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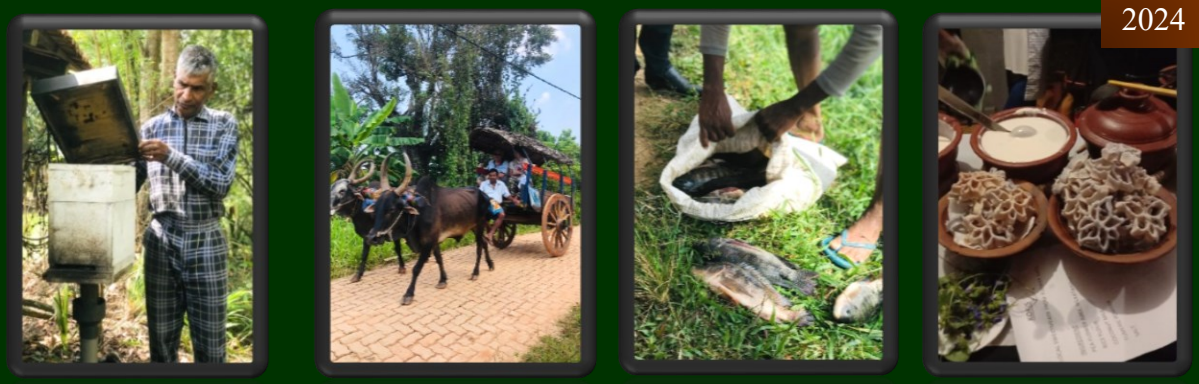

Consultancy Service for Undertaking Studies on Value Chain Development and Valuation of Ecosystem Services

Assignment 04: Conduct study on the analysis of multi-sector value chain and market illustrations

Report on baseline Status of multi- Sector value chain and Marketing illustrations

Submitted to

The UNEP-GEF project on Healthy Landscapes: Managing Agricultural Landscapes in Socio-Ecologically Sensitive Areas to Promote Food Security, Wellbeing and Ecosystem Health Project in Sri Lanka

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Content

Executive Summary

This activity was carried under as a part of Assignment 04 of the consultancy undertaken by the consultant which is attributed to the Activity 1.4.2 of HLP and to successfully achieve the outcome 01 of the project. With this report we present the deliverable 01 stipulated in the TOR of the consultant.

This report explores the intricacies of value chains in the Village Tank Cascade System (VTCS), focusing on four primary sectors: bee honey collection, food-fish production, traditional food production, and agro-ecotourism. Each sector offers unique insights into the local economy and cultural heritage, providing a comprehensive understanding of rural economic dynamics. The bee honey value chain encompasses various stakeholders, including producers, collectors, wholesalers, and retailers. The complexity and value addition vary across different channels. Channel 1, with its intricate structure, offers the highest total value addition due to the involvement of multiple intermediaries. In contrast, Channel 9 demonstrates a more straightforward pathway with a single producer, suggesting reduced costs and fewer intermediaries. This sector underscores the role of retailers and wholesalers in adding value through storage, transportation, and retail operations. In the food-fish production value chain, Channel 8 stands out due to its high average value addition, primarily driven by the producer and collector-retailer. The diverse value addition across channels highlights the impact of distribution and retailing on final selling prices. This sector reveals the need for a balanced approach to managing costs while ensuring profitability for all stakeholders involved in the value chain. The traditional food production value chain exhibits a range of value additions. Channel 3 shows the most significant variation, indicating the role of packaging, unit size, and additional processing steps in determining value. The analysis stresses the importance of balancing cost, quality, and cultural authenticity, ensuring a fair distribution of value among all actors involved. Agro-ecotourism in VTCS features a diverse array of channels offering unique experiences to visitors. The tourism sector combines traditional activities like cart rides, boat rides, and visits to village houses, contributing to its success. The evaluation underscores the importance of balancing costs, providing fair compensation for local staff, and preserving the authenticity and sustainability of the agro-ecotourism model. The analysis of value chains in VTCS demonstrates a delicate balance between economic viability, sustainability, community benefits, and cultural preservation. A collaborative and sustainable approach is essential to ensure all stakeholders benefit from value-added processes while maintaining the authenticity and heritage of the region. By implementing the recommended strategies, VTCS can enhance its value chains, fostering resilient communities and promoting inclusive growth.

Chapter 01

1.1. Introduction

In the contemporary globalized economy, value chains have surfaced as a crucial framework for comprehensively grasping and enhancing economic operations across various sectors. The phenomenon of globalization has witnessed the amalgamation of markets and industries on a global scale, thereby compelling the need for a thorough analysis of value chains. This imperative arises from the quest to identify and capitalize on opportunities aimed at bolstering efficiency, sustainability, and competitiveness within economic systems. As markets become increasingly interconnected and industries more interdependent, a deeper understanding of value chains becomes indispensable for navigating the complexities of modern economic landscapes. Consequently, the analysis of value chains serves as a strategic tool for elucidating the intricacies of economic processes, identifying areas for improvement, and devising strategies to maximize value creation and competitive advantage. Through a comprehensive examination of value chains, stakeholders can uncover latent potentials, streamline operations, and foster resilience in the face of dynamic market forces and global challenges. Thus, the concept of value chains emerges as a pivotal paradigm for driving informed decision-making and facilitating sustainable economic development in an interconnected world.

In sustainable community development, understanding the intricacies of value chains is paramount. Value chains represent the sequential processes involved in transforming raw materials into final products or services, with each step contributing to creating and delivering value to end users. the essence of value chains within the context of Village-based Traditional Community Systems (VTCs), emphasizing their significance in fostering livelihood sustainability and ecological restoration.

The value chains operative within Village-based Traditional Community Systems (VTCs) encapsulates a wide array of operations, ranging from acquiring raw materials to disseminating goods to end consumers. These value chains constitute the fundamental framework underpinning economic endeavors within VTCs, exerting a profound impact on the economic livelihoods of community members and the ecological equilibrium of the surrounding region. Through the systematic identification and prioritization of these value chains, the objective is to unveil avenues for development that adhere to the tenets of sustainability and bolster the community's resilience as a whole. This entails a meticulous examination of the interconnected processes and stakeholders involved in value chains within VTCs, to foster economic prosperity while simultaneously safeguarding environmental integrity. Such an approach is imperative for informing evidence-based interventions and policy decisions to promote holistic development and foster sustainable growth within rural communities.

Within the agricultural domain, particularly concerning staple commodities such as rice, the value chain epitomizes a meticulously structured progression of interconnected activities critical for the inception and dissemination of the final product. This sequential process encompasses several distinct stages, each executed by specialized actors and incorporating precise procedures. At the genesis of the value chain reside the primary producers, predominantly farmers, who initiate the process by cultivating paddy. This initial phase entails a myriad of tasks, spanning from land preparation to irrigation and pest management, with farmers serving as the foundational pillars responsible for nurturing the essential raw material

for rice production. After cultivation, collectors intervene in the value chain upon the maturation of the paddy. Their role pivots around the scrupulous harvesting of the crop, encompassing activities such as cutting, threshing, and gathering, pivotal in ensuring the efficient procurement of paddy from farmers' fields. Following collection, the raw paddy undergoes processing in rice mills, facilitated by processors, wherein a suite of activities including hulling, milling, polishing, and grading transpires. Processors leverage machinery and equipment to effectuate the transformation of raw paddy into marketable rice. Post-processing, the rice undergoes labeling, storage, packing, and transportation procedures to reach wholesalers or distribution centers, critical for preserving the quality and integrity of the rice throughout its journey from production to consumption. Wholesalers constitute another indispensable link in the value chain, procuring rice from processors and disseminating it to retailers or intermediaries, thereby engaging in bulk purchasing, inventory management, and efficient transportation to retail outlets. Retailers, the penultimate link, facilitate the sale of rice to end consumers through various channels such as supermarkets, grocery stores, or local markets, offering additional services such as packaging or branding. Ultimately, consumers form the culmination of the value chain, procuring and consuming rice for diverse culinary purposes, with their demand serving as the driving force behind the entire value chain, exerting influence on production, distribution, and marketing strategies. This comprehensive illustration underscores the holistic contribution of each value chain stage to the production and dissemination of rice, highlighting the intricate network of actors and processes converging to deliver a high-quality product to end consumers. Recognizing and comprehending the intricacies of the rice value chain is essential for enhancing efficiency, reducing costs, and fostering value creation for both producers and consumers alike.

The imperative to comprehensively understand and optimize economic activities within Village-based Traditional Community Systems (VTCs) stems from their pivotal role in fostering livelihoods and ecological restoration in rural communities. Despite this significance, there remains a notable dearth of empirical studies focusing on value chains within VTCSs. This scarcity underscores a critical gap in our understanding of the dynamics, resource flows, and stakeholder interactions inherent to VTCs. Without a thorough examination of value chains within these systems, it becomes challenging to identify and capitalize on development opportunities, enhance sustainability, and foster community resilience. Undertaking a value chain analysis allows researchers and stakeholders to unravel the intricacies of economic activities, identify inefficiencies, and formulate targeted interventions to optimize value creation. Therefore, the absence of comprehensive value chain studies in VTCSs accentuates the urgency and importance of conducting such analyses to inform evidence-based decision-making and drive inclusive development strategies in rural contexts. In essence, this report serves as a guiding beacon for stakeholders invested in the sustainable management and ecological restoration of VTCs. A holistic understanding of value chains facilitates the journey toward building resilient communities where economic prosperity harmonizes with environmental stewardship.

The continuation of research in Village-based Traditional Community Systems Analysis (VTCA) is imperative due to the current lack of comprehensive studies and the limited focus in this area, primarily stemming from challenges associated with conducting research experiments. The scarcity of research in VTCA hinders the understanding and development of sustainable agro-value chains in Sri Lanka. By conducting rigorous studies based on VTCA

system analysis, researchers can fill this knowledge gap and contribute to the enhancement of sustainable agricultural practices and value chain development. Such studies are essential for identifying key factors influencing the functioning of agro-value chains within traditional community systems, addressing challenges faced by stakeholders, and devising strategies to improve efficiency, sustainability, and resilience in these systems. Moreover, research in VTCA can provide valuable insights into the socio-economic dynamics, resource management practices, and community-level interactions that shape agricultural production and marketing in Sri Lanka. Thus, investing in research focused on VTCA is crucial for advancing agricultural development agendas, promoting rural livelihoods, and fostering inclusive growth in the country.

The exploration of value chain analysis within the confines of a village tank cascade system represents a novel endeavor within the realm of research. This uncharted territory is particularly pertinent in the quest to identify opportunities within rural and agroecological domains for the enhancement of livelihoods. The intrinsic importance of value chain analysis in this context emanates from its multifaceted capacity to unravel the intricate dynamics inherent within such systems.

At the crux of its significance lies the indispensable role of value chain analysis in elucidating the complex interplay of factors characterizing the village tank cascade system. By delving into this analytical framework, researchers endeavor to discern the various stakeholders implicated in the system's operations. These stakeholders encompass a diverse array of actors ranging from farmers to local authorities and water resource management agencies. A nuanced understanding of their roles and interactions is deemed imperative for the effective governance and management of the system.

Furthermore, the application of value chain analysis serves as a conduit for delineating the flow of resources within the village tank cascade system. This analytical process enables the meticulous mapping of water, labor, and capital resources as they traverse through the system's intricate network. In doing so, it affords researchers insights into potential bottlenecks, inefficiencies, and opportunities for optimization, thus laying the groundwork for informed decision-making.

Moreover, the evaluative dimension of value chain analysis assumes paramount importance in the context of the village tank cascade system. Through this analytical lens, researchers undertake a systematic assessment of value addition at each stage of the cascade. This entails a comprehensive examination of how inputs, including water and labor, transform into tangible outputs such as agricultural produce. By pinpointing areas conducive to value augmentation, value chain analysis paves the way for enhancing productivity and livelihoods within the system.

Equally pivotal is elucidating power dynamics engendered by value chain analysis within the village tank cascade system. This analytical endeavor sheds light on the distribution of power among disparate stakeholders, elucidating primary beneficiaries and marginalized entities alike. Such insights are instrumental in fostering equity and social justice within the community, thereby redressing imbalances and fortifying communal resilience.

1.2. Objectives

1.2.1. Overall Objective

To comprehensively assess and identify the present status across the selected value chains in the village tank cascade systems to enhance sustainability, livelihoods, and resilience in rural communities.

1.2.2. Specific Objectives

To systematically identify and map the existing value chains operating within the village tank cascade systems, delineating the flow of resources, products, and services aiming to provide a comprehensive understanding of the interconnected processes and stakeholders involved.

To assess the socioeconomic dimensions of the value chains in the village tank cascade systems in local communities, including income generation, gender dynamics, and social cohesion.

Chapter 02

2.1. Methodology

Study Scope: This research encompasses the entirety of the project implementation area delineated in Figure A and Table C.

Methodological Approach: A qualitative approach was undertaken in this study, a method commonly favored over quantitative approaches in value chain analyses. This approach entailed a thorough, descriptive examination of the various activities and processes within the respective value chain, facilitating the establishment of baseline status and the comprehension of opportunities for value chain development. Unlike quantitative analysis, which centers on numerical data and financial metrics, the qualitative approach accentuates the understanding of nuances, relationships, and dynamics among different components of the value chain.

Value Chain Study Procedure: The process of the value chain study, as depicted in Figure 2.1 involved several steps. Initially, sectors and subsectors/commodities emerging from Value Chain Transformation (VTC) landscapes were identified. This initial identification yielded a preliminary list of sectors and subsectors/commodities, along with their significance within VTC systems and the potential for inclusion of youth and marginalized individuals. Subsequently, this preliminary list underwent validation and updating before prioritization and identification of potential value chains for further analysis, based on predefined criteria outlined in the methodology section.

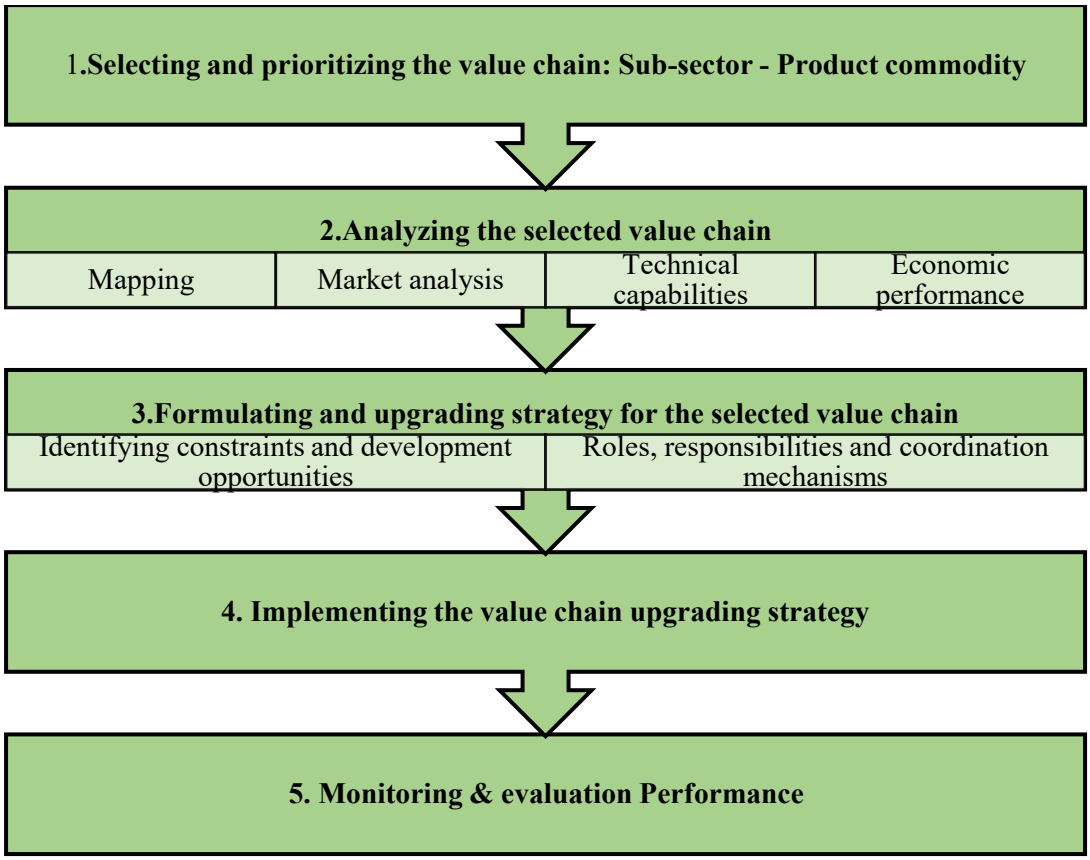


Figure 2.1. The schematic view of the process implemented in the value chain study

The subsequent step encompassed value chain analysis, which comprehensively covered all activities from raw material procurement to final customer delivery for the respective commodity. This phase involved the development of valuation maps for selected commodities, delineating all value chain actors, their linkages, the present status of value addition, gross margins, and market efficiencies. The evaluation of the value chain also entailed the identification of operational and market challenges.

