainable economic growth; and Goal 9: build resilient infrastructure and foster innovation by 2030 (Velempini & Garekae, 2022).

The systematic review of literature under different themes enables a conceptual and theoretical understanding of heritage trails and routes. The review emphasizes the importance of stakeholder engagement and stakeholder perception in safeguarding authenticity, traditional culture, and livelihood inclusivity for the community in the destination, as well as achieving sustainable tourism goals. The research gained valuable insights from studies related to various palm species most of which were native trees of that destination. The literature finds insufficient data on how Palmyra palm cultural ecology, traditional ecological knowledge and association of the local community can boost tourism and improve their living conditions. Critics have provided valuable insights on stakeholders' importance of heritage trails that were neither specific to the Palmyra palm community nor to the selected destination. Further, the mutualism and emotional connection between the tree and the community are less expressed. In the case of similar palm trees, memorable experiences gained by the tourists were expressed to boost economic benefits, the camaraderie and the value created between host and tourist are unspoken. Therefore, the amalgamation of insights into different theme-based heritage trails, the importance of community engagement in planning and similar palm trails from existing literature helps the study to bridge the gap and address the possibility of conducting a Palmyra palm heritage trail in Tamil Nadu, design the itinerary under different palmyra palm themes, and establishing networks and support with stakeholders. The study strives to preserve the inclusivity of Palmyra palm and the community through tourism.

2. Objectives of the study

1. To augment Palmyra palm heritage trail routes, aiding in revitalizing the livelihood opportunities of the Palmyra palm community in Tamil Nadu; and
2. To analyse stakeholder perspectives and experiences towards the developed Palmyra palm heritage trail routes.

3. Research Methodology

The study adopts the Delphi technique, field observation, and in-depth interviews with the local community to gain indigenous knowledge and the expert's expertise (Vorasiha, 2019). The research adopts an "action-oriented research method" with flexibility in planning, reflecting, implicating, progressing, and solving the problem (Macias et al., 2023).

The process for data collection is organized into 4 stages:

First Stage: In stage 1 The information is collected through relevant secondary documents and through expert opinion (Delphi technique). In total, seven potential destinations were selected to develop creative tourism routes. The destinations are Thellandhi near Thadagai forest cover, Kanyakumari, Anthoniyapuram, Adaikalapuram, Udangudi, Manapad, Theri Kaadu, and Vembar of Thoothukudi districts. The study is exploratory in nature, it involves limited empirical data. Therefore, it requires the Delphi technique to receive different expert opinions and consensus for planning and prioritizing the destinations. This process involves clarification of specialized knowledge, agreement and disagreement on different views and insights gathered from the experts. This technique has a limitation towards experts' availability, and potential for bias and consumes a huge time duration.

Second Stage: In stage 2, the study receives interest, cooperation and involvement of the local community towards participating in tourism activity. The study adopts field observation and in-depth interviews with local communities in six selected destinations and nearby destinations to understand the scenario and analyse how itinerary models can be prepared. Overall, 14 interviewees participated. Factors such as livelihood quality, accessibility, infrastructure facilities, the willingness of the local community to tourism, the willingness of other stakeholders, and tourist flow were analysed to find possibilities for conducting the trail. This technique is subjective in nature, time-consuming, and with less control over the environment and particularly in the field observer's effect may affect the authenticity of the information. But the study employs interviews to triangulate the information and to choose the appropriate destination to design the itinerary with local community support.

Third Stage: Two itineraries were made, comprising the shortlisted destinations. Participatory comments from stakeholders (community members, government officials, volunteers, and tourists) were recorded during the trial. These participatory comments help the study understand their emotions, insights and expressions during the trial. Participatory comments also reveal expectations and perceptions for improving and fostering sustainable destination management. It enhances the co-creation experience and inclusivity of the happenings. Having drawbacks to limited expertise and implementation challenges

Fourth Stage: Focus group discussions were conducted among the group of 45, involving tourists, the local community, and planners, to draw on their perceptions, opinions on products and services, experiences, and suggestions for the planned itinerary. This method is adopted in the final stage to encourage interaction and to enable every participant to respond. Every nuance of expressions was discussed to capture a collaborative insight and provide valuable suggestions. This method is limited to group thinking, conflicting opinions and social loafing.

Stage 1 & 2: Results from Field observation and in-depth interviews from the local community

Destinations	Livelihood quality. (Palmyra Tappers. Palmyra Handicraft makers)	Accessibility to the location	Basic Infrastructure facilities	Local Community willingness to participate in Tourism	Stakeholders Willingness to Participate in Tourism	Tourist flow	Planning Process
Thellandhi	✓	✓	✓	✓	✓	✓	✓
Anthoniyapuram	✓	✓	✓	✓	✓	X	X
Adaikalapuram	✓	✓	✓	✓	✓	✓	✓
Udangudi	✓	✓	✓	✓	✓	X	X
Manapad	✓	✓	✓	✓	X	✓	X
Theri Kaadu	X	✓	X	✓	✓	X	X
Vembar	✓	✓	✓	✓	✓	X	X

4. Discussions

Thellandhi Reserve Forest covers Palmyra and people in its foothills. Anthoniyapuram is a village that supports school education through the profit made by Palmyra tappers and sellers; Udangudi Palmyra saps are considered to have the highest brick value in Tamil Nadu. Hindu and Muslim villagers surround Adaikalampuram, which is a historical Christian village. Manapad, a coastal village with magnificent Portuguese churches, attracts film and niche tourists throughout the year. The fishing community in Manapad also relies on Palmyra palms for their livelihood. Theri Kaadu, a desert in Tamil Nadu, boasts a mesmerising biodiversity that includes Palmyra palms. Vembar sea beds are filled with a plethora of Palmyra palms.

Among seven villages, tappers are highly present in Thellandi, Anthoniyapuram, Adaikalapuram, Udangudi, and Vembar. All the listed villages, except Therikaadu, produce handicrafts from the Palmyra palm. That includes utensils, hats, mats, cots, and other miniature crafts. Women in Antoniyapuram have transitioned from being Palmyra palm weavers to factory labourers. Palm Gur, a Kadhi unit, provides training loan subsidies for women participating in Palmyra Craft activities. The scheme benefits more than 100 women living in Manapad. Many traditional handicrafts, such as solavu, cots, fish traps, and pots made from Palmyra leaves, are in the dooming stage.

To develop tourism, these villages have moderate infrastructure, such as communication systems, quality education, health facilities, sewage, and clean drinking water. Tamil Nadu has excellent transportation facilities throughout the state supporting tourist flow. The local community and other stakeholders are highly welcoming and eager to participate in tourism activities. Among them, Thellandhi, Manapad, and Adaikalapuram receive more tourists. All the chosen villages are close to potential attractions like beaches, temples, churches, scenic hills, and forests. Overall, within the limited period, planning and implementing the Palmyra Heritage tourism route was successful only in Thellandi and Adaikalapuram villages. Future planning can rectify the limitations in Anthoniyapuram, Therikaadu, Vembar, Udangudi, and Manapad.