Following the value chain analysis, attention turned to value chain development, focusing on strategic enhancements and optimizations of processes involved in product or service creation, manufacturing, and delivery. This endeavor aimed to analyze and enhance each value chain stage to bolster efficiency, reduce costs, and create value for producers and consumers. Opportunities for new market linkages, businesses, negotiations, and agreements were sought to address identified challenges.

The outcomes of the initial stages were consolidated into the first three deliverables of the assignment: a report on the baseline status of multi-sector value chains and marketing illustrations, a report on the review of value chain marketing options to enhance livelihood options within VTC systems, and the preparation of training documents for stakeholder and community capacity building to integrate value chain and marketing options. Resource support for organizing respective training programs was provided to the relevant stakeholders.

Tools employed for the value chain study included participant observation, crucial in qualitative research and particularly pertinent in anthropological studies encompassing value chain analyses. This method facilitated a deeper understanding of the characteristics of goods, and services, and the contextual intricacies of their value chains and developments. Additionally, semi-structured interviews (SSI) and focus group discussions (FGD) were utilized to gather information at various stages of the value chain study, fostering dynamic and iterative conversations yielding coherent insights and analysis, essential components of value chain analysis.

2.2. Study Area

This study covers the total project implementing area depicted in Table 2.1.

2.3. Sampling

The population of this study was delineated as comprising all multisectoral value chain actors and stakeholders within the respective market system. A two-stage sampling scheme was employed to select informants for data collection, incorporating non-probabilistic sampling methods at various junctures.

Initially, sampling occurred at the cascade level, with Grama Niladhari (GN) divisions serving as the primary sampling units, specifically targeting divisions with village tanks. Purposive sampling was applied in this stage, focusing on village tanks earmarked by the HLP for restoration, where the highest potential for the establishment of SVM was anticipated. The listing of selected village tanks, wherein some degree of restoration work had been initiated or was scheduled to commence, is detailed in Table 2.1.

Table 2.1. Primary sampling units selected based on purposive sampling

Tank	GN Divisions	Cascade	DS Division
Rambawalawewa	593 – Kelewa and Suburb GN divisions	Bellankadawala	Palugaswewa
Bulugahawewa			
Vidane Wewa			
Bellankadawala			
Hiriwadunna	591 – Hiriwadunna and Suburb GNs		
Thumbikulama	592 = Wayaulpotha and Suburb GN divisions		
Kapugama	603 – Horiwila and Suburb GN divisions	Horiwila	
Dumbuluwagama			
Thirappanewewa	562 - Walagambahuwa and Suburb GN divisions	Mahakanumulla	Thirappane
Pahalawewa			
Walagambahuwa			

The secondary sampling units are stakeholders in the respective market system and value chain actors sampled by the judgmental sampling method from the secondary sampling units. This is a commonly used sampling method in value chain studies that uses a qualitative approach.

2.4. Key Areas & Data Collection

Structured questions were developed under the following key areas to guide the data collection process, utilizing the above-mentioned tools across various stages of data collection. These questions served as guiding inquiries throughout the data collection process, constituting a dynamic checklist that was subject to updates as new inquiries emerged during data collection.

With consideration of personal background, respondents were queried about demographics and identity, tenure within their respective sector/production/business, roles therein, as well as relevant experiences and qualifications. Inquiries extended to familial aspects and involvement, alongside the extent of knowledge regarding VTCs, support mechanisms, and personal engagement.

For Identification of Sectors and Subsectors Functioning in VTCs, and Commodities Realized had aimed to elucidate major and minor sectors operative within VTCs, along with associated goods and services. Queries extended to key subsectors and the emergence of niche products within VTCs landscapes. Evaluation questions were posed to gauge the current status of sectors, subsectors, and their respective commodities, considering parameters such as popularity, family engagement levels, district-wise distribution, governmental and stakeholder involvement, economic contributions, market opportunities, as well as social and environmental impacts. Additionally, an assessment regarding the inclusivity of youth, gender, and marginalized individuals was conducted.

Prioritizing and Selecting Sectors/Subsectors/Commodities for Value Chain Analysis and Development entailed the identification of the ten most significant commodities originating from identified sectors and subsectors, followed by their ranking based on predetermined criteria detailed in Table 2.1.

2.5. Tools used for the Value Chain Study

The tools utilized for the value chain investigation encompassed a multifaceted array tailored to procure essential information and data across diverse tiers of the value chain examination, Participant observation, a pivotal component widely employed in qualitative research methodologies, notably finds application in anthropological inquiries inclusive of value chain investigations. This method facilitated a nuanced comprehension of the intrinsic characteristics of goods, and services, and the contextual nuances of their respective value chains and evolutions. Notably, this facet of the research endeavor was exclusively undertaken by the consultant and the collaborating expert vested in the comprehensive collection and analysis of data.

The employed methodology incorporated the utilization of Participatory Rural Appraisal (PRA) techniques, namely Transect Walk, Mapping, and Seasonal Analysis Pairwise Ranking, as tools for data collection. PRA, an established methodological approach within the realm of participatory research, was employed to engage local stakeholders in generating and interpreting relevant knowledge about the studied value chain.

Transect Walk, a fundamental component of PRA methodologies, involved systematic traversing through predefined geographical areas to observe and document environmental characteristics and socio-economic dynamics pertinent to the value chain under investigation. Mapping exercises complemented this observational process by facilitating the spatial representation of key elements within the value chain landscape, thereby elucidating spatial relationships and patterns of resource distribution.

Additionally, Seasonal Analysis Pairwise Ranking facilitated a structured assessment of seasonal variations in the perceived significance and performance of nodes and processes within the value chain. This methodological tool enabled the discernment of temporal fluctuations in value chain dynamics, thereby enriching the understanding of seasonal influences on value chain operations and outcomes.

By employing these PRA tools, characterized by their participatory nature and methodological rigor, comprehensive insights were garnered into the intricate dynamics of the value chain ecosystem under scrutiny.

Moreover, semi-structured interviews (SSI) and focus group discussions (FGD) emerged as indispensable tools deployed to elicit insights at varied junctures, encapsulating the value chain study's schematic. The interview protocol adopted was characterized by its dynamic and iterative nature, engendering a coherent tapestry of information. guided dialogues were premised upon predetermined thematic domains, yet remained flexible to accommodate emergent inquiries and insights stemming from the discourse. The consequential synergy between the dialogue participants and the ensuing visualized analyses assumed pronounced significance within the ambit of value chain analysis, amplifying the depth and granularity of the investigative endeavor.

2.6. Data Collection

The field-level coordination of the data collection process was executed with the utmost support provided by the staff of the Health Project (HLP) Field Coordination unit.

During the data collection, both secondary and primary data were gathered to identify sectors and subsectors supplying goods/services linked to VTCS. Secondary data were obtained through a review of existing literature pertinent to similar valuation studies. Primary data collection involved participant observations and key Informant Interviews (KIIs) conducted with the community, various stakeholders, and subject specialists.

Collecting data was aimed to identify and prioritize potential value chains within VTCS anticipated for sustainable development. Concurrently, outputs from Stage 01 were updated. Community and expert consultations, employing Focus Group Discussions (FGDs) as the primary data collection instrument, constituted the primary method. Structured questions were utilized to guide FGDs effectively.

Data collection was targeted at the identification of value chain actors, input supply stakeholders, and stakeholders within the enabling environment of the market system for value chain analysis. Participant observations, FGDs, and KIIs were employed. The semi-structured questions within the checklist above facilitated efficient data collection.

And it was aligned with the objectives of value chain development. Data were gathered from all actors within selected value chains, input suppliers, and stakeholders engaged in the enabling environment. Guiding structured questions from the provided checklist were utilized. FGDs and KIIs were employed to collect data from variously identified informants.

2.7. Data Analysis

Qualitative data analysis methods, along with graphical and numerical summary measures, were predominantly employed to draw expected inferences regarding the status of selected value chains using data collected across the aforementioned four stages. The utilization of exploratory data analysis further facilitated the comprehension of the gathered information.

The processes in the value chain were represented using a flow chart and the actors involved, core processes, and product flow were determined. The cost-benefit analysis was done to determine the amount of value added by each actor along the value chain. MS Excel was used to compute the value addition and gross profit percentages. The amount of value addition was measured by,

$$VA\frac{(Rs)}{(Kg)} = Selling\ Price - Unit\ Cost \quad \text{..... (1)}$$

2.8. Prioritizing the Value Chains

The process by which value chains were selected and prioritized for analysis constituted a pivotal initial phase in any value chain development initiative. This crucial decision-making process determined the potential socioeconomic impact that the value chain could achieve. A key factor considered during this phase was the incorporation of measures that allowed the active participation of impoverished individuals in business-related markets. If such measures were absent, additional components were deemed necessary to foster and support value chain development.

Requests for value chain analysis were typically issued by member states, partner institutions, or donor agencies, specifying the sectors or products that were to be examined. This prompted the execution of a rapid appraisal to evaluate the suggested agro-value chains and identify those with promising prospects for economic growth. The rapid appraisal comprised a desk review of several factors impacting rural industrial development, as well as a country's capacity to competitively produce and export manufactured goods. Critical factors reviewed during this appraisal included contributions to GDP, manufacturing value-added, labor costs, input costs, market potential, investment, and policy framework.

Upon completing the rapid appraisal, the selection of target value chains was refined using priority criteria that addressed various elements such as poverty reduction strategies, employment generation potential, startup costs, environmental and social standards, rural economic impact, risks and threats, demand, production costs, investment prospects, resource availability, infrastructure, skills, policy changes, and scalability. This set of criteria was flexible, allowing for adjustments based on regional or sector-specific conditions. Often, a weighted score sheet was utilized to effectively prioritize the value chains.

While the ultimate objective was to select specific subsectors, products, or commodities for further analysis, it was vital to retain a comprehensive focus on the overall development of the entire value chain. In promoting pro-poor agro-value chains, priority criteria were defined to consider the following factors:

- The sector's contribution to the country's poverty reduction strategy.
- The poverty level in the project area and the degree of marginalization.
- The potential for job creation through labor-intensive industries within the value chain.
- The availability of low-cost entry points that utilized low-tech skills.
- The possible impact of environmental and social standards on costs and competitiveness for impoverished agro-processors.
- The anticipated effects on the rural economy, including income diversification and employment opportunities for women.

Other considerations for economic growth and sustainable development include:

- Domestic and international market demand for the product.
- Production costs relative to competitors, including benchmarking and competitiveness assessments.
- Prospects for public and private investment.
- The availability of resources about the number of operators in the value chain.
- The existing infrastructure, financial services, and raw material supply.

- The workforce and management skill levels.
- Possible policy changes conducive to private sector development.
- The degree of alignment with other projects in the region and the scalability of the value chain.

This list of criteria could be expanded or adapted as required by the specific context and environment of the targeted region or sector. Additionally, the relative importance of each criterion determined the weight it received in the final assessment process.

Table 2.2. Assessment criteria used in prioritizing and selection of sectors/ subsectors/ commodities

Criteria	Sub criteria	Leading question
Economic/ market Criteria	Demand from the existing end markets	Is there a high demand within existing end markets?
	The gap in the supply to address	Are there gaps in supply to be addressed? / Are there more opportunities to increase supply?
	Potential for improvement and value addition	Are there more opportunities/ potential for value addition and venture creation?
	Realistic opportunities to reach new end markets	Are there realistic opportunities to find new/ niche markets?
Impact on the poverty alleviation in VTCS	Involvement of the poor	Are there more opportunities to get the poor into the system?
	As a sustainable livelihood opportunity	How about its sustainability as a livelihood for the poor?
	Potential for high profit margins and short-term	Does it provide high margins and quick returns etc.?
Environmental resilience	Environment-Friendly (Pollution Free)	Is this environmentally/ Ecologically friendly? Any potential environmental pollution?
	Resilient to climate change	Is it resilient to climate change?
	Adaptations/Mitigation to Climate Change	How much does it adapt to climate change and support mitigating climate change?
	Support ecological restoration	Are there any measures/ implications/ practices that can support the restoration of VTCS?
Feasibility	Enabling Environment and availability of supportive mechanisms	Are there any actions/ programs/ parties/ mechanisms that promote/support engagements of private/ public sectors and civil societies? / Does the enabling environment support its development?
	Social acceptance	What about social acceptance? Are there any socially unacceptable practices involved?
	Environmental support	Are environmental conditions in VTCS favorable for this sector/ subsector?
	Economic/ Market risk	How about the economic/ market risk? (lower the risk higher the rank)
Inclusion of Gender/ Youth/ marginalized persons	Inclusion of gender	Are there more opportunities for inclusion of gender?
	Inclusion of the youth	Are there more opportunities for inclusion of youth?
	Inclusion of marginalized persons/ groups	Are there more opportunities for inclusion of marginalized persons (differently able persons/ families, widows, underprivileged persons, etc.)

An initial market analysis was undertaken to assess the demand for specific products or commodities, a crucial step in determining the prioritization of value chain selection. While detailed analysis wasn't deemed necessary at this early stage, attention was paid to key factors such as market specifics, competitor performance, and conditions for market access. This initial analysis facilitated the evaluation of strategic positioning and commercial strategies, which in turn helped to identify both challenges and opportunities in local and international markets.

Resources such as training manuals and specialized publications were employed to aid in market analysis and demand forecasting. These materials provided critical insights into economic and market trends, enabling businesses to make informed decisions regarding their product offerings. The insights drawn from these resources contributed to the broader understanding of the market environment in which the value chain study was conducted.

The study outlined the initial findings of the value chain investigation, with a particular focus on the baseline status of various sectors and subsectors or commodities within the framework of Value-Chain Trade and Competitiveness Schemes (VTCSs). Table 2.2 showcased some of these baseline findings, serving as a reference point to measure progress throughout the study. Six main sectors within the VTCSs were identified, with key commodities from each sector highlighted to emphasize their current relevance in the market landscape.

Table 2.3: Baseline status of the sectors and subsectors/ commodities prominent in VTCSs that were identified during the first step of the value chain study

Sector	Subsector/ Commodity	Baseline Status			
		Prominence	Inc_Gen	Inc_Youth	Inc_MPs
Agriculture – Food crop production	Rice production	*****	***	**	***
	Traditional rice production	**	***	***	**
	Seed paddy production	**	***	***	**
	Maize production	***	***	***	***
	Other cereals and grains production	***	***	***	**
	Groundnut production	***	***	**	**
	OFC (green/ black grams/cowpea etc.)	****	***	***	**
	Vegetable crop production	****	***	****	**
	Mushroom production	**	***	**	**
	Root and tuber crop production	**	**	**	**
	Sesami production	***	**	***	**
	Condiments production (Big onion)	***	***	**	*
Agriculture - Fruit crop prod.	Wood apple	**	***	****	****
	Papaya cultivation	***	***	***	**
	Banana cultivation	****	***	**	**
	Guava cultivation	****	***	***	*
	Pineapple cultivation	***	***	**	*
Plantation/ other crop production	Coconut cultivation	**	**	*	*
	Rubber cultivation	*	**	*	*
	Cinnamon cultivation	*	**	*	*
	Pepper cultivation	*	**	**	*
	Vanilla cultivation	*	**	**	*
	Aloe vera cultivation	**	***	***	*

	Beetle cultivation	***	*	*	*
	Beekeeping	*	***	*	**
Livestock and Naviance production	Dairy farming	****	***	***	***
	Mutton/ goat husbandry	*	*	**	**
	Swine husbandry	*	*	**	***
	Backyard poultry	***	****	**	****
Inland fisheries	Food fish production	****	*	***	*
	Smoked and dried fish production	***	***	***	***
	Ornamental fish cultivation	*	***	***	**
Industries (small and medium) and other	Ayurvedic/ herbal/ medicinal products	***	***	***	***
	Reeds based products	**	*****	*	***
	Domestic garments	**	*****	***	**
	Toye making	*	****	***	*
	Bee honey collection	***	*	**	**
	Handloom industry	**	*****	****	*
	Fiber-based products	**	***	***	***
	Rexene/ leather-based products	**	***	***	***
	Aroma stick making	**	***	****	*****
	Palmira leaf-based products	*	****	****	****
	Beauty culture	***	*****	*****	**
	Handicraft industry	***	***	***	***
	Pottery industry	***	***	**	***
	Bakery production	***	***	***	***
	Sweet/ Candy production	**	****	****	***
	Traditional/ village food production	***	*****	*****	***
Tourism	Ecotourism	**	****	****	***
	Homestay	***	***	***	***

In the process of preparing an agro-industrial master plan for Sri Lanka, a comprehensive prioritization process was undertaken to identify commodities with the highest demand and potential impact. This study examined fifty (50) sub-sectors of commodities, evaluating them based on their importance to the economy, relevance to national food security, and contribution as sources of foreign exchange. Several factors were considered in the assessment, including productivity, cost of production, existing infrastructure, and the overall business environment.