Therefore, this paper presents two itineraries: the Palmyra Safari, which focuses on "connecting varied landscapes." We organised the trail on January 29, 2023, collaborating with the District Forest Department, Kanyakumari Tamil Nadu, Aetram Commune, Palmyra Mission, activists, and Thellandhi village's local community. The second itinerary is the Palmyra Trail, "connecting diverse religions." We organised the trail on April 15, 2023, in association with Aetram commune, Palmyra Mission, members of the Palmyrah Workers Development Board, the Abati welfare organisation of Kayalpatnam, and the Adaikalapuram Palmyra community.

Stage 3 Itinerary Model preparation

The itinerary promotes sustainability, social practices, and entrepreneurship. It develops new routes, networks, and circuits by adding inclusiveness. It can also include maps, pictorial representations, and illustrations (Arcos-Pumarola et al., 2023). It explores heritage places' explicit art, architecture, and literature (Pantalei, 2020).

The itinerary actively involves community and stakeholder engagement to support the community's livelihood. The District Forest Department, Kanyakumari Tamil Nadu, Aetram commune, Palmyra Mission, and the local community of Thellandhi village collaborated to organise the

Palmyra Safari, "connecting varied landscapes," on January 29, 2023. The second itinerary, the Palmyra Trail, which connects diverse religions, was organised in association with Aetram commune, Palmyra Mission, members of the Palmyra Workers Development Board, Abati, a welfare organisation in Kayalpatnam, and the Adaikalapuram Palmyra community on April 15, 2023.

4.1. Heritage Trail Route I: Palmyra Safari

Itinerary model

7.00 a.m.: Starting from the District Forest Office, Vadasery Nagercoil.

7.30 a.m.: Community interaction at Thellanthi Village, tales of Palmyra Climbers. Sharing of Traditional climbing methods, Welcome drink (Palmyra Neera) in palmyra leaves.

8.30 a.m.: Nature Walk at Thadakai forest cover along with Forest officials

10.00 a.m.: Interaction with the experts and local community.

1.30 p.m.: Lunch (traditional Kanyakumari vegetarian food served in Palmyra palm leaf prepared by the community).

1.45 p.m.: Sightseeing the Palmyra tree veneration shrine adjacent to Thadagai hill

3.00 p.m.: Sightseeing Puthalam CSI Church to witness 200-year-old giant Palmyra palm pillars.

4.00 p.m.: Visit handicraft makers and learn creative crafts from the community.

5.00 p.m.: Reaching Chothavilai Beach to listen to the stories narrated by Vareethia Constantine (Connection between Palm and Coastal Community).

6.00 p.m.: Closing remarks and feedback at the District Forest Office Kanyakumari.

4.2. Observation and Participatory Comments during the Trial

Palmyra Safari is organised to cover Thellandhi and its nearby locations. Thellandhi, a lively village located in the foothills of Thadagai Hill Reserve Forest in Kanyakumari district of Tamil Nadu, is covered with dense forest, pristine waterfalls, unpolluted dams, and other nearby eco-friendly locations that attract adventure and nature-loving tourists. (Rev. Godson Samuel, Founder Palmyra Mission Organizer) finds "palmyra palm to be entangled on a banyan tree deliberately for safeguarding the tree." He further explains its association, connecting the mythological stories of Sathyavaan and

Savithri. (District Forest Officer, Mr. Illayaraja, Organizer) stated, "Wild boars in this forest cover eat the fruit from palmyra palms, which helps it sustain itself inside the forest without crossing its boundary."

"Even after a fracture in my pelvic bone, I never stopped climbing, but this poverty made my sons leave our livelihood practice and move to other countries for work. Today, they completely lost interest in climbing." (Kuruks Michael, 74-year-old Palmyra climber).

After relishing, the tourists were also educated on the nutritional benefits of the food and beverages they consumed. They witnessed 200-year-old heartwood pillars in Puthalam CSI Church and reached Sothavilai Beach. An eminent writer (Vareethaiah, an expert) showed the left-out trees on the beach, narrated "the relationship of Palmyra palm with the fishermen community and the coastal region", and highlighted that "Palmyra palm was serving as a navigator for fishermen in the Coromandel coastal region. When the tsunami hit Tamil Nadu in 2004, Palmyra palm, located in the coastal region of Tamil Nadu, prevented the region from the disaster."

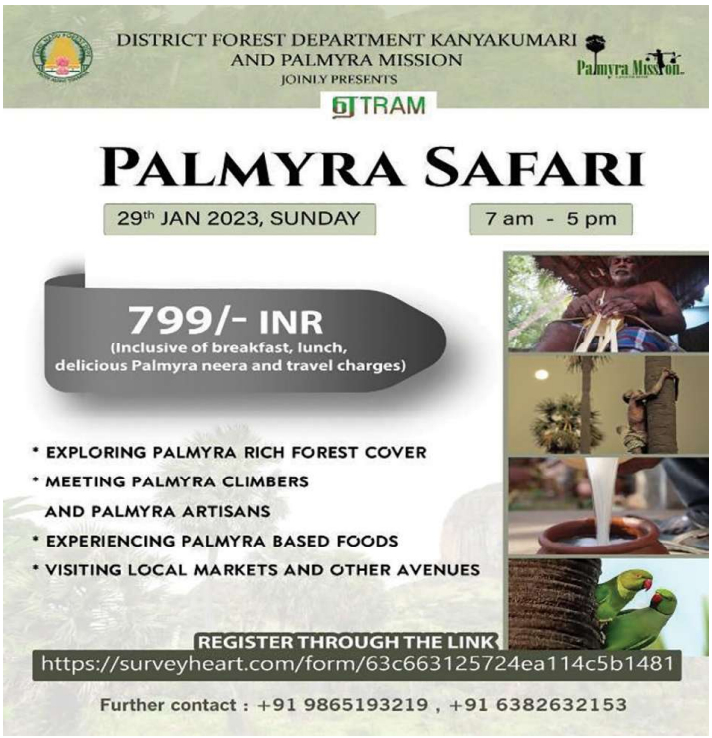

Figure 1: Palmyra Safari Invitation

Figure 2: Photos taken during Palmyra Safari

4.3. Creative Tourism Route II: Palmyra Trail

Itinerary model

8.30 a.m.: Starting the trail from Tiruchendur Murugan Temple, Storytelling on solitary Palmyra palm on the temple premises by Rev. Godson Samuel Author of the Book: Panai *Mara Salai* (A travelogue in search of Palmyra Palm)

9.30 a.m.: Sightseeing at Adaikalapuram, a village in Thoothukudi district with Christians as the majority. Interact with the local community and enjoy Palmyra Neera in the Palmyra leaves. Experiencing climbing activities and engaging in making creative crafts.

10.30 a.m.: Nature Walk with Storytelling by Mr. Anto Briton, an educated Palmyra climber and Member of the Palmyra Workers Society, Tamil Nadu.

11.30 a.m.: Visiting Our Lady Church to explore the usage of Palmyra palm in Christian festivals and to witness the usage of Palmyra palm as wood for roofing and learning traditional architectural styles.