The study assessed the attractiveness of these industries to investors through the analysis of the policy environment, available incentives, and access to essential technology, infrastructure, services, and facilities. Another critical consideration was the potential for short-term impact, focusing on sectors and commodities that could achieve significant improvements along the value chain without requiring substantial infrastructure investments.

To gather relevant data, the study utilized a combination of secondary data reviews and interviews with key informants, including representatives from government departments and the private sector. During the initial stage of the value chain study, all identified sub-sectors and commodities were rigorously evaluated as shown in Table 2.3, incorporating both community and expert perspectives. This rigorous evaluation was guided by the assessment criteria outlined in Table 2.2, with the outcomes reported in Table 2.4.

The findings from this prioritization process were instrumental in directing the subsequent steps of the value chain analysis. The results of this comprehensive evaluation provided a clear roadmap for the further development of value chains in Sri Lanka's agro-industrial sector, highlighting the areas with the most promise for rapid growth and significant economic impact.

Table 2.4: Selected Prioritized value chains for analysis

Commodity	Mean score					Grand mean score
	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Criteria 5	
1. Regular paddy production	2.75	3.33	2.50	3.25	2.67	2.90
2. Traditional rice production	4.00	3.33	3.00	2.75	3.00	3.22
3. Seed paddy production	3.50	3.00	2.25	3.25	3.00	3.00
4. Dairy production	3.25	3.33	3.00	3.00	3.00	3.12
5. Ecotourism	4.25	4.67	4.25	3.75	4.00	4.18
6. Food fish production	4.25	3.33	3.25	3.50	2.00	3.27
7. Traditional/ village food production and catering	3.75	3.67	3.50	2.75	4.00	3.53
8. Reed based products	3.00	3.00	3.75	2.50	3.67	3.18
9. Bee honey collection	3.75	3.67	3.75	3.00	2.00	3.23
10. Ayurvedic/ herbal products and other forest products	3.25	2.67	4.00	3.25	3.00	3.23

The table outlines a scoring system used to evaluate ten commodities based on five criteria. The mean scores for each criterion were listed, and a grand mean score was calculated for each commodity by averaging the individual criterion scores. The grand mean score gives an overall indication of how each commodity performed in the analysis, with higher scores suggesting a greater potential for success in the village tank cascade system.

An analysis was conducted to determine the most promising value chains within the village tank cascade system. This analysis involved ten different commodities, each evaluated based on five distinct criteria. The exact nature of these criteria encompassed factors such as economic viability, sustainability, community benefits, or resource efficiency. The mean scores for each criterion were averaged to obtain a grand mean score for each commodity. The four highest-scoring commodities in this analysis were identified. The top position was taken by ecotourism, which received a grand mean score of 4.18. This was followed by food fish production with a score of 3.27. Traditional/village food production and catering, with a grand mean score of 3.53, also ranked highly. Bee honey collection secured the fourth position with a score of 3.23. These four commodities were considered the most promising value chains for further development and focus within the village tank cascade system, providing valuable insights for stakeholders and decision-makers.

Chapter 03

3.1. Present Status of the Selected Value Chains

The value chain process was mapped to facilitate a comprehensive understanding of how value was created and distributed across the entire chain. This exercise employs both qualitative and quantitative methodologies, frequently incorporating graphical representations to delineate the various actors within the chain, their interconnections, and the full spectrum of operations. These operations encompass pre-production stages, such as the supply of inputs, and extend through subsequent phases, including industrial processing and marketing.

The structure and flow of the value chain were described in logical clusters, encompassing the various actors involved, the connections among them, and the entire range of chain operations from pre-production (including the supply of inputs) to industrial processing and marketing.

The value chain was quantified by adding details to the basic maps that had been initially drawn to depict the structure and flow. Depending on the level of detail required for the research entry point, this process focused on elements such as the size and scale of key actors, production volume, the number of jobs created, sales and export destinations, and their concentration, as well as the existing policy and regulatory framework.

3.1. Present Status of the Bee Honey Value Chain

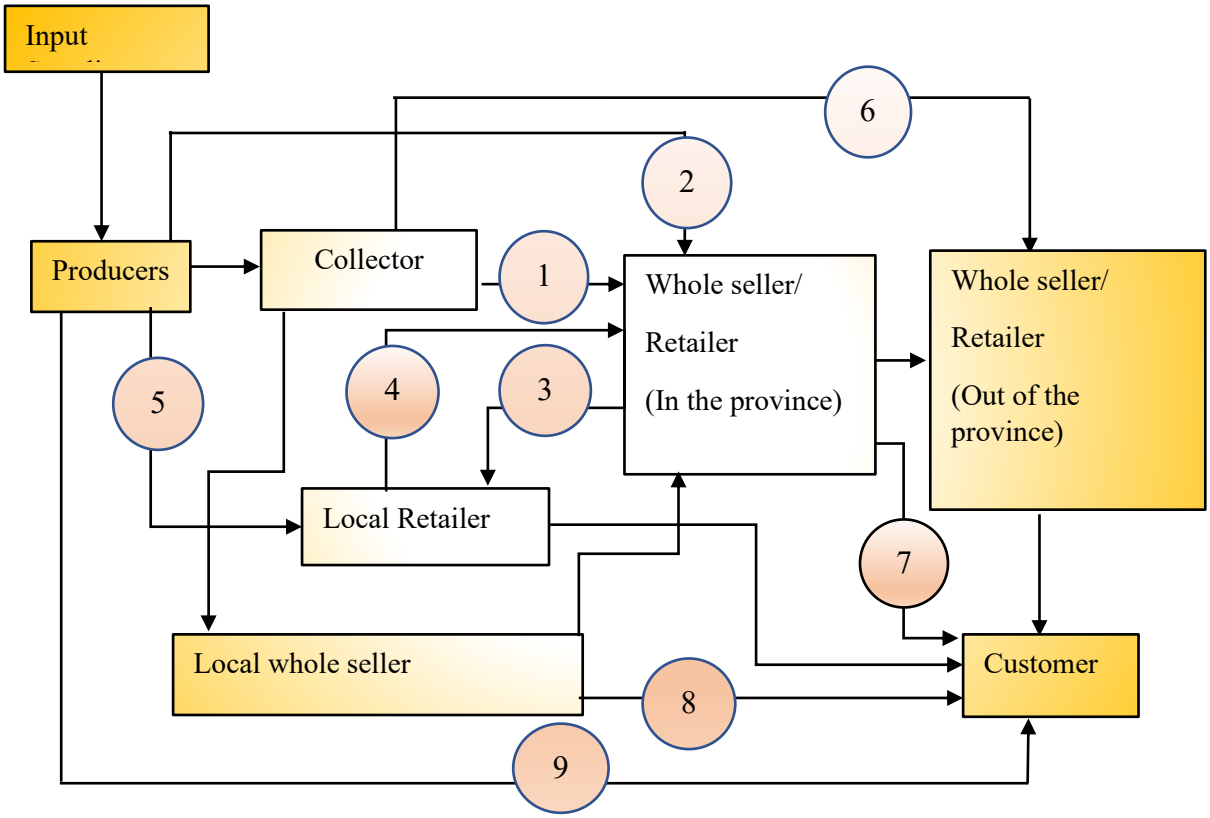
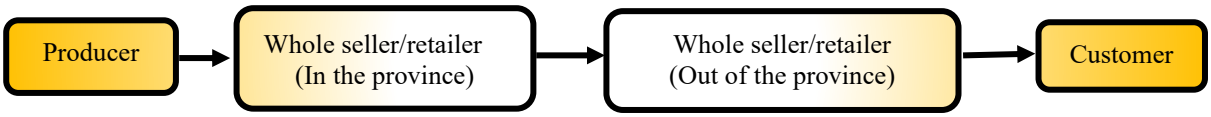


Figure 3.1.1. Bee honey value chain map under VTCS

Channel 1 :

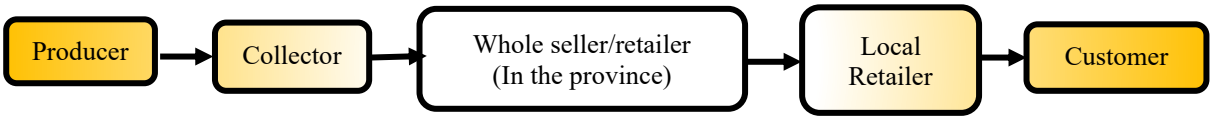
As determined in this channel, the products were issued by the producer from Asirigama village to a collector at a price of approximately Rs. 1200.00 and then transported through the collector to wholesalers and retailers for Rs. 1300.00, located within the Anuradhapura province, including places such as Ganewalpola and Hingurakgoda. From there, the products were distributed to wholesalers outside the province, in locations such as Jaffna, Kandy, and Colombo, for Rs. 1400.00. Ultimately, then value-added products were distributed to Retailers outside the province for Rs.2600.00. Final products were provided to customers for Rs. 3800.00. Product and price differentiations were sometimes observed due to the value-adding process.

Channel 2 :



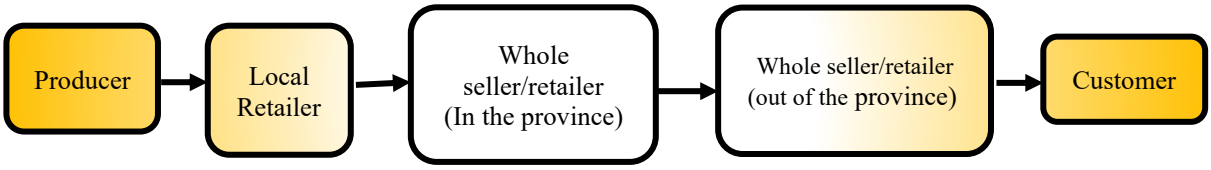
The products were initially issued by the producer from Asirigama at a price of approximately Rs. 1300.00. Subsequently, these products were supplied to wholesalers and retailers within the province for a price of Rs. 1400.00. From there, the products were distributed to wholesalers and retailers in other regions, including Jaffna, Kandy, and Colombo, at around Rs. 1650.00. Ultimately, the final products reached customers for Rs. 3500.00. Variations in product characteristics and pricing could be observed depending on the intended use, such as in the medicinal, beauty, and cosmetic industries.

Channel 3 :



In this channel, the products were initially issued by the producer to a collector at a price of approximately Rs. 1200.00. Subsequently, the products were supplied to wholesalers or retailers within the province for Rs. 1400.00. After value addition, these products were distributed to local retailers at prices between Rs. 1600.00 and Rs. 1650.00. Finally, the end products were provided to customers for approximately Rs. 3500.00.

Channel 4 :



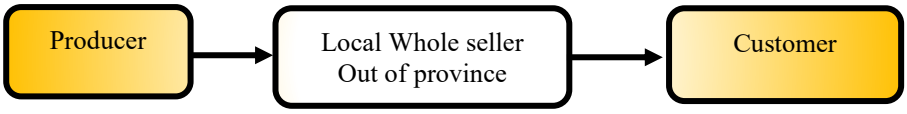
Products are issued by the producer at a price of around Rs.1200.00 to local retailers. Then the products are distributed to wholesalers and retailers within the province for a price of Rs.1300.00. Then, the products are provided to wholesalers and retailers out of the province.

for Rs.1650.00. such as Jaffna, Kandy, and Colombo. Finally, the final products are provided to the customer for a price of Rs.3500.00.

Channel 5 :

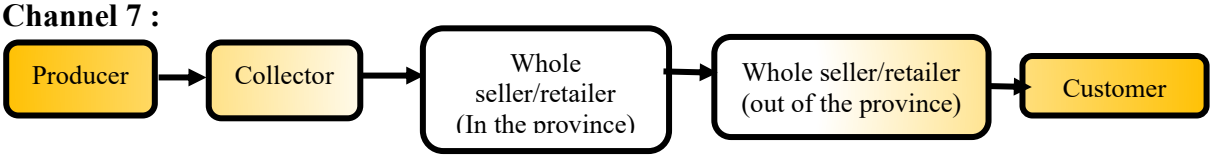
Products are issued by the producer from Kudarambawa at a price of around Rs.1200.00 to the local retailer. Then provided to the customer for the price of Rs.1800.00.

Channel 6 :



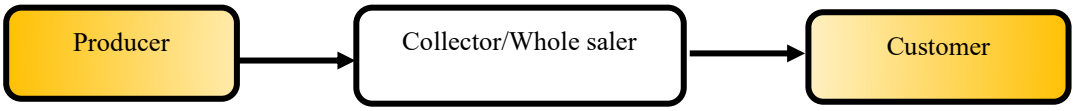
Products are issued by the producers from Kudarambawa at a price of around Rs.1200.00. The products are obtained by local wholesalers out of the province, and they are located in areas such as Colombo, Kandy, Mathara, and Gampaha. Through local intermediaries, the products are provided to retailers for a price of 1400.00. Finally, the final products are provided to the customer for the price of Rs. 2500.00

Channel 7 :



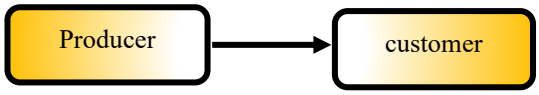
As identified in this value chain products were issued by the producer from Kumbukwewa at a price of around Rs.1000. mainly products were collected from the producer by the collector and wholesalers located within the Anuradhapura province, such as Ganewalpola and Hingurakgoda. From there, the products are distributed to retailers outside the province, such as Jaffna, Kandy, and Colombo for the price of Rs.1500.00. The final products were provided to the customer for a price of Rs.3000.00.

Channel 8 :



Products are issued by the producer from Kumbukwewa at a price of around Rs.1000.00 to the Collector and Wholesaler. Then the final products were provided to the customer at a price of around Rs.2750.00.

Channel 9 :



Products are issued to producers from Kumbukwewa at a price of around Rs.2000.00 for local customers from Mahanuwara and Kuliyapitiya. Production is limited.

3.1.1. Identifying the Key Processes

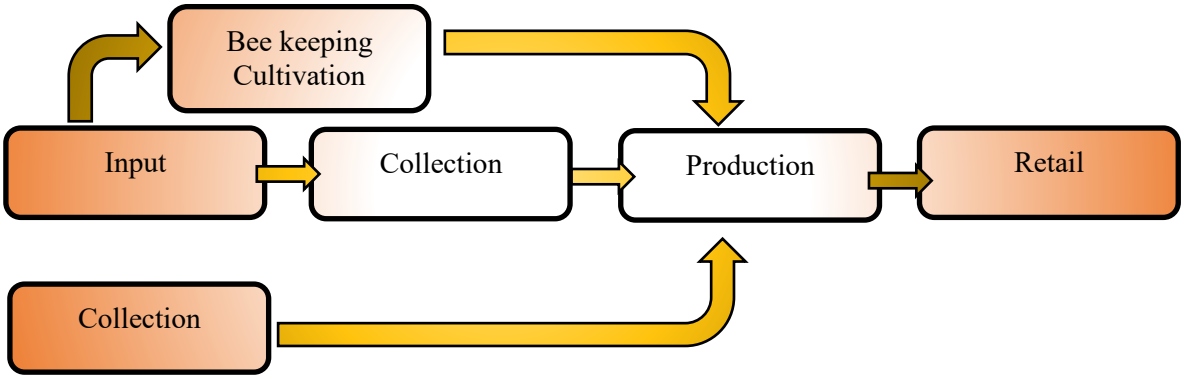


Figure 3.1.2. Core processes of Bee honey value chain

In the study on the bee honey value chain, several key processes were identified. The analysis encompassed the identification of specific inputs and individual beekeepers, as well as the various stages of production, collection, intermediation, wholesaling, retailing, and final consumption.

During the input provision stage, essential tools such as baskets, containers, axes, and boxes were utilized. These items, along with other raw materials like collection tools and specialized safety equipment, were sourced from dedicated providers. Honey could be collected directly from natural forest environments or cultivated on small-scale honey farms.

In the production stage, raw bee honey was harvested from beekeepers who used traditional methods involving baskets and axes. The collected honey was then processed, typically involving filtration and quality control measures, to ensure that it met retail standards.

Intermediation was carried out by middlemen who facilitated the transition of raw honey to processed products. This stage also included quality control checks to maintain product standards. Wholesale activities involved large-scale distribution of quality-controlled honey to various retail outlets.

The retailing stage was marked by the sale of processed bee honey in various formats, including jars and bottles. Additionally, value-added processes such as labeling and packaging were employed to enhance product appeal to consumers. The final stage involved the consumption of bee honey products, with value-added variations such as flavored honey, honey spreads, and other related products entering the market.

Figure 3.1.3. Core processes of Bee honey cultivation

3.1.2. Identifying the Key Actors

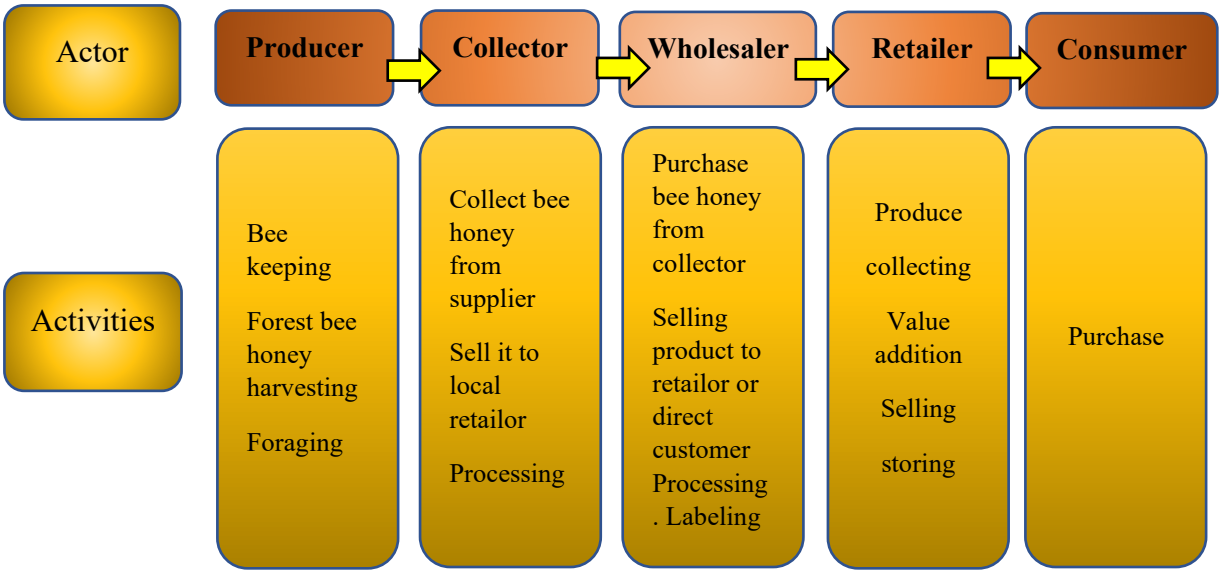


Figure 3.1.4. Bee honey value chain mapping actors

According to this study, the bee honey value chain encompasses various stakeholders, including beekeepers, forest bee honey hunters, intermediaries, collectors, retailers, wholesalers, and customers. Beekeepers and forest bee honey hunters are involved in beekeeping and forest bee honey hunting, which also include activities such as retailing, wholesale, collecting, and direct supply of bee honey to customers. In some cases, the honey is processed before reaching consumers, and transportation is used to facilitate the distribution of honey products. Local intermediaries, who do not typically charge significant fees, create connections within the bee honey value chain, often facilitated by individuals from outside the village. The study indicates that bee honey collectors are not limited to collection alone; they may also engage in retailing, wholesale, and processing, with additional activities like storing, value addition, and quality control. Retailers, categorized into local, in-province, and out-of-province groups, frequently participate in wholesale and sometimes also in collection and processing. Wholesalers, similarly divided into local, in-province, and out-of-province, generally engage in retailing alongside their wholesale functions, with some roles in storing, value addition, and quality control. Finally, the customer base for bee honey, according to this study, spans a range of uses, including Ayurvedic products, food for consumption, and cosmetics. Throughout the value chain, transportation has been consistently used to connect each stage, ensuring the efficient flow of bee honey products.

Figure 3.1.5. Actors of Bee Honey value chain VTCS

3.1.3. Mapping the Resource Flow

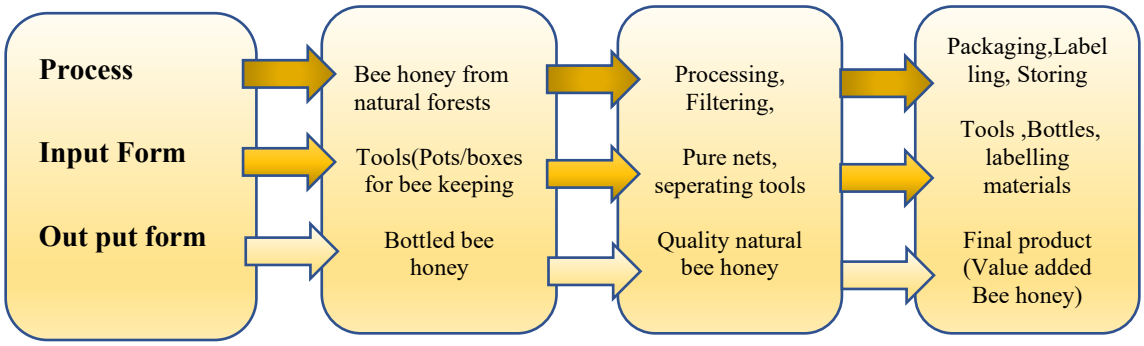


Figure 3.1.6. Resource flow in the Bee honey value chain of VTCS

In the study of the bee honey value chain within the Village Tank Cascade System, the resource flow was examined from the initial stages of honey production through to the final distribution of bottled honey. The process began with natural forests, which provided the primary source of nectar for bees. Within these forests, bees collected nectar from a variety of flowers, establishing the foundational material required for honey production.

Individual beekeepers contributed to the value chain by setting up infrastructure such as pots or boxes to serve as hives for bees. The placement of these hives was strategically chosen to maximize nectar collection, facilitating a higher yield of honey. During the collection phase, honeycombs were carefully harvested to minimize disruption to the bees, ensuring the ongoing sustainability of the hives.

Once collected, the honeycombs were processed to extract honey. This process involved several steps, including uncapping the combs and employing centrifugal force to separate the honey from the wax. Following extraction, the honey underwent a filtration process designed to remove impurities such as beeswax and other debris. Specialized nets and separating tools were used to ensure that only pure honey was obtained.

Quality control measures were implemented throughout the process to maintain the purity and integrity of the honey. These measures adhered to regulatory standards and consumer expectations, with each batch of honey subject to rigorous testing to ensure it met the required quality levels. The processed honey was then bottled for distribution and sale, ready to be sent to retailers or directly to consumers.

The research highlighted that by meticulously managing each stage of the value chain, beekeepers could optimize efficiency, reduce costs, and enhance the overall quality of the honey. This attention to detail not only helped in meeting market demands but also contributed to increased profitability, ensuring the sustainability of the bee honey value chain within the Village Tank Cascade System.

Figure 3.1.7. Example Bee honey product flow in VTCS

3.1.4. Mapping the Information Flow and Supportive Activities and Services

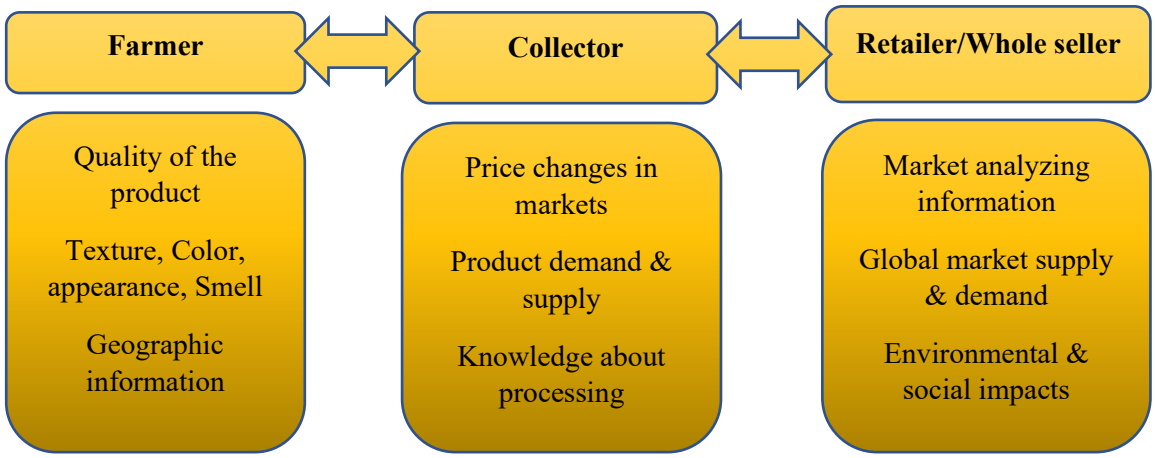


Figure 3.1.8. Information mapping for Bee honey value chain

According to the study, the quality of bee honey products was influenced by various factors such as texture, color, appearance, and smell. Geographic information was exchanged among input suppliers, producers, and collectors, affecting the overall quality of the product. The exchange of information about market price fluctuations, product demand, and supply was also noted. Knowledge about processing, difficulties with product prices, product demand, and grading, as well as the emergence of new opportunities for bee honey products, were exchanged throughout the value chain. Different grades of bee honey products and standards related to their production were communicated between stakeholders.

The relationship between traders and farmers was critical in this exchange process. Traders informed farmers about product requirements, while farmers provided information about product availability. This dialogue allowed for the analysis of options for demand-driven upgrading of knowledge skills, technology, and support services. Tools for tracking the flow of knowledge and information across the value chain were used to help identify the areas of improvement.

An important aspect of this study involved considering the role and position of the poor within this knowledge exchange process. It analyzed whether the poor participated in this knowledge exchange within the bee honey value chain. Figure 2.7, referenced in the study, depicted a map showing the knowledge held by each actor throughout the bee honey value chain, highlighting the importance of knowledge sharing in enhancing product quality and market opportunities.

3.1.5. Supporting Services

Farmers' organizations and national associations (Palugaswewa- Vidatha Center, Department of Agriculture-Beekeeping supporting units also play vital roles in facilitating value chain development. Farmers' organizations enable small-scale producers to participate effectively in value chains by reducing production costs, enhancing value-added activities, and representing farmers' interests. National associations, including farmers' unions and sector associations, provide platforms for dialogue between farmers, government entities, and other stakeholders, contributing to policy development and sector-wide collaboration.

3.1.6. Evaluating the Performance

Table 3.1: Honey Bee Value Chain: Average Value Addition

Channel	Total Cost (Rs.)	Selling Price (Rs.)	Average Value Addition (Rs.)
Channel 1			
Producer	645.68	1200.00	554.32
Collector	1201.85	1300.00	98.15
Wholesaler 1	1335.66	1400.00	64.34
Wholesaler 2	1483.55	2600.00	1116.45
Retailer	3142.10	3800.00	657.90
Channel 2			
Producer	645.68	1300.00	654.32
Wholesaler 1	1331.08	1400.00	68.92
Wholesaler 2	1472.60	1650.00	177.40
Retailer	2600.00	3500.00	900.00
Channel 3			
Producer	645.68	1200.00	554.32
Collector	1229.85	1350.00	120.15
Wholesaler	1422.60	1650.00	227.40
Retailer	2600.00	3500.00	900.00
Channel 4			
Producer	644.58	1200.00	555.42
Local Retailer	1203.08	1300.00	96.92
Wholesaler 1	1372.60	1650.00	277.40
Wholesaler 1	2600.00	3500.00	900.00
Channel 5			
Producer	700.00	1200.00	500.00
Local Retailer	1203.08	1800.00	596.92
Channel 6			
Producer	644.98	1200.00	555.02
Collector-Wholesaler	1230.60	1400.00	169.40
Retailer	1401.25	2500.00	1098.75
Channel 7			
Producer	645.48	1000.00	354.52
Collector-Wholesaler	1037.10	1500.00	462.90
Retailer	2050.00	3000.00	950.00
Channel 8			
Producer	645.48	1000.00	354.52
Collector-Wholesaler	1001.25	2750.00	1748.75
Channel 9			
Producer	643.83	2000.00	1356.17

(Note: Average Value Addition was calculated for one kilogram)

The data in Table 3.1 presents nine distinct honey bee value chains, each with varying actors and their associated costs, selling price, and average value addition. The analysis of average value addition across contributions by producers, collectors, wholesalers, and retailers.

In Channel 1, incremental increases at each stage led to a total value addition of Rs. 2490.16, with significant contributions from Wholesaler 2 and the retailer. Channel 2 displayed a different structure, where the retailer contributed the most significant addition (Rs. 900.00), resulting in a total value addition of Rs. 1800.64. Channel 3's structure, with a collector, wholesaler, and retailer, achieved an average total addition of Rs. 1801.87, emphasizing retail and wholesaler contributions.

In Channel 4, the producer's Rs. 555.42 addition was followed by contributions from two wholesalers and a retailer, leading to a total value addition of Rs. 1829.74. Channel 5, with only the producer and the local retailer, achieved a simpler pathway with a total addition of Rs. 1096.92. Channel 6, featuring a collector-wholesaler, recorded a total average value addition of Rs. 1823.17, with significant contributions from the retailer.

Channel 7, with a producer, collector-wholesaler, and retailer, had a total average value addition of Rs. 1767.42, with substantial retail-related costs. Channel 8 had one of the largest contributions from a collector-wholesaler (Rs. 1748.75), resulting in a total value addition of Rs. 2103.27. Finally, Channel 9, involving only the producer, reached a total average value addition of Rs. 1356.17, highlighting a simpler chain structure.

The total average value addition in each channel is calculated by summing the average value additions from each actor within a given value chain. This measure indicates the cumulative addition of value as the product moves from the producer to the final retailer.

In **Channel 2**, the retailer added significant value to the product. The average value addition for this actor was Rs. 900.00, contributing the most significant increase in the selling price along this channel. The retailer's substantial value addition reflects its role in bringing the product closer to the end consumer, often involving costs related to storage, transportation, marketing, and retail operations. This addition results in a selling price of Rs. 3500.00, indicating the highest price at the consumer end.

Conversely, in **Channel 1**, the largest value addition was seen at the final retail stage, where the retailer added Rs. 657.90 to the cost. This channel's value chain progressed through several stages, including producers, collectors, and wholesalers, before reaching the retailer. Each actor contributed varying levels of value, but the retailer's role in reaching the end consumer and providing a comprehensive retail experience appeared to be the most significant in driving up the selling price.

Another noteworthy finding is in **Channel 4**, where Wholesaler 1 added Rs. 277.40 to the average value, showcasing a substantial contribution to the cost increase. This role possibly includes bulk storage and distribution, emphasizing the intermediary step between smaller-scale collectors or producers and final retailers.

Channel 6 displayed a significant average value addition at the retailer level (Rs. 1098.75), indicating the retail sector's critical role in driving the product's final price to the consumer. This suggests that retailers are key players in the value chain, often responsible for the largest price increments.

3.1.7. Key Findings

The highest average value addition in the honey bee value chain is observed in the retail sector across most channels. This finding underlines the importance of retailers in determining the final price to consumers and suggests that efforts to optimize the value chain should consider the influence and efficiency of retail operations. The varied value additions across different channels indicate a complex network of actors, each contributing uniquely to the final product's cost and price.

In this study, significant insights into bee honey production patterns, harvesting volumes, and associated challenges were derived. Maximum bee honey harvesting was observed in the Palugaswewa divisional area during July, August, and September, with total output reaching approximately 24 metric tons (mt). During January, February, and March, average levels of harvesting were recorded, yielding a collective supply of approximately 4.8 mt. The period with the lowest production was noted in October, December, April, and May, contributing to an output of only 0.24 mt. Annually, the study estimated a total supply of approximately 29.04 mt in the Palugaswewa area.

Furthermore, it was identified that the honey sold by wholesalers consisted of a mixture of bee honey and wasp honey, with bee honey accounting for about 30% of the mix, while wasp honey constituted about 70%. This mixing of different types of honey was observed as a common practice among wholesalers.

An investigation into factors affecting bee honey production found that the yellow-flowered Acacia plant, originally from Australia, was somewhat detrimental to bee honey production due to its impact on bee population dynamics. Additionally, it was determined that about 85% of the natural bee honey collected by producers came from reserved forests near the Palugaswewa divisional region. In contrast, 13% of producers utilized beekeeping methods involving pots, boxes, and concrete tunnels. Only 2% of beekeepers employed wooden boxes, a method that was found to be less effective in comparison.

These findings underscore the variability in honey production across different periods and the significant influence of environmental factors on bee populations and honey yield. Moreover, the data highlight the need to address the mixing of bee and wasp honey in the supply chain and the potential environmental challenges affecting bee honey production.