12.30 p.m.: Experiencing the making of different varieties of Palmyra-based food from the newly opened outlet that produces exclusive palm food products.

1.30 p.m.: Relishing Kayal's Traditional Nei Soru and Chicken Curry in Mittai Petti (crafted box) prepared from Kayalpattinam, taken to Adaikalapuram Palmyra forest, and served hot.

3.00 p.m.: Exploring Kayalpattinam, a beautiful coastal village located 7 km away from Adaikalapuram.

4.00 p.m.: Interacting with Writer and historian Salai Basheer at Abati.

5.00 p.m.: Observing unique crafts, engaging in making and tasting Kayal summer delicacies made using Jaggery (Vattalapam, Puttu, Paavu, and Ponavam).

4.4. Observation and Participatory Comments during the Trial

The Palmyra trail is organised in Thiruchendur, Adaikalapuram, and Kayalpattinam of Thoothukudi districts. Tiruchendur holds the temple for Lord Muruga, which receives a huge number of pilgrims throughout the year. Adaikalapuram is a Christian-majority village 7 km away from Thiruchendur. In this village, a large number of people depend on palmyra palm for their livelihood. Kayalpattinam is an Islamic town located 6 km away from Tiruchendur. Palmyra palm plays a strong role in connecting the diverse religious people of Tiruchendur, Kayalpattinam, and Adaikalapuram.

People gathered in Adaikalapuram after witnessing the solitude of Palmyra palms at Thiruchendur Murugan Temple. Mr. Anto Briton, a 27-year-old climber, B.Tech graduate, and member of the Palmyra Palm Workers Society of Tamil Nadu, organizer, enlightened the group on tapping neera, palm-based food-making processes, traditional ecological knowledge on Palmyra palm and its belonging species, and also about his motivation, experiences, and struggle.

His grim expression reads, "Many youngsters are not interested in climbing; they are demotivated because they don't get the required income for the effort taken to climb and to produce rich Palmyra palm karupatti." "Society treats Palmyra climbers poorly, and grooms who aspire to continue climbing often struggle to find brides." "The intervention of intermediaries is significant; they do not offer reasonable prices for the karupatti. This forced the community to produce adulterated products" (Anto Briton, Climber).

His motivation for climbing: "I resigned from my work and started climbing. Initially, it was challenging for me to persuade my family, but over time, I began to receive compensation for my efforts, and today, I earn a decent salary that surpasses what I used to receive from my previous job." "Today, my growth motivates numerous young individuals, who seek my guidance to overcome significant obstacles, raise public awareness about adulteration, and inspire the next generation" (Anto Briton, Climber).

His view on this trail: "These trails pave the way to bridge the gap between tapers and consumers; without the middlemen, youngsters can facilitate tours and explain the making process to the tourists." At present, pilgrimage tourists who visit Tiruchendur stop in Adaikalapuram to relish the Pathaneer, which motivated them to open more outlets. The community is eager to welcome tourists. More than pilgrim tourists, these purposeful trails or tours will amazingly help the community to empower, reduce

adulteration, engage more people, and help with the spatial recovery of Palmyra palm." (Anto Briton, climber).

Upon arriving in Kayalpattinam, the tourist engaged in conversation with Saalai Basheer, a writer and organiser who represents Abati. "During Odukkathe Pudhan, a religious practice of Islam, people write Quranic sayings in Palmyra leaves using roasted rice dye. The next day, they pour water on it, apply the ash to their heads, and consume it," he recounts. The community believes that this practice protects them from evil spirits. "Both good and bad ceremonies utilise Palmyra palm leaf mats." "We prepare traditional authentic dishes during marriage or festival times, such as Ponaavam, Puttu, Paavu, Vattalaappam, and many more, using Palmyra palm Jaggery." This tree has been linked to communities in the form of food, worship, craftwork, and cultural practices (Jariya, Founder Abati).

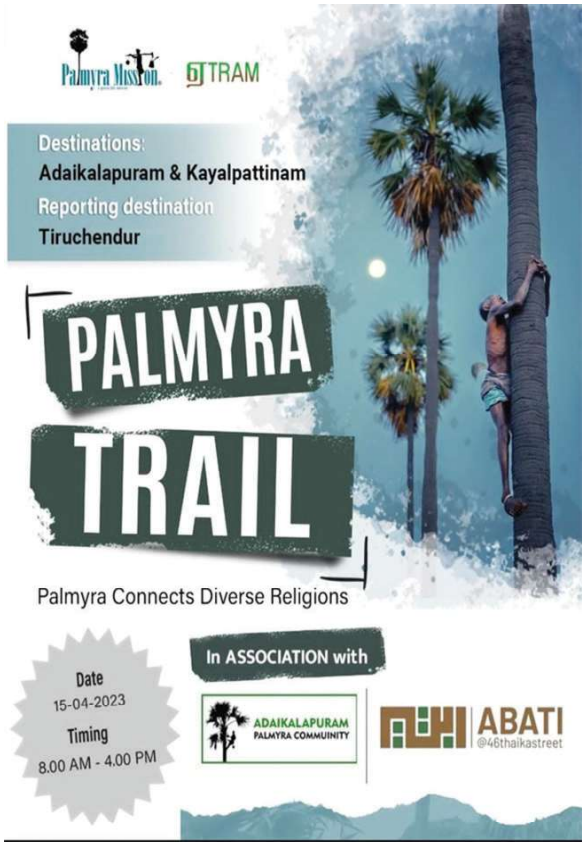

Figure 3: Palmyra Trail Invitation

Figure 4: Photos taken During the Palmyra Trail

5. Results

The District Forestry Department, Kanyakumari, Tamil Nadu, along with other experts in the field, organized the trail Palmyra safari on 29th January 2023 to highlight and improve the current situation of underprivileged communities that rely on Palmyra palms for their livelihood. The Tamil news article validating this information is present in the appendix section.

On 16th April 2023, The New Indian Express reporter Godson Wisley Dass appreciated and wrote about the initiative of the Palmyra trail in binding communities which was organized by us along with the Palmyra palm workers welfare board and local community. The article validating this information is present in the appendix section.

Table 1: Demographic Profile of Participants

Participant Category	Sample Size	Male	Female	Total
Local community	Age Range			
	<18	0	0	0
	18-27	2	0	2
	28-37	2	0	2
	38-47	1	0	1
	48-57	1	1	2
	58+	1	1	2
	Total	**7**	**2**	**9**
Planners	Age Range			
	<18	0	0	0
	18-27	1	1	2
	28-37	1	1	2
	38-47	2	0	2
	48-57	1	0	1
	58+	0	0	0
	Total	**5**	**2**	**7**

Participant Category	Sample Size	Male	Female	Total
Tourist	Age Range			
	<18	1	3	4
	18-27	4	3	7
	28-37	6	1	7
	38-47	7	1	8
	48-57	3	0	3
	58+	0	0	0
	Total	**21**	**8**	**29**
Total		**33**	**12**	**45**

Table 2: Stakeholders' opinions on the planned Heritage trail obtained through group discussion.

Number	Aspects		Opinions7
1.	Perceptions	Local community	The community members were welcoming new ideas. They were eagerly anticipating the chance to embark on their skills and abilities. They believed that the heritage tourism routes would foster and uplift their livelihood and their status in society.
		Planners	Planners were keen on disseminating information on Palmyra palm heritage, biodiversity, livelihood, and historical evidence. This model ensures that the community receives the most benefit. They aim to unite all the stakeholders, such as the government, local community, activists, and common people, to discuss and bring solutions to issues relating to Palmyra palm and its community.
		Tourists	Tourists found the itinerary to be unique and were excited to engage with and listen to the tales from the community and experts. They were eager to gain knowledge and understanding about the vitality of the Palmyra palm from the local community and experts.
2.	Products and services	Local community	The local community actively participated in the trail's facilitation; they shared their traditional knowledge of Palmyra palm, demonstrated the tapping of Neera, served Neera, Ice Apples, and food made from Palmyra leaves, and educated tourists on how to make Palmyra petti (boxes) and value-added food delicacies.
		Planners	Planners conducted extensive research to plan and organize the trail. In the planning process, they collaborate with the government and local community. Planners have identified an exclusive unique selling proposition (USP) to attract niche tourists.
		Tourists	Tourists engage in direct purchasing and experiencing the authenticity of the destination. These tourists also participated in responsible tourism practices, aiming to positively influence both the community and the destination.

3.	Experiences	Local community	Community members were happy to engage in tourism activities and display their culture. They believed this executed model would foster additional earnings and recognition for the community. Even though they lacked confidence, they were happy to interact with the tourists and planners. They wished for more such trials to happen often in the upcoming days.
		Planners	The planners were anxious about ensuring the event was successfully organized. Planners ensured that the local community should be the primary player. They were excited to see the overwhelming response from tourists and the outstanding cooperation from the local community, government, and media.
		Tourists	Tourists expressed positive feedback about their overall experience, which included idea generation, the planning process, interaction with the local community, perceiving livelihood and cultural stories, exploring biodiversity, learning traditional ecological knowledge from the local community, experiencing local craft, celebrating locally made traditional food in leaves, visiting historical locations, interacting with experts, and co-learning with other tourists.
4.	Suggestions	Local community	The government can support us by providing loans, subsidies, and pensions. They can develop tourism in our location to build community well-being and prosperity. They can promote more skill development training and capacity-building programs to support our livelihood and not eliminate us from our livelihood practices. We wish they could add this to their five-year plan and allocate funds.
		Planners	The government can implement this itinerary model on a regular or seasonal basis. As other countries' planners have suggested, the Tourism Department should incorporate a special itinerary into their portal. This itinerary can also be modified with more practical engagement of tourists on the livelihood of the local community that relies on the Palmyra palm. The Tamil Nadu government has taken some measures to conserve the Palmyra palm, but the most important step is to understand the community's need and support the community's livelihood untouched.
		Tourists	Some tourists felt the trail was tightly packed and did not get much time to interact with the local community. They wish the trail could be organized as a two-day tour that would bring them the opportunity to unwind with the tree and its community, and they fully appreciate the entire tour.

6. Discussion

Palmyra climbers are gradually decreasing in Tamil Nadu. Most of the Palmyra climbers were aged above 40. A significant number of elderly individuals participate in this livelihood activity. It empowers around 1,000 women to create crafts. The current heritage trail route aims to unite tourism players in understanding the village's social space. Social space refers to

the regional interactions of communities with others (Ding et al., 2022). The community's interactions are more closely linked to the geographical region.

This model empowers women, elderly people, and young people. It offers additional opportunities to the local community and improves their livelihood which is in a precarious state. The model gives the local community the power to make decisions (Wardana et al., 2023). Empower old men who cannot climb to sell the products to tourists. It allows local communities to set their own prices for their goods and sell them directly to tourists. It eliminates the need for intermediaries. Tourists contribute directly to the local community by enjoying their authenticated services.

The local community views the Palmyra Palm Heritage Trail or tourism as a sharp tool for livelihood conservation. Some additional schemes, such as homestays and experiencing tourism, in this region may positively influence the regional economy and unlock eco-business opportunities (Wardana et al., 2023). This eco-business minimizes production costs and usage of water and electricity, inculcates waste management practices, and infiltrates the brand's image

Tourism, along with participatory activities, promotes environmental conservation. (Arkarapotiwong & Chindapol, 2022). One of the interesting observations is that most of the communities associated with Palmyra palm for livelihood worship the tree. Along with tree veneration, the Palmyra palm is also associated with Thala Maram. The temple premises retained the left-out Palmyra tree to symbolize its previous existence as a grove (Sivasubramanian, 2017). Palmyra climbers considered the tree as a reincarnation of goddess Kali, and Palmyra Neera was Kali's milk. They have the practice of offering the first tapped Neera to the tree before starting their work. Some Christians also take the Neera to church for offerings. The veneration of sacred groves and trees is considered a tool for biodiversity conservation. As a result, local communities are keen on respecting their culture and heritage. This creates more opportunities to highlight their rich culture and heritage.

The tree is a shelter for many endangered endemic species. Most of the local community is aware of their traditional ecological knowledge. In addition to heritage trials, an organized nature walks facilitated tourists' comprehension of the community's trees, biodiversity, and traditional ecological knowledge. In the southern region of Tamil Nadu, tree climbing is considered more primitive than in the northern region. The climber connects his chest with the tree and hugs it tightly to ascend the tree. Whereas in the northern part of Tamil Nadu, the Palmyra climber connects them with the tree using the rope. The primitive climbing methods enable the climbers to climb more trees compared to the climbers using ropes.

The Palma Federation, located in Marthandam, is a self-help group that strives to support and uplift the Palmyra palm community of Kanyakumari. They provide training to the women on making craft and value-added products from Palmyra. The society exports the products to many countries. Kadhi provides licenses to climbers, which further assist them in securing loans, insurance and pensions.

In recent times, tourist demands have focused on unique quality assurance and responsive supply chains. Service providers are also keen on building satisfaction, loyalty, and value for the product (Tasnim et al., 2023). In this study, by optimizing the resources in the selected village, the tourism planners include productivity, competitiveness, and sustainability, which are considered core factors of value chain integration and create linkages between handicraft artisans, climbers, self-help groups, private players, and the government to provide quality service and authentic experiences for tourists (Bharat & Suresh, 2023) and (Prados-Castillo et al., 2023). This study optimizes the resources in the selected village and creates links between handicraft artisans, climbers, self-help groups, private players, and the government.