Figure 3.1.9. Fish selling place in VTCS

3.2. Present Status of the Food Fish Value Chain

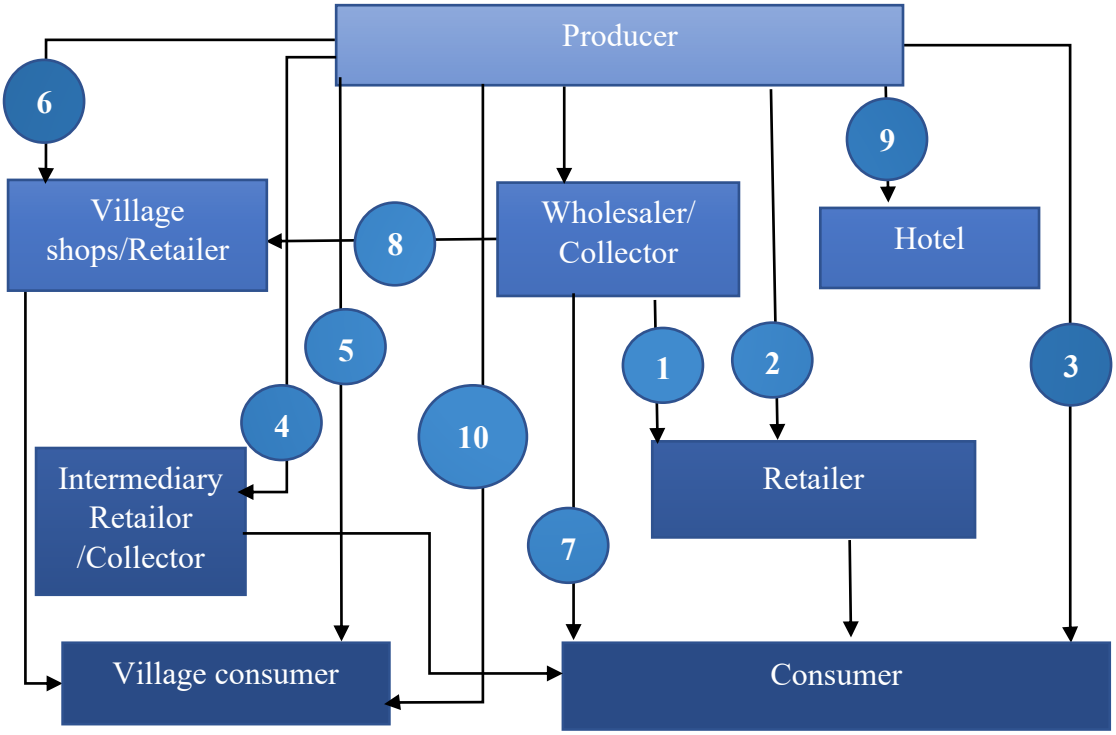
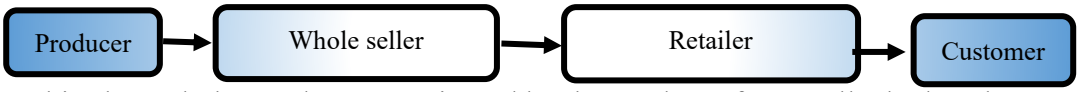


Figure 3.2.1. Food fish value chain under VTCS

Channel 1 :

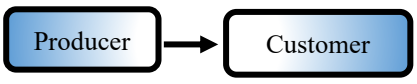


In this channel, the products were issued by the producer from Bellankadawala to a wholesaler who was also from the same area at a price of approximately Rs. 500.00 and then transported to Retailers from Kekirawa for Rs.600.00. Final products were provided to customers for Rs. 800.00.

Channel 2 :

The products were initially issued by the producer from Bellankadawala at a price of approximately Rs. 450.00. to a retailer from the same area and final products reached customers in the same area for Rs. 600.00. Variations in product characteristics and pricing could be observed depending on the intended use.

Channel 3 :

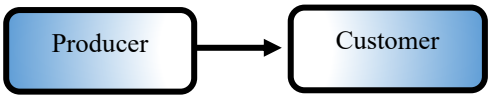


In this channel, the products were directly issued by the producer in Bellankadawala to customers without any intermediatory involvement for the price of Rs. 500.00. there was no value addition

Channel 4 :

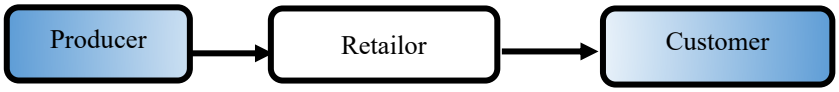
Products are issued by the producer from Bellankadawala at a price of around Rs.500.00 to local retailers. Then the products are distributed to the customers in Bellankadawala for a price of Rs.700.00.

Channel 5 :



Products are issued by the producer in Thumbikulama to the customer from the same area for the price of Rs.500.00. without any processing activities.

Channel 6 :



Products are issued by the producers from Thumbikulama, through local intermediaries from Digampathana, to retailers for a price of 500.00. The final products are provided to the customer for the price of Rs. 600.00

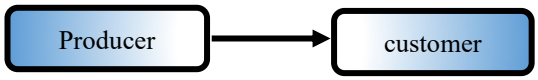
Channel 7 :

Mainly products were collected from the producer in Thumbikulama by the collector in the same place at a price of around Rs.500.00 . From there, the products are distributed to the customer for a price of Rs.700.00.

Channel 8 :

Products were issued by the producer in Horiwila at a price of around Rs.500.00 to the collector and retailer from Habarana. Then the final products were provided to the customer at a price of around Rs.900.00.

Channel 9 :



Products are issued to producers in Horiwila at a price of around Rs.500.00 for customers' hotels around the village and the production is limited

Channel 10 :

In this value chain products were issued by the producer from Horiwila at a price of around Rs.500.00 and products were collected from the producer by the collector who was also a retailer. From there, the products were distributed to the customer for a price of Rs.700.00.

3.2.1. Identifying the Core Processes

Figure 3.2.2. Core processes of food fish value chain

In the village tank cascade system (VTCS), a series of interconnected steps were employed to manage the fish food value chain, from production to retail. The production stage was primarily centered around traditional fishing methods. Boats, tubes, and nets were utilized to catch fish from village tanks, which are small, community-managed reservoirs commonly found in rural areas. This step involved not only the act of fishing but also the community's knowledge and expertise in sustainable practices. Following production, the processing phase took over. In this stage, processors were responsible for preparing the fish for market. The fish were cleaned, sorted, and cut into fillets, depending on market demand. Additionally, measures were taken to preserve the fish's freshness; this could involve packing the fish in ice or using freezing techniques. The processing step was crucial in ensuring that the fish met quality standards and maintained safety for consumption. Transport formed the next stage in the value chain, characterized by the logistical challenge of moving perishable goods. Given the sensitive nature of the product, careful measures were taken to transport the fish efficiently and hygienically. Vehicles equipped with refrigeration or ice storage were used to ensure that the fish remained fresh throughout transit. The goal was to minimize spoilage and maintain the product's quality until it reached its destination. Wholesale operations were a significant component of the fish food value chain. Wholesalers typically purchase fish in large quantities from processors or from those involved in fresh fish catches. Once the fish were acquired, the wholesalers consolidated the supply, enabling them to distribute to various markets and buyers. They played a critical role in bridging the gap between processors and retailers, allowing for a more organized distribution network.

The retail stage represented the last point before the fish reached consumers. Retailers in this stage were responsible for selling fish directly to customers. They often sourced their products from wholesalers, though some chose to buy directly from processors or producers. The key characteristic of this stage was its direct interaction with consumers, offering a range of fish products and accommodating customer preferences. This phase of the value chain was where the final product was presented, and customer satisfaction was prioritized.

Figure 3.2.3. Fish production under VTCS

3.2.2. Identifying the Key Actors

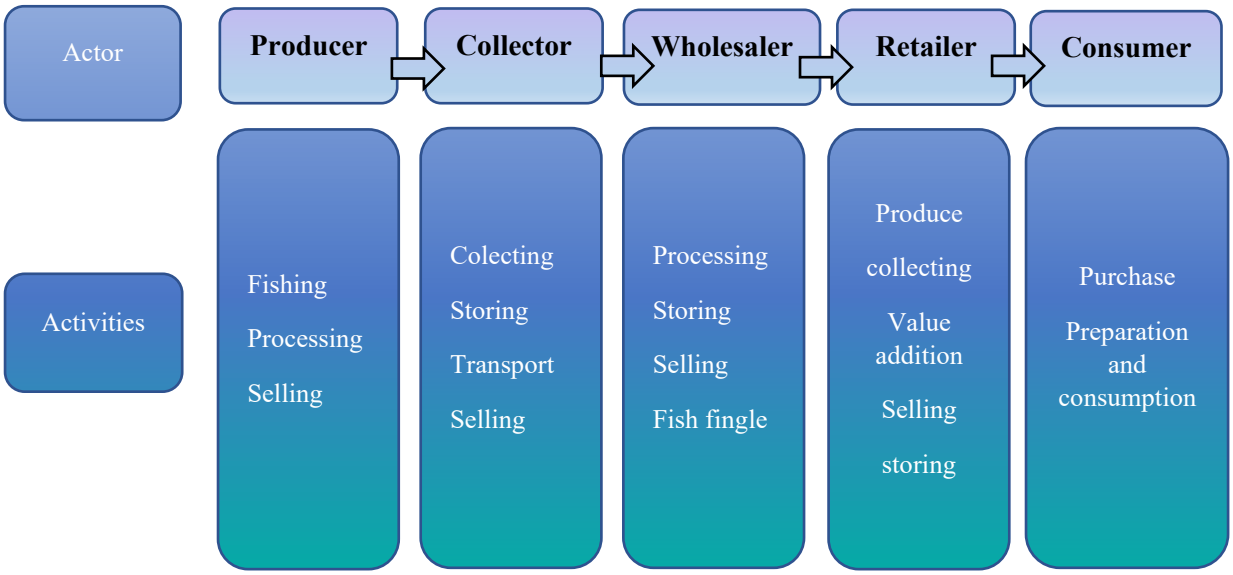


Figure 3.2.4. Food fish value chain mapping actors

The key actors involved in the fish value chain in the village tank cascade system were evaluated, emphasizing their specific roles and contributions. Producers, engaged in fishing, processing, and selling, were found to be the primary source of raw fish products. Wholesalers then received these products, where additional processing, storing, and selling activities took place. It was observed that wholesalers often used specialized equipment for storage and transportation, suggesting a critical role in maintaining product quality.

Retailers, following wholesalers, were responsible for further storing, transporting, and selling the fish. Additionally, the practice of "fish fingling," which refers to preparing fish for retail sale by cleaning and cutting, was predominantly conducted at this stage. The role of intermediaries was examined, revealing that they were mainly involved in storing, transporting, and selling fish, similar to retailers, but with a focus on broader distribution networks.

Hotels, significant players in the value chain, bought fish for meal preparation and added value through culinary processes, eventually selling prepared meals to consumers. Consumers represented the final stage of the value chain, with activities primarily centered on buying, preparing, and consuming the fish.

Figure 3.2.5. Actors of Food fish value chain under VTCS

3.2.3. Mapping Product & Service Flow

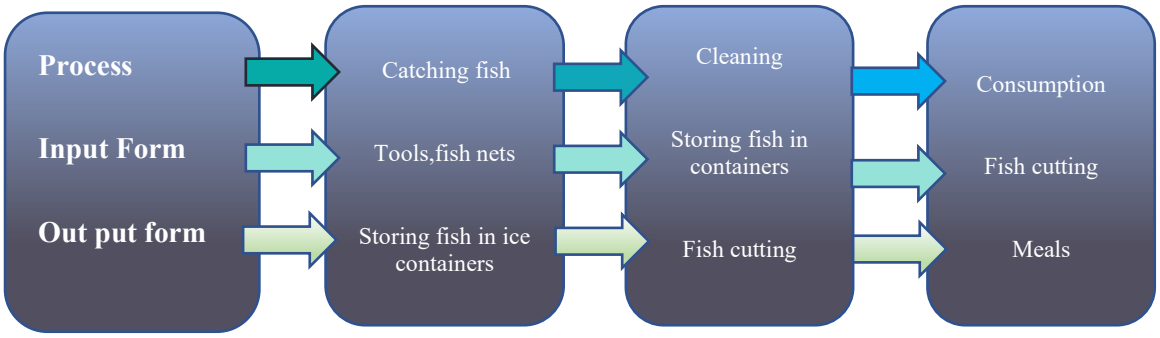


Figure 3.2.6. Resource flow in the food-fish value chain of VTCS

Another major investigation in this study was the flow of products and services in the fish food value chain within a village tank cascade system. The process began with the catching of fish from the village tank, a critical step in the overall value chain. Following the catch, the fish were transported to a designated cleaning area where they were meticulously cleaned to remove any unwanted debris or impurities.

After the fish were cleaned, they were placed in specialized containers designed for storage. These containers were typically insulated to maintain the freshness of the fish during transport and storage. To ensure that the fish remained in optimal condition, ice was used as a key input during the storage process. This step was essential in preventing spoilage and maintaining the quality of the fish for subsequent stages of the value chain.

The next stage involved cutting the fish, where they were processed into smaller pieces suitable for cooking and consumption. This process required specific equipment and skills to ensure that the fish were prepared correctly and safely. Once the fish were cut, they were either sold directly to consumers or transported to local markets, depending on the needs of the village community.

In the final stage, the fish were utilized in meal preparation. The cleaned and cut fish were cooked and consumed by the villagers, often as part of traditional dishes. This stage marked the culmination of the value chain, where the products and services provided throughout the process contributed to the sustenance and economic livelihood of the village tank cascade system's inhabitants. Overall, this study highlighted the intricate flow of products and services that supported the fish food value chain in a rural village setting.

Figure 3.2.7. Tools used in food fish value chain under VTCs

3.2.4. Mapping Information Flow in the Value Chain

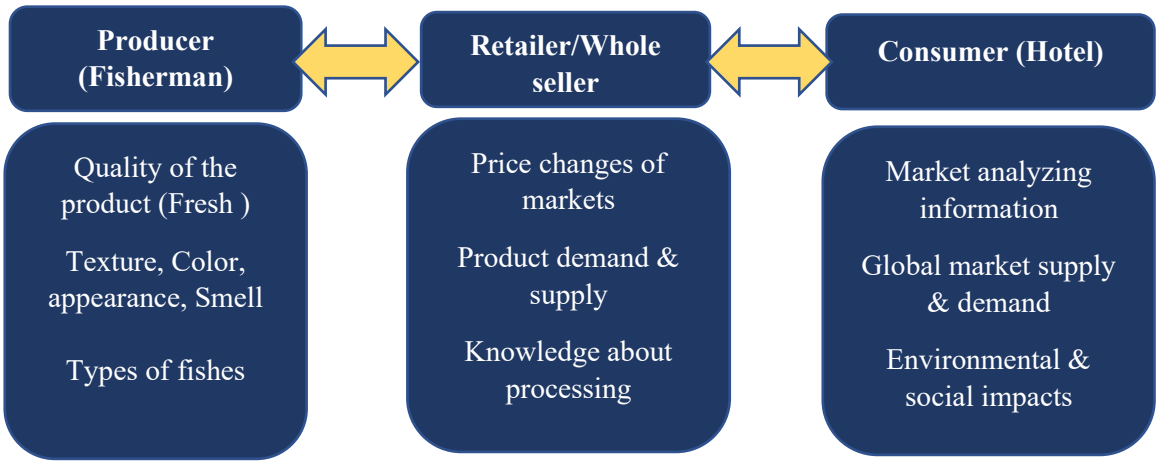


Figure 3.2.8: Information mapping flow of food fish value chain in VTCS

The information flow of the food fish value chain in VTCS was established to ensure that quality information about fish products flowed efficiently from producer to consumer. The journey begins with the fishermen, whose primary responsibility was to ensure that the fish they caught met specific quality standards. This quality was gauged by the freshness of the product, which was indicated by its texture, color, appearance, and smell. Fresh fish tended to have firm, resilient flesh, vibrant hues, and a clean, oceanic scent.

After the fishermen collected their catch, the fish was transported to retailers or wholesalers. During this stage, the value chain depended heavily on market dynamics such as price fluctuations, product demand, and supply variations. Retailers and wholesalers were responsible for maintaining the freshness of the product during transportation and storage. They also needed to understand basic processing techniques to extend the product's shelf life. This stage in the value chain was crucial, as inadequate handling could lead to a decline in quality, affecting the final product received by consumers.

Once at the retail level, the information flow within the VTCS focused on disseminating market trends and consumer preferences to inform business decisions. Retailers relied on market analysis to adjust their inventory and pricing strategies to meet consumer demand effectively. The criteria for assessing fish quality at this stage included examining the product's shiny skin, bright eyes, and slippery, wet texture. Consumers, particularly hotels and restaurants, expected fish that retained its elasticity when touched, indicating freshness.