7. Conclusion

The anecdotes of the Palmyra heritage trail routes exemplify a testament to displaying the real image of the destination and the condition of the community. The itinerary created serves as a model, complementary to the tourist offering, shapes the destination image, and attracts special interest tourists to engage with and experience the tangible and intangible heritage. We have created these itineraries by analysing the destination's unique selling proposition, which includes local food, handicrafts, traditional knowledge, sustainable approaches, conservation methods, rituals, and cultural practices. Identifying preserved identity, considering intangible products to generate economic value, involving younger generations as planners, using resources responsibly, passive usage and consumption, choosing quality over quantity, and retrofitting solutions are some challenges faced in developing these heritage trail routes. The outcome of this trial revealed nuances of the heritage tourism route that engages the tourist to directly participate in the livelihood activity of the local community, acquire knowledge on the transdisciplinary value of Palmyra palm, and aim to reduce adulteration. It also addresses their social problems, paves the way to ameliorate their present status, sustains livelihoods, generates revenue, and safeguards the Palmyra ecosystem and empowers the community. Further, it builds capacity in the community to withstand unity to yield recognition and rewards. The tourists who participated in the trail were more focused on sensationalism and existential questions than they were on relaxation. This motivates the community to connect with them. The Tamil Nadu Tourism Development Corporation recognized the trail and chose district-

level entries to compete for the Rural Tourism Award 2023, according to the Ministry of Tourism (Ministry of Tourism, 2023). The study provides a pathway to develop a successful rural community-based tourism model in selected locations for the long run employing the community to actively participate in tourism activity beyond organizing heritage trails and also recommend the government to implement tourism policies to sustain their livelihood and to improve their living conditions. Future studies related to value creation, mutualistic or symbiotic relationship between visitor and host, destination development, the impact of tourism in the selected destination, tourism and sustainable livelihood practices, and memory cape of the destination can proactively develop solutions with the support of exploration obtained by the present study.

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ABSTRACT

COMMUNITY BASED TOURISM APPROACHES FOR CONSERVATION OF PALMYRA PALM IN SOUTHERN TAMIL NADU

AN ABSTRACT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

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COMMUNITY BASED TOURISM APPROACHES FOR CONSERVATION OF PALMYRA PALM IN SOUTHERN TAMIL NADU

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1. Introduction

Tourism has evolved significantly in recent years. The industry has reinvented itself in new forms. Technologies have eased travel for tourists and promoted unexplored destinations. The industry offers far more individualized choices than traditional suppliers. Community based tourism is aligned with principles of sustainability and serves as a transformative tool for rural development and livelihood generation. It protects both tangible and intangible heritage.

Tamil Nadu, a state renowned for its rich cultural heritage, diverse ecosystems, and deeply rooted traditions, presents unique opportunities to integrate tourism with community based conservation efforts. One such opportunity lies in capitalizing on the historical, cultural, economic, and ecological significance of the Palmyra palm, often referred to as the "Tree of Life," as a cornerstone for livelihood enhancement and sustainable tourism practices. The underprivileged and marginal groups relatively receive low wages despite being educated and skilled. For centuries, they have fought for their rights, respect, and dignity. Pasanchay and

Schott (2021) mentions that livelihood can be sustainable only when it has the capability to overcome stress or shock, to develop and maintain the capability and assets without damaging natural resources. Sustainable livelihood provides economic opportunities within the geographical region, conserves natural resources, and supports the community to fight against resistance.

Tourism seeks to "transform our world" along with the Sustainable Development Goals (SDGs). UNWTO (2015) has embraced the SDGs to "… end extreme poverty, fight inequality and injustice, and fix climate change until 2030." Some of these goals match the goals of community-based tourism. They are: Goal 5 "Gender Equality" empowers women at all stages; Goal 6 "Access to Clean Water and Sanitation" ensures basic human rights; Goal 10 "Reduced Inequality" empowers underprivileged communities, develops skills, and creates more entrepreneurial opportunities; and Goal 15 "Life on Land" emphasizes protection, restoration, and promotion of sustainable use of terrestrial ecosystems. Similarly,

Millennium Development Goals (MDGs) Goal 1 and Goal 3 aimed to

alleviate poverty and empower women (McArthur, 2014).

The Palmyra palm is the state tree of Tamil Nadu and is found to have existed alongside humans or even before human existence. Tala Vilasam, a classical Tamil poem written by Arunachalam, describes 801 benefits of the Palmyra palm (Krishnaveni et al., 2020). Also known as “Kalpa Vriksha,” otherwise called the "Wish-fulfilling Tree or Divine Tree. In Tamil, the tree is celebrated as “Panjam Pokki,”meaning “the remover of famine.” The tree is closely associated with underprivileged communities across South Asia and Southeast Asia.

Southern Tamil Nadu was chosen for this study on the Palmyra palm due to its high concentration of the tree and production of products from the tree, particularly in districts like Thoothukudi, Tirunelveli, Ramanathapuram, and Kanyakumari. This study seeks to explore the untapped potential of Palmyra palm-based tourism as a means to promote spatial recovery of the tree, livelihood conservation, heritage appreciation, and economic empowerment of the community in Southern Tamil Nadu.

The latitude and longitude points are marked using Google Maps, and the output is generated using ArcGIS software. Each location visited to interact with the local community is segregated into different themes. The maps represent tapping areas, handicraft villages, market locations, and Palmyra palm veneration hotspots. The study aims to identify various factors influencing conservation and restoration of the Palmyra palm in Southern Tamil Nadu from the perspectives of both the local community and experts. The information related to the conservation of the tree and livelihood includes economic, social, ecological, cultural, and historical factors, as well as stakeholder involvement. It examines the interest of the local community in participating in tourism activities. It investigates how traditional knowledge systems, local craftsmanship, and eco-tourism initiatives can be revitalised. Further, the study investigates the opinions of experts associated with the Palmyra palm towards community based tourism approaches for conservation of the Palmyra palm and empowerment of the local community.

2. Objectives of the Study

1. To map the potential locations of Palmyra palm in Southern Tamil Nadu for developing community-based tourism destinations.
2. To identify and study various factors influencing conservation and restoration of the Palmyra palm in Southern Tamil Nadu.
3. To examine the interest of the local community associated with the Palmyra palm for livelihood towards community-based tourism activity and empowerment of the local community.
4. To investigate the opinions of experts associated with the Palmyra palm towards
5. community-based tourism approaches for conservation of the Palmyra palm and empowerment of the local community.

3.Research Questions

1. What are the potential locations of Palmyra palm in Southern Tamil Nadu that could be developed into community based tourism destinations?
2. What are the key factors influencing the conservation and restoration of Palmyra palm in Southern Tamil Nadu?
3. How do socio-economic, cultural, and environmental factors affect the sustainability of Palmyra palm?
4. What is the level of interest among the local community in utilizing Palmyra palm resources for community based tourism activities?
5. In what ways can Palmyra palm contribute to livelihood opportunities and empowerment of local communities?
6. What are the expert perspectives on adopting community based tourism approaches for the conservation of Palmyra palm?

4. Scope of the Study

The study believes that the new opportunities developed through tourism can prevent exploitation of the Palmyra palm tree and the community. The findings reveal that the Community and local economy is closely related to their traditional climbing skills, traditional artistic skills, preparation and preservation of local food,

and preservation of tangible and intangible heritage. These are the attractive factors to drive tourists and engage the community. The community has the potential to become a brand or a landmark. They have the potential to change the visibility of the village image in the tourism map along with their image. If all stakeholders join together to improve and upgrade the standard of the community through tourism, it would definitely build sustainable livelihoods and a thriving Palmyra palm ecosystem.