In summary, the VTCS facilitated a structured flow of information throughout the food-fish value chain. From the fishermen who ensured the catch met quality standards to the retailers and wholesalers who managed pricing and supply dynamics, each step in the chain contributed to a seamless transition of fish products to the final consumer. By the time the fish reached hotels and restaurants, it was expected to meet stringent criteria for quality, ensuring a product that was both safe and enjoyable for consumers.

Table 3.2.1: Food Fish Value Chain Average Value Addition

Channel	Total Cost (Rs)	Selling Price (Rs)	Average Value Addition (Rs)
Channel 1			
Producer	109.55	500.00	390.45
Retailer-Wholesaler	524.55	600.00	75.45
Retailer	721.50	800.00	78.50
Channel 2			
Producer	109.55	450.00	340.45
Retailer	509.45	600.00	90.55
Channel 3			
Producer	109.55	500.00	390.45
Channel 4			
Producer	110.60	500.00	389.40
Collector-Retailer	592.50	700.00	107.50
Channel 5			
Producer	108.80	500.00	391.20
Channel 6			
Producer	129.55	500.00	370.45
Retailer	522.75	600.00	77.25
Channel 7			
Producer	110.30	500.00	389.70
Collector-Retailer	588.73	700.00	111.27
Channel 8			
Producer	133.30	500.00	366.7
Collector-Retailer	644.51	900.00	255.49
Channel 9			
Producer	108.80	500.00	391.20
Channel 10			
Producer	109.65	500.00	390.35
Collector-Retailer	560.75	700.00	139.25

(Note: Average Value Addition was calculated for one kilogram)

In the evaluation of the performance of the food-fish value chain, various channels were analyzed to determine the total cost, selling price, and average value addition. The data was then examined to identify which channels demonstrated the highest average value addition, focusing on the key actors involved and the role each played in increasing the price throughout the value chain.

Channel 8 exhibited the highest average value addition among the analyzed channels. The value addition was achieved through a combination of costs incurred by the producer and the collector-retailer, with the latter accounting for a significant increase in the final selling price. In this channel, the producer incurred a total cost of Rs 133.30, and the fish was sold for Rs 500.00, resulting in an average value addition of Rs 366.70. The collector-retailer, who played a critical role in the distribution and retailing of the product, incurred a total cost of Rs 644.51 and set a final selling price of Rs 900.00. This resulted in an average value addition of Rs 255.49, the highest among all the analyzed actors and channels.

Further analysis of the data revealed that in other channels, while producers generally incurred similar total costs and set similar initial selling prices, the variation in value addition could be attributed to the roles played by other actors, such as wholesalers and retailers. However, none reached the same level of value addition as observed in Channel 8.

Understanding the dynamics within each channel allows for a deeper insight into the value chain's overall efficiency and profitability, providing a clearer indication of where value is being added and by whom, and how this impacts the final selling price.

Channel 1 ranked second with a total average value addition of Rs 544.40. This was derived from three key actors: the producer (Rs 390.45), the retailer-wholesaler (Rs 75.45), and the retailer (Rs 78.50). The incremental value addition across the multiple actors suggests a robust structure involving both wholesale and retail segments.

Channel 10 held the third position with a total average value addition of Rs 529.60. In this chain, the producer contributed Rs 390.35, while the collector-retailer added Rs 139.25. The collector-retailer in this channel again played a crucial role in contributing a significant portion of the total value addition.

Channel 4 ranked fourth with a total average value addition of Rs 496.90, with contributions from the producer (Rs 389.40) and the collector-retailer (Rs 107.50). The value addition here was heavily influenced by the producer's initial production costs and the subsequent retailing and transportation costs by the collector-retailer.

Channel 7 was fifth in the ranking, with a total average value addition of Rs 500.97, with contributions from the producer (Rs 389.70) and the collector-retailer (Rs 111.27). This channel also highlighted the impact of the collector-retailer's role in driving value addition.

Channel 6 and **Channel 2** ranked sixth and seventh, respectively, with total average value additions of Rs 447.70 and Rs 430.10. The value addition in these channels primarily involved the producer and retailer, with Channel 6 featuring Rs 370.45 from the producer and Rs 77.25 from the retailer, while Channel 2 comprised Rs 340.45 from the producer and Rs 90.55 from the retailer.

Channel 3 and **Channel 9** shared the eighth position, with a total average value addition of Rs 390.45 and Rs 391.20, respectively, solely from the producer.

Channel 5 concluded the ranking with a total average value addition of Rs 391.20, also attributed exclusively to the producer.

The analysis of the food-fish value chains indicates a significant variation in total average value addition. Channels with collector retailers or multiple actors typically demonstrated higher

value addition, pointing toward a more complex and integrated structure. This complexity, in turn, has implications for cost, efficiency, and market dynamics, as the additional value added by intermediary actors often translates to a higher selling price for the consumer.

3.2.5. Key Findings

Research into the fish food value chain in the Village Tank Cascade System (VTCs) has uncovered several notable findings that contribute to understanding the dynamics of fish production and distribution in the region. When fish fry were released into tanks in the Horiwila and Bellankadawala areas, it was found that water levels were at their maximum. Yet, the yield during these periods was notably low. This indicated a limitation in fishing activities, potentially due to factors such as fish behavior, water temperature, or habitat structure that affect fish population growth and availability.

Data from the Horiwila tank revealed seasonal variations in fish yields. The maximum yield, ranging between 1500 kg and 600 kg, was observed in July and August, with the average daily yield of approximately 540 kilograms occurring predominantly in April and May. However, a significant drop in yield, reaching a low of 120 kg, was recorded during the colder months of November through February. These fluctuations suggest a seasonal pattern in fish availability that could impact the fishing industry's scheduling and supply chain management.

Similarly, in the Bellankadawala tank, the maximum yield ranged from 320 kg to 400 kg, peaking in July and August, while the average yield of 62 kg to 100 kg was mostly observed in April and May. The lowest yield, averaging 8 kg to 10 kg, was observed during the same low-yield period from November to February. These findings demonstrate the cyclical nature of fish production in these tanks and imply a need for strategic planning to optimize fishing activities according to yield trends.

The Thumbikulama tank followed a similar pattern, with the maximum yield of 180 kg to 200 kg recorded in July and August, while the average yield of 20 kg to 40 kg was seen in April and May. The lowest yield, between 5 kg and 6 kg, was again observed during the low-yield period in the late and early months of the year. The consistency of these patterns across different tanks indicates a common underlying cause, likely related to seasonal changes in environmental conditions.

Despite the high demand for fish in the VTCs villages of Horiwila, Bellankadawala, Thumbikulama, and Mahawewa, excess supply during the high-yield periods resulted in 15% of the fish being processed into dry fish to avoid spoilage. This practice reflects a method of value addition and preservation in response to market fluctuations. Additionally, fish products were supplied to nearby areas such as Habarana, Digampathana, and Kekirawa, indicating an established distribution network extending beyond the immediate village areas.

Concerns about fish quality arose due to the overflowing of water from the tanks, which can lead to contamination and impact fish health. Furthermore, the presence of the suckermouth catfish, colloquially known as "tank cleaners," has been identified as a significant threat to the fish food value chain in the VTCs. As an invasive species, these catfish can disrupt native ecosystems and outcompete other fish species, potentially leading to reduced yields and long-term ecological consequences.

Overall, the research highlights the complex interactions between environmental conditions, market demand, and invasive species in the fish food value chain within the VTCs.

3.3. Present Status of the Traditional Food Value Chain

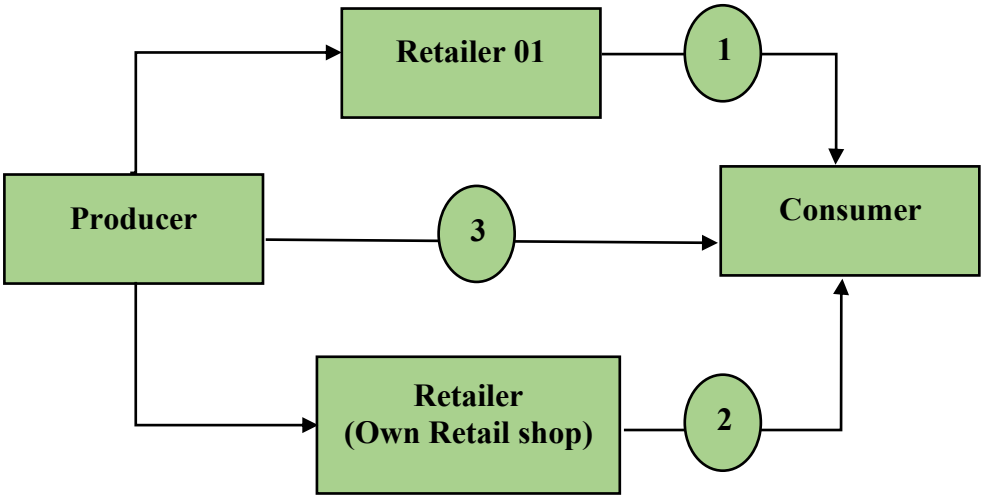


Figure 3.3.1. Traditional Food Value Chain

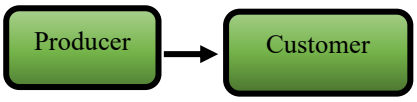
Channel 1 :

In this channel, the food products (Lawariya) were issued by a traditional food maker from Palugaswewa village to a retailer in the same village. Then the food items were sold to consumers in the same area and also to the customers from outside the province.

Channel 2 :

The products(Lawariya, Hoppers, String Hoppers, Mango Chatni, Polos cutlet) were issued by the producers from Palugaswewa they have their retail shops which are arranged by some government projects. Products are available to customers in the same area and also to local tourists.

Channel 3 :



In this channel, the Traditional food items such as Laweriya, Asmi, Kurakkan helapa, Dodol, Kokis, tea, and two snacks, Rice & curry were directly issued by the producers in

Kudarambawewa, to customers in Plugaswewa, Horiwila, for requested orders without any intermediatory involvement.

3.3.1. Identifying the Core Processes

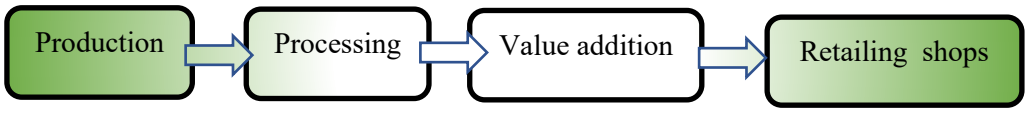


Figure 3.3.2. Core processes of Traditional Food value chain

Traditional food production in the VTCs involves small-scale producers in the Palugaswewa Raw materials such as rice flour, flour, sugar, honey, and other ingredients were found by shops and from farmers near the village and from wholesalers in the city area. The process of production often integrates organic practices and respects the natural ecosystem.

At the Processing stage, the raw materials are processed using traditional methods. Rice, for example, is prepared by pounding the dehusked grains in a wooden or stone mortar with a wooden pestle, or by grinding them between flat stone slabs. This process has been largely replaced by commercial-scale flour mills and home-scale electric grinders. The sieving of flour helps control particle size, which is crucial for the consistency and texture of traditional food products.

The processed raw materials are then subjected to various value-adding steps to create traditional Sri Lankan dishes. This stage involves cooking, steaming, roasting, or fermenting to produce a variety of products. For instance, string hoppers (indi appa) are created by extruding a flour paste into circular mounds and steaming them. Similarly, hoppers (appa) are made from a fermented rice flour batter, while lavariya involves filling string hoppers with a sweet coconut and palm treacle mixture.

Retailing typically occurs through small local shops and producer-owned retail establishments. Producers from the Palugaswewa area operate their retail shops to sell traditional food products. Retailers play a critical role in connecting producers with consumers, ensuring that traditional foods are available for purchase both within the local area and beyond.

Consumers in the Palugaswewa area and other regions enjoy a wide range of traditional Sri Lankan foods. These foods are often consumed with suitable accompaniments, such as sweets with honey, hoppers with lunumiris, string hoppers with curry, sambol, curried vegetables, fish, or meat. The traditional food value chain extends beyond the local area through orders placed by consumers

Figure 3.3.3. Value-added food items in workshops

3.3.2. Identifying the Key Actors

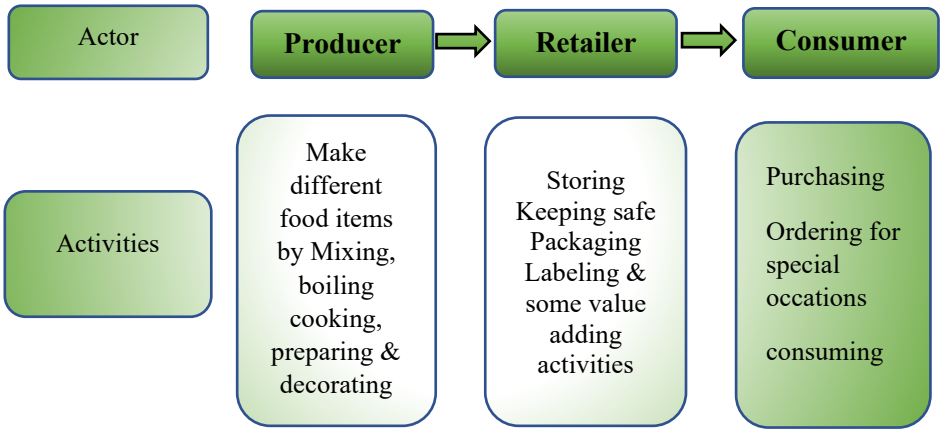


Figure 3.3.4. Food fish value chain mapping actors

In the traditional food value chain of the village tank cascade system in Palugaswewa, key actors played distinct roles in ensuring the seamless flow of food production, storage, distribution, and consumption. The roles of these actors varied depending on the value chain segment and type of food.

In the first value chain, focusing on laveriya, producers were responsible for making this traditional sweet by preparing string hoppers, filling them with a coconut and palm treacle mixture, and rolling them into their distinctive shapes. The preparation process involved various techniques, including mixing, boiling, and cooking. Once laveriya was ready, it was stored and packaged by retailers for sale. Retailers undertook additional activities such as labeling and value addition, enhancing the product's market appeal. Consumers, on the other hand, were responsible for purchasing laveriya from retail shops, consuming it, or ordering it for special occasions.

The second value chain included a broader range of traditional foods, such as laveriya, hoppers, string hoppers, mango chutney, and polos katlat. Producers engaged in cooking and preparing these items, employing various traditional methods like steaming, frying, and fermenting. Retailers in this value chain were tasked with storing, packaging, and labeling the products, ensuring they remained fresh and met consumer expectations. The consumer's role was to purchase these foods for everyday consumption or special events, emphasizing the cultural significance of these traditional dishes.

The third value chain expanded further to include various traditional foods such as aasmi, kurakkan halapa, dodol, kokis, tea with snacks, and rice and curry in parcel form. Producers in this chain undertook a wider range of activities, including mixing, decorating, and customizing food items. Retailers played a crucial role in maintaining the quality and presentation of these foods through safe storage, effective packaging, and creative labeling. Consumers were involved in ordering these foods for special occasions or purchasing them for daily consumption, reflecting the broader distribution and popularity of these traditional dishes.

Overall, the activities of these key actors in the village tank cascade system in Palugaswewa were integral to sustaining the traditional food value chain, with each actor contributing to the production, retailing, and consumption of a diverse array of traditional Sri Lankan foods.

3.3.3. Mapping Product & Service Flow

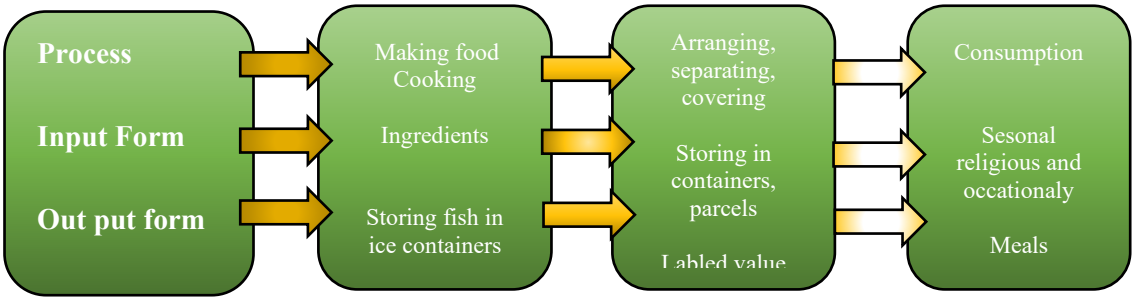


Figure 3.3.5. Resource flow in the Traditional food value chain of VTCS

The village tank cascade system in Palugaswewa involves a series of activities that transform raw ingredients into traditional dishes. This process involves multiple stages, including making and cooking food, arranging and separating ingredients, and ultimately delivering products for consumption. The input flow in this system involves transforming raw materials like rice flour and palm treacle into finished products through cooking, filling, and rolling. After production, these value-added food products are stored in containers and parcels to ensure their freshness. Packaging and labeling are then done for market distribution. In the second value chain, producers source various raw ingredients for making and cooking traditional foods like laveriya, hoppers, string hoppers, mango chutney, and polos katlat. These ingredients are then prepared and stored in appropriate storage to maintain their quality. The output form consists of labeled and value-added foods ready for retailing, targeting consumers for daily meals or special events. The third value chain includes a broader spectrum of traditional foods, such as aasmi, kurakkan halapa, dodol, kakis, tea with snacks, and rice and curry. The mapping process begins with selecting high-quality ingredients and then involves arranging, separating, and covering the finished products for storage and transportation. The output form consists of meals and snacks that are distributed to retailers and purchased by consumers for consumption during religious festivals, family gatherings, Traditional food-promoting exhibitions, workshops, and other special occasions.