5. Review of Literature

From scholarly literature, the study contextualizes existing knowledge, broadens academic discourse, demonstrates the relevance of the study, explores gaps, formulates research questions, identifies best practices, avoids pitfalls, enhances research quality, and supports the study with relevant evidence. Theoretical dimensions such as the evolution and concept of community-based tourism, global perspectives on community-based tourism, community based tourism in India, overview of the Palmyra palm, botanical, ecological, cultural, and economic importance of the Palmyra palm, conservation and restoration approaches of the Palmyra palm and its belonging community, stakeholders' engagement in community-based tourism, stakeholders' interest and participation, community participation and empowerment, planning community-based tourism, case studies, related theories, and GIS mapping in community-based tourism.

Over time, the concept of community-based tourism has evolved with notable milestones. The initial study of community-based tourism was conducted as Tourism as a Community Approach. In this study, the author discusses social, cultural, and economic constraints created by tourism on the community. The author suggests to tourism planners to support communal goals and include the community in the decision-making process (Murphy, 1983).

Haywood (1988) presented a "community planning paradigm" to overcome conflicts, stereotyped thinking, and to generate communal benefits. Blank (1989) insisted on "The necessity and possibility of community-based tourism." Community Based Mountain Tourism (CBMT) emerged in the year 1998, witnessing sustainable

exploitation and requisites for the community economy (Mountain Forum, 1998). Further, Pearce and

Moscardo (1999) provided direction on shaping the community for future tourism development. Mitchell and Muckosy (2008) viewed community-based tourism along with a sustainable participatory approach. Richard and Hall (2000) explored community based tourism with pro-poor tourism. The concept of volunteerism/voluntourism, pro-poor tourism, and community-based tourism combines to alleviate poverty of certain societal groups (Kennedy & Dornan, 2009; Wearing & McGehee, 2013). World Wildlife Fund (WWF) (2001) investigates community-based tourism as a tool to measure ecotourism and conservation efforts. The year 2002 was celebrated as the International Year of Ecotourism. During and after the celebration, the concept and approaches of Community-Based Ecotourism (CBET) for protecting nature and attenuating poverty, and Sustainable Community-Based Ecotourism (SCBET) for increasing economic, social, and environmental sustainability received popularity (Hafezi et al., 2023). In the following years, some managerial studies aligned with community-based tourism were emerging. Blackstock (2005) critically viewed community-based tourism as a functional approach by involving local entrepreneurs. Goodwin and Santilli (2009) witnessed academic pedagogy of community-based tourism as "community ownership/management and community benefits."

India has seen growing interest in promoting community-based tourism and the local economy in the past few decades. Some of the notable impactful projects are homestay and guided tours to explore Kashi culture in Mawlynnong, the cleanest village in Asia (Dutta, 2024).

The Central Nodal Agency (CNA), Rural Tourism (RT) and Rural Homestays (RH) Centre, along with state bodies, central bodies, and other stakeholders, has identified niche areas to visit and experiences in rural destinations in India, including agritourism, art and culture, eco tourism, wildlife, tribal tourism, and homestays. More than 134 villages have been identified for development and to support traditional occupations, indigenous art and craft, rejuvenate rural lifestyles by

creating new business opportunities through tourism, and uphold sustainability to avoid massive infrastructure development. COVID-19 pandemic has shifted tourism close to community and conservation (Chiawo et al., 2023). “The most significant feature of the 1972 World Heritage Convention is that it links together in a single document the concepts of nature conservation and preservation of cultural properties. The convention recognizes the way in which people interact with nature, and the fundamental need to preserve the balance between the two” (The World Heritage Convention, UNESCO). International Union for Conservation of Nature (IUCN) has launched “Nature 2030: One Nature One Future,” a union-in-action programme to overcome habitat loss, overexploitation, climate change, urbanisation and industrialisation, agriculture, fishing and forestry, water use, transportation, and resource consumption. The target was taken to accelerate “living in harmony with nature” by 2050, which supports the sustainable development goals to a great extent.

Community-based tourism is a form of social enterprise that has a strong will to empower the community, build capacity, involve partnerships and collaboration, and transform the community into entrepreneurs (Thananusak, 2023). Conti (2014) defines capacity-building programmes as “creation of awareness of the local population, creation of local working groups, and training human resources on specific aspects of tourism.” Sustainable development goal (17.9) targets international support and develops capacity-building programs to achieve national plans through triangular cooperation (Dolezal & Novelli, 2020).

Capacity building programmes and community participation safeguard tourism from becoming a polluted industry (Moayerian et al., 2022) and develop the potential ability of the community by increasing the understanding of knowledge, skills, and attributes. Communities face limitations regarding information, skills, and capital; even though they are difficult to produce, capacity-building programmes help overcome the challenge (Imbaya et al., 2019; Moayerian et al., 2022). Capacity development is visualised as a “positive sum of powers” among the community that empowers the group and fosters the ability to adapt to the changing environment for common wellbeing (Moayerian et al., 2022; Park et al., 2023).

The relationship between “community,” “capacity,” and “cultural activity” is that they positively contribute to sustainable tourism approaches and rural development. Effective capacity building programs transfer power, integrate sustainability, and maximise equity (Kusin et al., 2019). Some important critics believe the tree originated from the African continent and is traced to have been distributed from India to South-East Asian countries up to New Guinea. The tree is largely found in India, Myanmar, and Cambodia. In many developing countries, underprivileged communities depend on Palmyra palm trees for their livelihood (Jana & Jana, 2017).

Some authors state that India has the highest number of Palmyra (85.9 million) in the world, and out of this, it is believed that 60% are in Tamil Nadu. Tamil Nadu has the major share with 51.9 million trees, with the district of Thoothukudi ranking first (Krishnaveni et al., 2020). Palmyra palms serve as significant hosts for numerous species. Indian robins, palm civets, and various other wildlife species depend entirely on these trees for survival. The slender loris, a primitive species native to Tamil Nadu and listed as endangered by the IUCN, is known to inhabit the Palmyra palm trees in the Erode and Dindigul regions. Recognizing the ecological importance of these trees, on October 8, 2018, the Seeds Trust, Palmyra Nation, Arulagam, and the Tamil Nadu Forest Department launched an initiative to plant Palmyra palms to protect the vulnerable slender loris (Samuel, 2018).

Available literature on the transdisciplinary importance of the Palmyra palm lacks information on statistical data on the population of Palmyra palm, census of the community engaged in Palmyra palm activities. Some of the provided information is outdated. The absence of records on spatial analysis to find accurate data on the distribution of Palmyra palm generates obstacles to prioritising potential green zones for protection and restoration. Apart from general conservation and restoration practices like plantation drives of Palmyra palm, no tailor-made conservation and restoration strategies and practices were recorded in any existing documents. No research was found on conservation and rejuvenation of the socio-economic condition of the community depending on Palmyra palm for their livelihood in the

entire state.

6. Research Methodology

For the study, a prudent mix of both qualitative and quantitative approaches has been adopted to capture data from transdisciplinary angles. The mixed methods have been chosen for an in- depth analysis, especially using the Exploratory Sequential Design (ESD). The sampling echniques used in the study are purposive sampling and snowball sampling. The responses are gathered from the local community through schedules and from experts. Excerpts include academicians, activists, and organisation members (Palma Federation, Kanyakumari; Tirunelveli Self Help Groups supported by the District Collectorate office and Nellai crafts; Ramanathapuram and Thoothukudi Self Help Groups supported by the District Forest Department). A total of 350 samples were collected from local communities belonging to 36 villages across 5 districts of Southern Tamil Nadu.

7. Results and Discussion

7.1 Maps and Interpretation of the Potential Locations

Maps can draw attention to emerging and developing captivating tourism destinations. Manual thematic qualitative analysis is obtained from information collected through field visits from various stakeholders. These themes are also reflected in the schedule as statements. Quantitative analysis is obtained using the Program for Statistical Analysis of Sampled Data (PSPP 2.0.1). Interpretation of the data and information is provided with logical reasoning through evidence to avoid bias but also reflects personal experiences and perspectives. Further in discussion, the chapter proposes tailor-made Palmyra Routes.

The major tapping hotspots located in the maps are Keezhmundhal, Melselvavanallur, Methalodai, Kovalli, Puthumayakulam, Valinokkam, Kadukalvalasai, and Nadarvalasai in Ramanathapuram district; Kannirajapuram, Naripayur, Antoniyapuram, Poothotam, Adaikalapuram, and Udangudi in Thoothukudi district; Kadayanallur, Mudhaliyarpetti, and Thottavilai in Tirunelveli district; Thanoothu in Tenkasi district; and Kuzhithuraivalavankodu, Marthandam,

Kizhioor, Kalkulam, Naaval Kaatu, Chinnamedu, Thellandhi, and Agatheeswaram in Kanyakumari district. The majority of these villages are located in the coastal belt.

Palmyra handicraft locations include Manappad, Kundhal, Tirupullani, Radhapuram, and Urumankulam, which are supported by Self Help Groups (SHGs). The majority of the SHG members are women. The map also displays disappearing traditional crafts and the stories of traditional artisans. Some of the disappearing crafts recorded in the study are palmyra palm leaves (Solavu), Palmyra palm coir cots (Naar kattil), Palmyra pots (Kuduvai), Palmyra mats (Sala pai), and Palmyra fish traps.

The third map represents the market location. In some shops, specific products are sold for example, Naarkatil Kotaram in Kanyakumari and Eral shops selling only cots made from Palmyra palm. Vembar market and Kulasai shops sell Palmyra jaggery in large quantities. Colourful crafts with unique patterns prepared by SHG women are sold exclusively in Mathi Angadi, Kanyakumari Poombhuhar Unit, Nellai Craft Panai Porul Angadi in Tirunelveli, and Tamil Nadu Forest Eco shops located in Ramanathapuram. Marketplaces such as Marthandam, Udangudi, and Ramanathapuram markets provide space to sell Palmyra crafts along with other crafts.

The study mapped some temples where these practices are observed, including Erattaithalai Munusamy, Irulappa Sami, Thiraviyapuram, Mundrupanai Natchiyaar Kurusadai, Othapanai Munusamy, Othapanai Jada Muneeshwarar, Madasamy Temple Kulayaneri, Othapanai Sula Temple, Nallupanai Sudalai Madan, and Kuthiraimozhi Therikudieruppu. Alongside these maps, associated rituals and practices are recorded. The combination of maps representing Palmyra palm tapping areas, handicraft locations, market areas, and veneration hotspots are grouped for cluster mapping. This method helped to identify potential tourism destinations such as Melselvanallur, Vembar, Thoothukudi town, Manappad, Adaikalapuram, Uvari, Thisanvilai, Thanoothu (Surandai), and Thellandhi village as major spots to connect with other potential destinations to form creative routes. These routes provide multiple experiences to tourists, especially focusing on livelihood activities, cultural

programs, religious activities, historical narratives, and nature trails.

Example routes include:

1. Melselvanallur (Tapper village) – Mundhal – Erattaithalai Muniyasamy Temple (Valinokkam) – Keezhakarai (Craft and Food) – Tirupullani (Craft village) – Pamban(Forest Department Eco Shop) – Kurusadai Island.

2. Vembar – Naripayur – Sayalkudi (Ramanathapuram–Thoothukudi district).

3. Anthoniyapuram – Eral.

4. Adaikalapuram – Kayalpattinam – Thiruchendur.

5. Manappad – Udangudi – Theraikaadu.

6. Uvari – Thisayanvilai – Kalakaadu.

7. Alangulam – Thanoothu (Thenkasi).

8. Thellandhi Reserve Forest – Puthalam Church – Sothavilai Beach – Marthandam.

7.2 Factors Influencing Conservation and Restoration of the Palmyra Palm

Conservation is influenced by ecological, socio-cultural, economic, and policy related factors. Significant contributions to the spatial recovery of the Palmyra palm have been made by Godson Samuel and the Green Needa organization. Every year, around 10,000 Palmyra palm seed saplings are planted by the Rural Workers Development Society, Ramanathapuram, and 2,000 saplings by the Ramanathapuram Forest Department.

To improve the social fabric of climbers, Pandiyan Palmyra Climber organized a cycling campaign across Tamil Nadu for about 90 days in 2022. The purpose was to create awareness, break taboos, and build confidence among Palmyra climbers, particularly in toddy tapping. He also organised the Palmyra Dream Festival to raise public awareness. Climbers can be found across all age groups, and there are many young and educated climbers who willingly practice their livelihood activity, feeling proud and independent.

After COVID-19, perceptions of Palmyra jaggery have changed, with people recognising its medicinal value. This increased its market share and price, and the number of climbers, especially young ones, began to rise. However, many products face high adulteration. Palmyra jaggery is often priced low to attract consumers, and in some regions artificial colours and scents are added before sale. Adaikalapuram Palmyra jaggery brick value is 76%,while Udangudi brick value increases to 83%. The Food Safety and Standards Authority of India (FSSI) should regulate jaggery standards to address adulteration.

The Tamil Nadu government has initiated the development of climbing technology to increase production, but the community is reluctant to adopt it, fearing commodification of their products. The Palmyra Palm Workers Welfare Board provides benefits to registered members, and in 2022, the state reintroduced regulations for registration, requiring tappers to pay ₹275 for a five-year card. However, middlemen often hinder access to benefits, and community awareness of these schemes remains low.

7.3 Local Community Interest in CBT Participation

With regard to participation in tourism activities, the local community shows high interest in learning skills related to the Palmyra palm, exhibiting local culture and traditions to tourists, taking initiative and leading teams, and working collectively for community wellbeing.

- They expressed average interest in activities such as:
- Receiving tourists and hosting them through homestays.
- Providing exclusive Palmyra palm homemade food.
- Guiding tourists on nature trails.
- Providing awareness about the significance of the Palmyra palm.
- Facilitating and guiding historical tours in the region.
- Planning tours based on the Palmyra palm.
- Organizing plantation drives.
- Selling Palmyra products in shops.
- Exporting products.