In summary, the mapping of product and service flow within the traditional food value chain in the Palugaswewa village tank cascade system involved an intricate sequence of processes that transformed raw ingredients into culturally significant traditional foods. Each stage, from input to output, was crucial for maintaining the quality and sustainability of these traditional

dishes, ensuring they reached consumers in a form suitable for various occasions and religious observances.

Figure 3.3.6 Traditional food varieties

3.3.4. Mapping Information Flow in the Value Chain

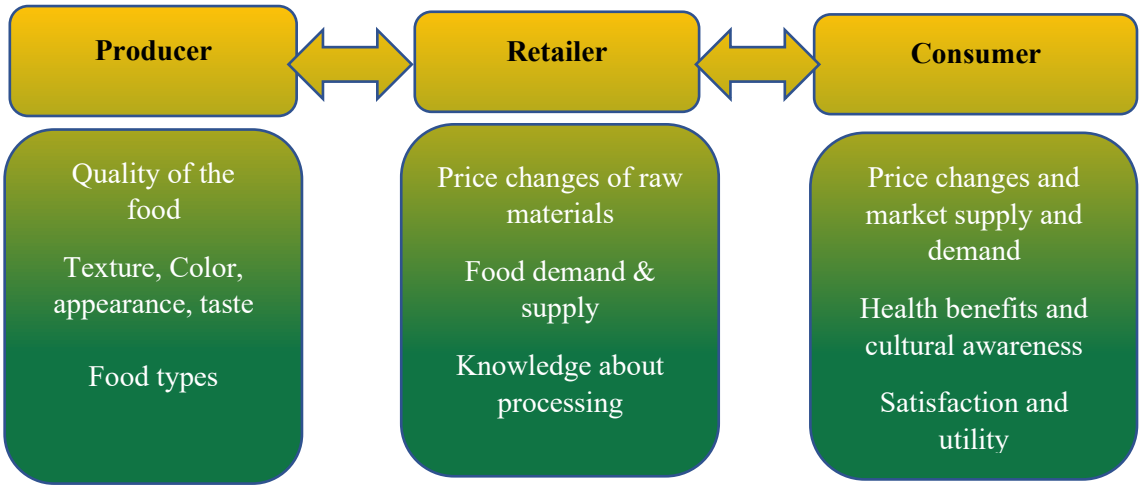


Figure 3.3.7. Information mapping for Traditional food value chain in VTCS

In the study of the traditional food value chain within the village tank cascade system, information flow was mapped to understand the dynamics between producers, retailers, and consumers. Producers were observed to play a crucial role in determining the quality of the food, focusing on aspects such as texture, color, appearance, and taste. Their knowledge about making different types of traditional food contributed to this quality, with an awareness of order-based and package-based product supply enhancing their communication with consumers. On the retailer's end, price changes in raw materials and fluctuations in food demand and supply were monitored to maintain a consistent flow of goods. Retailers' understanding of food processing was also noted as a key factor in maintaining product quality. Consumers, in turn, influenced this information flow through their responses to price variations, market trends, and their growing interest in the health benefits and cultural significance of traditional foods. Ultimately, consumer satisfaction and utility were found to be central to the success of the value chain, underscoring the importance of effective communication and information exchange across all levels of the chain.

Figure 3.3.8 Smale scale Food retail shops

3.3.5. Average Value Addition

Channel	Unit	Total Cost (Rs)	Selling Price (Rs)	Average Value Addition (Rs)
Channel 1				
Producer	No.	12.59	50.00	37.41
Retailer-Wholesaler	No.	50.00	70.00	20.00
Channel 2				
Producer-Retailer	No.	12.59	50.00	37.41
	No	11.50	20.00	8.50
	Pack	35.75	150.00	114.25
	Cup	54.75	100.00	45.25
	No.	18.80	50.00	31.20
Channel 3				
Producer-Retailer	No.	12.59	50.00	37.41
	No.	36.55	60.00	23.45
	No.	13.48	30.00	16.52
	kg	565.00	700.00	135.00
	No.	7.90	20.00	12.10
	Pack	58.39	200.00	141.61
	Parcel	236.66	450.00	213.34

(Note: Product mix of the channel 2: Lavariya, Hoppers, String Hoppers, Mango Chatni, and Polos Katlat; Product mix of the channel 3: Lavariya, Asmi, Kurakkan Halapa, Dodol, Kokis, Tea + Two Snacks and Rice and Curry)

The evaluation of the performance of the traditional food value chain, based on the data provided, revealed significant variations in average value addition across different channels. The analysis focused on identifying the highest average value-added chain and the flow of value addition between key actors, along with the subsequent increase in price throughout the value chain.

In the assessment of Channel 1, the total cost for the producer was estimated at Rs.12.59, with a selling price of Rs.50.00 . This resulted in an average value addition of Rs.37.41 for the producer. For the retailer-wholesaler in this channel, the cost was Rs.50.00, and the selling price was Rs.70.00, leading to an average value addition of Rs.20.00. The cumulative impact of these value additions contributed to an overall price increase across the channel.

Channel 2 showed a more complex structure, with multiple points of value addition. The initial value addition for the producer-retailer was consistent with Channel 1, where Rs.12.59 in costs translated to a Rs.50.00 selling price, resulting in an average value addition of Rs. 37.41. Subsequent value additions occurred at various levels: a pack had an average value addition of Rs.114.25, a cup had Rs.45.25, and another pack had Rs.31.20. These increasing value additions across different packaging types indicated that processing and presentation played a critical role in value creation, ultimately influencing price increases along the chain.

The analysis of Channel 3 revealed the most considerable variation in value addition, indicating a high potential for price escalation throughout the value chain. The producer-retailer segment had an average value addition of Rs.37.41, similar to channels 1 and 2. However, further along the channel, a kg unit displayed an average value addition of Rs.135.00, a pack of Rs.141.61, and a parcel of Rs.213.34. These substantial increases in value addition highlighted that as the chain progressed, the perceived value of the product also increased, translating into higher prices.

Overall, the data suggested that in traditional food value chains, factors such as packaging, unit size, and additional processing steps contributed significantly to value addition, with higher costs and corresponding selling prices observed. The key actors responsible for these increases were primarily producers, retailers, and wholesalers, with each step involving a tangible addition of value through various means such as repackaging, processing, or refinement. This cumulative effect of value addition drove the escalation of prices along the value chain, illustrating the importance of value creation at each stage for overall chain performance.

3.3.6. Key Findings

It was observed that the market structure in the area did not support significant expansion for stakeholders, as orders were typically arranged every two months. This infrequent scheduling of orders contributed to a lack of steady income for producers and limited their ability to scale their businesses. Furthermore, it was found that the producers in this area often lacked the knowledge and skills needed to add value to their products, which further hindered market growth and profitability.

The study indicated that while foreign tourists frequently visit nearby areas such as Habarana and Dambulla, they did not typically venture into the village cascade system, suggesting a lack of awareness about rural tourism and its potential benefits. This disconnect between tourism and local production has prevented village producers from reaching a broader market, thereby restricting their revenue opportunities.

To address these challenges, showrooms for producers of village traditional food items were arranged, with each showroom receiving funding of Rs. 25,000 to support their operations. These showrooms provided a platform for producers to sell their products directly to consumers, thereby creating a small but significant boost to their visibility and sales. To further

support producers, workshops were conducted by "The Sithamu Kantha Organization" at the Aliya Hotel. These workshops aimed to enhance the producers' skills and knowledge regarding product development, value addition, and marketing strategies.

Despite these efforts, the research identified that there was no centralized marketplace for selling products within the village tank cascade system, which limited the cohesion of the local market and made it challenging for producers to reach potential buyers. Additionally, there was a noted lack of connection between government institutions and village producers, particularly in terms of supplying canteens and other public facilities. This disconnect suggested that further efforts were needed to foster relationships between the local producers and governmental bodies, which could lead to new business opportunities and a more sustainable economic environment for those involved in traditional food production.

3.4. Present Status of the Agro-eco Tourism Value Chain

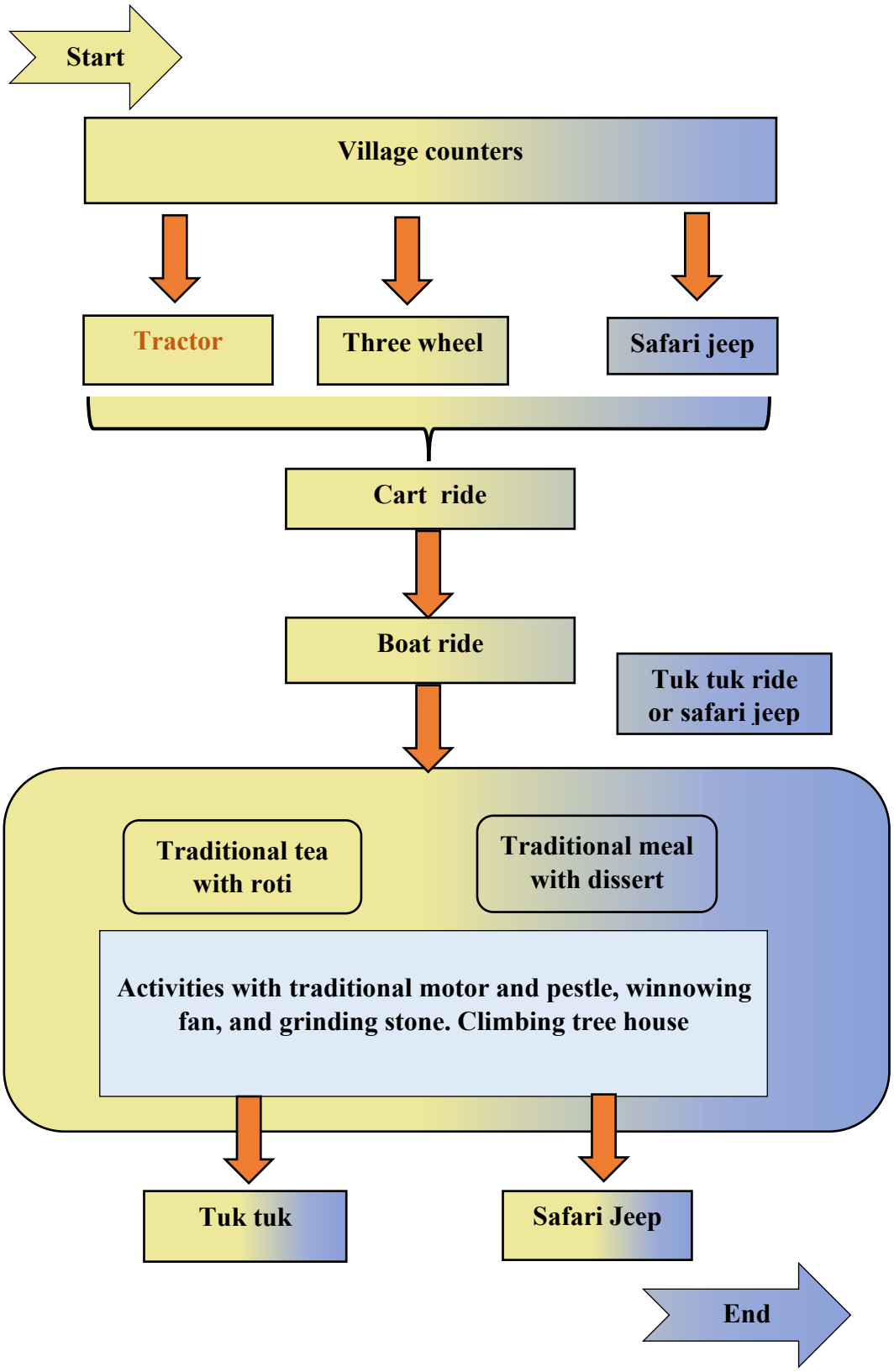


Figure 3.4.1. Agro-Eco Tourism value chain in VTCS

3.4.1. Agro Eco Tourism Channels

Counter based channels

Type 01
Counter ➡ Three wheel ➡ Cart ride ➡ Boat ride ➡ Village house ➡ Three-wheel

Type 02
Counter ➡ Three wheel ➡ Cart ride ➡ Boat ride ➡ Three wheel ➡ Village house ➡ Three-wheel

Type 03
Counter ➡ Jeep ➡ Cart ride ➡ Boat ride ➡ Village house ➡ Jeep

Type 04
Counter ➡ Jeep ➡ Cart ride ➡ Boat ride ➡ Jeep ➡ Village house ➡ Jeep

Productions Channels

Handicraft by "*Pan* and *Thal* leaves"

Type 01
Input collection ➡ Production ➡ Decoration ➡ Sell to a village house

Type 02
Input collection ➡ Production ➡ Decoration ➡ Sell to market

Preparation of coconut cups/ Hand motor and pestle

Type 01
Input collection ➡ Production ➡ Processing (Surface fixing, color applying) ➡ Sell in village houses

Type 02
Input collection ➡ Production ➡ Processing (Surface fixing, color applying) ➡ Sell in the external market

3.4.2. Identifying the Core Processes

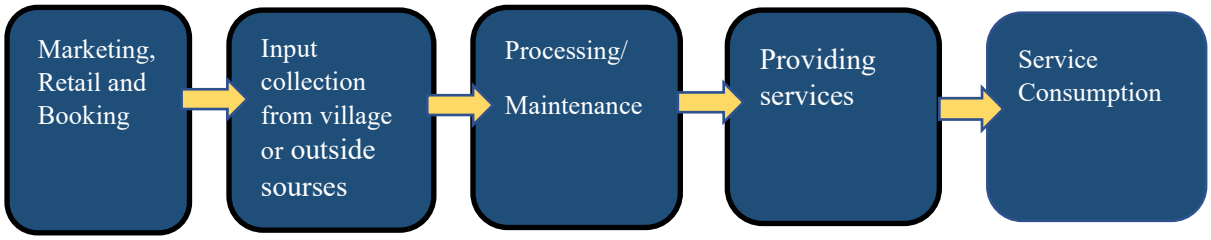


Figure 3.4.2. Mapping core processes of agro-eco tourism in VTCS

The core processes involved in the agro-ecotourism value chain within the village tank cascade system were comprehensively outlined, focusing on the marketing, retail, and booking process; input collection from village-level and external sources; processing and maintenance; service provision; and service consumption.

In the marketing, retail, and booking phase, online websites and positive reviews from tourists were utilized to promote the destination. These websites contained detailed information, such as pictures and package details, to attract potential visitors. Additionally, information was disseminated through counters where tour operators provided package options and arranged activities based on tourists' selections.

The inputs for food and beverages, as well as transportation and decoration, were sourced from both village-level and external suppliers. In Anuradhapura's "Hiriwadunna," a village celebrated for its natural beauty and agricultural heritage, raw materials like paddy, vegetables, and coconuts were gathered from small-scale village farmers and nearby retail shops, supporting the local economy. Fertilizers and seeds for village cultivations and home gardens were obtained from external sources, while water was also supplied from outside the village.

The processing and maintenance stage involved the preparation of food and the upkeep of transportation. Food raw materials were cleaned, washed, cut, or sliced to prepare homemade meals and beverages for tourists. Transportation services, such as cart rides and boat rides, were regularly maintained, including daily condition checks and vehicle decoration as per tourists' requests, ensuring safety and reliability.

Service provision encompassed food and beverage services and transport and excursion services, designed to offer tourists a 3-4 hour experience in the village by the tank. Village houses provided traditional hospitality, allowing tourists to engage in rural food preparation. Transport services included cart, boat, jeep, and tuk-tuk rides, with the latter offering unique scenic views of the tank and surrounding attractions like Sigiriya and Pidurangala rocks.

The final step, service consumption, was characterized by tourists, both local and foreign, enjoying the provided services, with a majority being foreigners. The completion of the transport services and home-cooked meals marked the culmination of the agro-ecotourism experience in the village tank cascade system.

Figure 3.4.3. Bullock carts tour

Figure 3.4.4. Boat ride

Figure 3.4.5. "Gemi gedara" Village house

3.4.3. Identifying the Key Actors

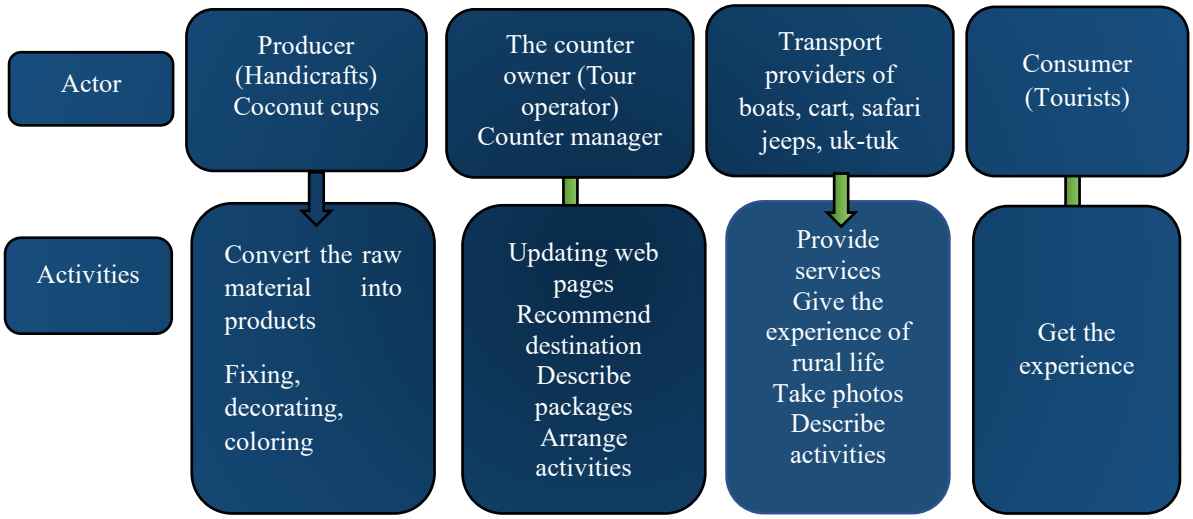


Figure 3.4.6. Mapping Key Actors & Activities of Agro- eco-tourism in VTCS

In the agro-ecotourism value chain within the village tank cascade system, key actors and their corresponding roles were identified across various stages of the chain. In the marketing, retail, and booking stages, the counter owner and manager were tasked with updating online web pages to provide information on location, package prices, and activities available to tourists. Tour guides were involved in recommending this eco-friendly destination, describing available packages, and arranging activities based on customer orders. For input collection, small-scale sellers and village farmers supplied raw materials for meal preparation, while hardware operators and VH helpers provided the necessary components for transport facilities and other infrastructure needs. Processing and maintenance were carried out by carpenters and vehicle mechanics, who were responsible for fixing transportation issues and converting raw materials into meals or beverages. The service provision stage included transport providers offering boats, carts, safari jeeps, and tuk-tuks, with village houses and tourist spots adding to the authentic rural experience. Tourists consumed the services by engaging in the arranged activities, taking photos, enjoying the hospitality, and immersing themselves in the rural setting. This detailed mapping of actors and activities outlined the interconnectedness and collaboration required to maintain a functioning agro-ecotourism ecosystem.

Figure 3.4.7. Key actors in Agro-Eco tourism in VTCS

3.4.4. Identifying the Product & Service Flow

Figure 3.4.8. Mapping product & service flow in Agro co value chain VTCS

The product and service flow within the agro-ecotourism value chain in the village tank cascade system was established through various interconnected activities, encompassing food, beverage, and transportation services. In the food and beverage category, ingredients such as vegetables, fruits, tank fish, water bottles, tea, and jaggery were sourced from local farmers and sellers. These raw materials were used to prepare traditional homemade meals, consisting of an array of 6-7 rural curries, fried tank fish, papadam, and desserts made with fruits like banana, pineapple, and papaya. Additionally, tea and other traditional beverages were served to visitors, contributing to the culinary experience. Excursion and transport services were also integral to the value chain. Buffaloes and carts were employed to offer bullock cart rides through the village, while tuk-tuks provided short excursions around the tank. These tuk-tuk rides could be enhanced with decorations such as balloons and flowers to create a festive atmosphere. Further into the excursion category, safari jeeps facilitated longer rides for birdwatching and exploring the surrounding flora and fauna. Boats, equipped with life jackets, enabled guests to enjoy boat rides and rowing experiences on the tank, with additional enhancements like hats and necklaces made from lotus flowers and leaves.

Each of these services contributed to the overall agro-ecotourism experience, allowing visitors to immerse themselves in the local culture, engage in traditional village activities, and explore the natural environment. The interconnected flow of products and services demonstrated the holistic approach to promoting tourism and supporting local livelihoods within the village tank cascade system.

Figure 3.4.9. Product and services supply in the Agro-Eco value chain in VTCs

3.4.5. Mapping Information Flow in the Value Chain

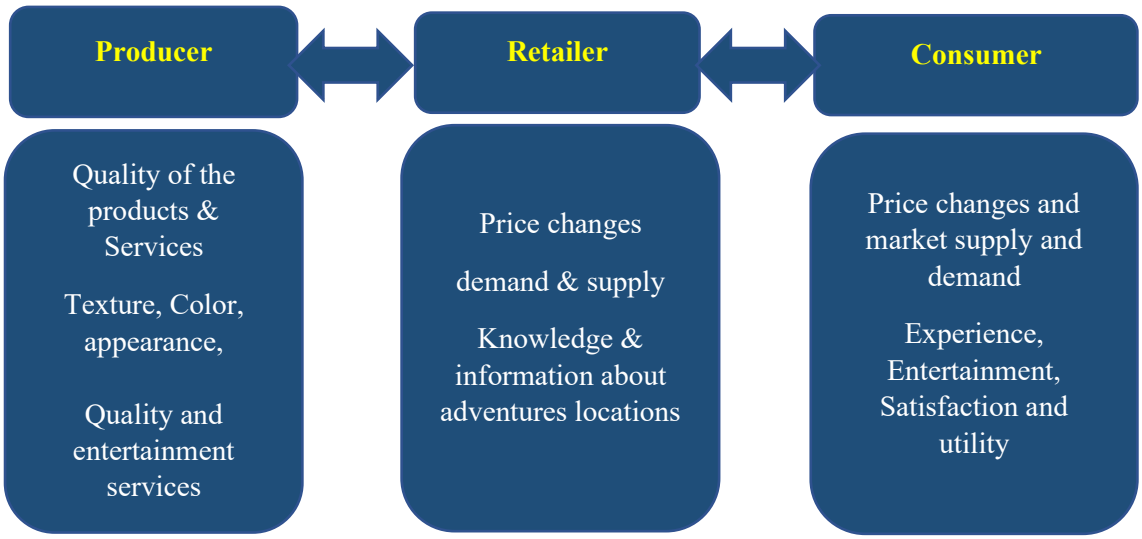


Figure 3.4.10. Mapping information flow of Agro-Eco tourism in VTCS

The information flow within the agro ecotourism value chain in the village tank cascade system involved the exchange of key details among various actors to ensure smooth service delivery. For the food and beverage service, information was transmitted from village house helpers to village house owners regarding the required curries and beverages to be prepared. The village house owners communicated with the counter owner, providing information about meal types, the number of tourists, and any specific food requests, including special foods or dietary preferences. Additionally, the village house owners were responsible for ensuring that quality standards were maintained throughout meal preparation. The counter owner, in turn, informed tour guides and tourists about the package details, confirming bookings, and relaying any additional information about meal offerings.

In the context of transportation and excursion services, the information flow began with the owners of boats, carts, tuk-tuks, and safari jeeps. These owners were informed by the counter owner about the time of arrival, the number of tourists, and whether any decorations or specific arrangements were required for the excursions. This information allowed them to prepare and coordinate transportation services accordingly. The counter owner was responsible for selecting appropriate transport types based on tourist preferences and communicated these decisions to the respective owners. This structured information flow played a crucial role in aligning service provision with customer expectations, enabling a cohesive and well-organized agro-ecotourism experience within the village tank cascade system.

3.4.6. Supporting Services

Support services in the agro-ecotourism value chain within the village tank cascade system encompassed a range of entities providing essential services, regulatory oversight, and guidance to ensure a smooth and compliant operation. Financial support was offered through local banks, which facilitated foreign currency exchange, aiding international tourists in managing their transactions. Public health and safety were maintained through the supervision of the Public Health Inspector, who provided information on hygienic practices and guidelines for preparing healthy food. Additionally, this role was instrumental in ensuring that all food-related activities complied with public health standards.

Government support was another critical aspect of the value chain. The State Ministry of Samurdhi, Household Economy, Micro Finance, Self-employment, and Business Development provided resources to support entrepreneurship and business growth within the agro-ecotourism sector. Safety instructions for driving and correct behavior for staff and tourists were provided by regulatory bodies, contributing to a secure and orderly environment.

Further regulatory support came from various government agencies, including the Metrology Department, which ensured the accuracy of measurements and weighing practices, and the Sri Lanka Tourism Development Authority, which established guidelines and regulations for the tourism industry. Environmental sustainability was overseen by the Ministry of Environment, in conjunction with the Mahaweli Authority of Sri Lanka, to ensure that tourism activities did not negatively impact the local ecosystem. Local governance and infrastructure support were provided by the Pradeshiya Sabhawa, ensuring that the necessary permits and local approvals were in place. Additional support services included the Department of Agriculture, which promoted sustainable agricultural practices, and human resources from local community organizations, such as the President of Ranketh Farmer Society, who contributed to the overall functioning of the value chain. Collectively, these support services formed a comprehensive network that underpinned the success and sustainability of agro-ecotourism in the village tank cascade system.

Figure 3.4.11. Supporting services and products supply for Agro Eco tourism in VTCS

3.4.7. Key Performance in Agro eco-tourism in VTCS

An evaluation of the performance of agro-eco tourism within the village tank cascade system was conducted, focusing on counter-based channels. This analysis centered on various tour configurations, each incorporating different modes of transportation and activities for visitors. The evaluation highlighted the structure and cost of these tourism channels, as well as their impact on both guests and local service providers.

Channel Type 01 utilized a combination of transportation methods, starting from the counter with a three-wheeler, then progressing through a cart ride, a boat ride, a visit to a village house, and concluding with a return trip via a three-wheeler. The inclusion of traditional and local experiences was emphasized in this configuration. For instance, guests who participated in cooking experiences at the village house, known as "gemi gedara," were required to pay between 1500 and 2000 rupees. Additionally, costs associated with transportation for food materials from Habarana to the village house via three-wheeler were estimated at 800 rupees, with an additional charge of approximately 250 rupees for three-wheeler transport from Hiriwadunna city to the village house.

Channel Type 02 mirrored the first channel but with an additional three-wheeler ride before reaching the village house, highlighting an alternative sequence in guest transportation. This configuration provided a similar array of activities but allowed for a more diverse transportation experience. In this type, the monthly salary for the counter staff was approximately 45,000 rupees, with sales commissions varying depending on the number of tour bookings and associated sales. Tips from guests for the national guide or tour guide ranged between 2000 and 2500 rupees, indicating a potential source of additional income for local staff.

Channel Type 03 Channel Type 03 employed jeep transportation as a key element of the tour. Guests were taken from the counter by Jeep, followed by a cart ride, a boat ride, a visit to the village house, and a return journey by Jeep. This channel catered to tourists seeking a more adventurous experience, typically attracting those interested in off-road travel and safari-like excursions. The cost for a Jeep safari, including park entrance tickets, was between 8300 and 10,000 rupees, suggesting a higher price point for this type of tour.

Channel Type 04 predominantly featured jeep transportation. Guests were taken by jeep from the counter and then engaged in a cart ride, a boat ride, and another Jeep ride before visiting the village house. The return journey also involved jeep transportation, further emphasizing the adventure aspect. This configuration was typically priced higher, with traditional products produced at the village house priced according to their natural and ancient appearance, reinforcing the authentic cultural experience.

Overall, the evaluation revealed that the counter-based channels within the agro-eco tourism sector in the village tank cascade system offered a range of experiences and transportation methods. Costs varied depending on the transportation mode and activities involved, while guest engagement through unique experiences such as cooking in the village house contributed to the overall success of these tours. However, attention was needed to balance cost structures, ensuring fair compensation for local staff, and maintaining the authenticity and sustainability of the agro-eco tourism model in the region.

production channels in the village tank cascade system's agro-eco tourism sector have revealed several key insights into the manufacturing and distribution of traditional products. These products, often made in "gami gedara" (village houses), were sold through various channels, both to local customers and to foreign tourists. The pricing and production methods for these traditional items were influenced by their natural quality, craftsmanship, and cultural significance.

Products created in gami gedara encompassed a range of traditional items, each with unique pricing based on size, craftsmanship, and materials used. For example, traditional wooden mortars and pestles were sold at 3,500.00 and 1,750.00 rupees, respectively. The "magala," a traditional tool, was issued for 9,000.00 rupees, with larger versions priced at 18,000.00 rupees. "Pedura" mats, made from natural materials, were priced between 1,600.00 and 3,500.00 rupees, depending on size and design. Similarly, other items, such as lunch boxes made from "pan," were sold at 3,500.00 rupees, while old box prices varied according to size, with the smallest priced at 1,200.00 rupees, the average at 2,200.00 rupees, and the largest at 8,500.00 rupees.

Traditional kitchen items like spoon racks were sold at 100.00 rupees, and "pittu gotta" (a utensil for making pittu) was issued at 200.00 rupees. Other notable items included "kurahan gala" (a traditional grinding stone) priced at 14,500.00 rupees, "miris gala" (a stone for grinding spices) issued at 5,500.00 rupees, and traditional "kulla" (a traditional winnowing fan) priced at 2,600.00 rupees. These traditional tools and products were marketed to both foreign tourists and local customers interested in traditional crafts and were sold in village houses and local markets.

Handicraft products made from "pan" (palm leaves) and "thal" leaves followed two distinct production channels. In **Type 01**, the process began with input collection, followed by production, decoration, and then sale to a village house. This channel focused on local distribution, with products being displayed and sold in village houses where tourists could experience the traditional setting. **Type 02** involved input collection, production, decoration, and then sale to the external market, indicating a broader distribution strategy aimed at reaching a wider audience beyond the village.

The production of coconut cups and traditional mortars and pestles also followed two distinct channels. In **Type 01**, input collection was the initial step, followed by production, processing (which included surface fixing and color application), and then sale in village houses. This channel was geared towards providing tourists with an opportunity to purchase these traditional items while experiencing village life. **Type 02** included input collection, production, processing, and then sale in the external market, targeting a broader customer base, including local and foreign markets.

Conclusion

The village tank cascade system presents a complex web of value chains across multiple sectors, offering key insights into rural economic dynamics and traditional practices. In this context, the analysis examines bee honey collection, food-fish production, traditional food production, and agro-eco tourism, each with unique value chains that contribute to the local economy and cultural heritage.

The bee honey collection value chain shows a varied structure with multiple intermediaries. Channel 1 has the most complex setup, involving producers, collectors, wholesalers, and retailers, leading to the highest total value addition. On the other hand, Channel 9 has a more straightforward pathway with only the producer, indicating fewer intermediaries and reduced costs. This analysis reveals the critical roles of retailers and wholesalers in adding value through storage, transportation, and retail operations, despite the associated cost increases.

Channel 8 in the food-fish production value chain stands out due to its high average value addition, mainly driven by the producer and the collector-retailer. This highlights the impact of collector-retailers in determining the final selling price, reflecting the cost implications of distribution and retailing. The diversity in value addition across channels suggests a need for a balanced approach to manage costs and ensure profitability for all stakeholders.

Traditional food production exhibits a varied pattern of value addition, with Channel 3 displaying the most significant variation. This channel's complexity arises from various factors like packaging, unit size, and additional processing steps, impacting the final price. The findings stress the importance of balancing cost, quality, and cultural authenticity, ensuring a fair distribution of value among all actors involved.

Agro-eco tourism in the village tank cascade system features a diverse array of channels offering unique experiences to visitors. The tourism sector combines various traditional activities, such as cart rides, boat rides, and visits to village houses, contributing to its success. The analysis underscores the importance of balancing costs, providing fair compensation for local staff, and preserving the authenticity and sustainability of the agro-eco tourism model.

Overall, the analysis of the village tank cascade system's value chains demonstrates a delicate balance between economic viability, sustainability, community benefits, and cultural preservation. A collaborative approach is essential to manage these value chains effectively, ensuring all stakeholders benefit from the added value while maintaining the region's authenticity and heritage. To support long-term success and community development, stakeholders should focus on efficient processes, equitable compensation, and sustainable practices.