- Managing interpretation centres or museums.
- Teaching climbing or craft techniques to tourists.

7.4 Experts' Opinion on Developing CBT

Experts view tourism involving Palmyra palm community members as an urgent need, particularly for creating awareness about the Palmyra palm and its associated communities,ultimately safeguarding the tree. They believe tourism can:

- Monitor adulteration of products.
- Support marketing and sales.
- Improve living standards.
- Provide unique experiences to tourists.
- Empower women to address social and economic challenges.
- Support youth employment.
- Recognise and reward artisans.

Palmyrabased food trails can promote traditional cuisines and inspire innovation. Palmyra based nature trails can help conserve biodiversity and ecosystems. These initiatives can increase the number of food and craft outlets.

From a community perspective, activist Pandiyan Palmyra Climber described tourism as a way to connect people with purpose and place, creating meaningful change and showcasing strong cultural legacies. Overall, experts believe this approach can engage and surprise tourists with a "wow factor."

The study also observes that the local community lacks the skills to sustain their livelihoods and grow their businesses. They face multiple challenges: Lack of control over pricing. Reliance on middlemen. Debt cycles during off-seasons. Seasonal migration to industrial factory work for survival.

These challenges reflect issues of "Class Struggle," "Industrialisation," and "Exploitation." Activists within and outside the community are calling for recognition of human and equal rights. There is an immediate need for interventions from relevant authorities to disseminate knowledge about existing schemes and benefits, and to provide skill development for improving business capacity.

7.5 Recommendations for Development of Community Based Tourism

1. Enhance Awareness on Policy Access: Conduct village-level workshops to educate local communities on existing government schemes (Namakul Namme Thittam, Samathuvapuram Housing Scheme, MGNREGS, Indira Awas Yojana, License and Registration for Palmyra climbers) that improve livelihoods with financial and infrastructure development.
2. Themed Tourism Circuits: Design Palmyra Creative Routes aligned with schemes

1. like Swadesh Darshan, PRASAD, and ODOP, connecting potential Palmyra villages,
2. artisans, monuments, intangible heritage, and natural landscapes. Create routes such
3. as Palmyra Palm & Coastal Heritage Trail, Palmyra Sacred Route, Palmyra Palm Route Connecting Varied Landscapes, and Palmyra Circuit Connecting Diverse Religions.
4. Brand Awareness Campaigns: Organise promotional drives showcasing Palmyra
5. villages as unique CBT destinations through storytelling, social media, and roadshows. Obtain GI tagging and develop a USP for Palmyra tourism for national and international markets.

3. Skill Development (Hunar se Rozgar): Train communities in hospitality, handicraft production and marketing, and culinary arts, especially women and youth. Prepare community members as tourism facilitators, homestay and transport providers, and event managers.
4. Palmyra Census: Map tree populations and conduct a census of climbers and artisans to create a conservation baseline.
5. Palmyra-Themed Homestays: Build eco-friendly homestays using palm products in interior and exterior design, offering authentic experiences.
6. Community–Government Partnerships: Collaborate for tourism planning, revenue sharing, and conservation monitoring.
7. Experiential Tourism: Demonstrate climbing techniques, jaggery making,

palm

6. craft, and edible product preparation for visitors.
8. Revive Cooperative Outlets: Modernise inactive cooperative shops selling karupatti and crafts to benefit both locals and tourists.
9. Karupatti in Ration Shops: Introduce karupatti in the Public Distribution System to support women producers, expand demand, and raise health awareness.
10. Cultural Showcases: Organise cultural programs (Therukoothu, Madal Erudhal,
7. Spinning Maavuli, Villupaatu) and sports related to the Palmyra palm.
11. Digital Documentation: Archive traditional recipes, crafts, ecological knowledge, manuscripts, rare photos, sacred groves, songs, and oral histories.
12. Films & Media: Produce short documentaries and feature films on Palmyra heritage, skills, and struggles to attract niche tourism.
13. Coffee Table Book: Publish The Palmyra Palm: Heritage, Crafts & Communities.
14. Encourage Academic Writing: Support publications on Palmyra heritage by researchers, writers, and cultural historians.
15. Palmyra Palm App: Develop a multi-stakeholder app with maps, booking services, product catalogues, academic resources, and cultural content.
16. Human Rights Advocacy: Address occupational hazards, fair wages, and social dignity in tourism narratives.
17. Youth & Student Trails: Organise Palmyra Nature & Heritage Trails for schools and colleges.
18. Community Plantation Drives: Involve tourists, NGOs, and schools in plantation activities.
19. Voluntourism & Internships: Offer hands-on projects in conservation and tourism for social work, anthropology, and tourism students.
20. Palmyra Interpretation Centre: Develop a museum showcasing products, tools, photographs, and videos of Palmyra stories.
21. Fruit Festival: Celebrate a Palmyra Palm Fruit Festival with tasting events, contests, and cultural performances.

22. Accessibility Measures: Provide transport shuttles linking Palmyra villages and tourist hotspots.
23. Vocal for Local: Use and sell locally made Palmyra products in all tourism destinations and airports.
24. Cultural Exchange Programs: Facilitate exchanges between artisans, students, and researchers across South and Southeast Asia.
25. Memorandum of Understanding: Establish MoUs for collaborative Palmyra research and community development.

8. Conclusion

The study has highlighted the need for community-based tourism as an intervention to play a transformative role in empowering Palmyra palm-based communities by strengthening their economic stability, social advantages, and cultural pride. It creates sustainable livelihood opportunities for underprivileged communities and provides additional jobs through homestays, tour facilitation, hospitality, handicrafts, export and import businesses, interpretation centres, food outlets, and other tourism-related services. The communities' indigenous cultural programs, when included in tourism, foster respect and recognition for artisans. Tourists visiting the destination help prevent structural damage to Palmyra palm-based heritage buildings and protect intangible heritage such as traditional ecological knowledge, folklore, and artisanal practices. Tourism promotes biodiversity conservation of the Palmyra palm and the species dependent on it through nature walks, camping, and ecotourism activities.

Overall, tourism involving the Palmyra palm community has become an appropriate approach for empowerment, sustainability, and inclusive growth. The new opportunities developed through tourism can prevent exploitation of both the tree and the community. The community's local economy is closely tied to traditional climbing skills, artistic craftsmanship, preparation and preservation of local food, and the safeguarding of tangible and intangible heritage. These are the key attractions that draw tourists and engage the community. The design and services cannot be separated from the community's identity, which is expressed through vernacular

artistic traditions, entrepreneurial talents, and strengthened business skills that foster self-reliance.

Therefore, the community has the potential to become a brand, a landmark, and a unique selling proposition of the district. This influences not only the visibility of the village image but also the recognition of the community across the country. This approach requires support from various stakeholders in the region, such as NGOs, SHGs, volunteer groups, the Palmyra Palm Welfare Board, Palmgur, the Forest Department, the Horticulture Department, and other government organizations. It is now the responsibility of policymakers and supporters to improve and upgrade the community's standards, social fabric, sustainable livelihoods, and the Palmyra palm ecosystem.

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