From Field to Craft: Maya People's Gendered Relations with the Jipijapa Palm in San Jose Village, Belize

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ABSTRACT

Seeking to create new foundations for life, the Maya of Belize continue to create economies that allow their ways of living to persist and thrive within a globalized world. The Maya have relied on their surrounding natural resources to ensure their socio-economic and cultural well-being. One natural resource that has been vital for the Maya is the jipijapa palm (*Carludovica palmata*). Although the jipijapa palm is commonly used as a food source, men's and women's interaction with it differs. Men utilize the palm for farm work, whereas women utilize it within their household work as well as for craft creation to sell on the tourism market. Although jipijapa has always had cultural value, the advent of tourism gave it monetary value, causing a shift in how Maya relate to the plant.

Tourism, the COVID-19 pandemic, and climate change are significant globalized changes that have impacted the Maya's relationship with the jipijapa palm. Partaking in the tourism industry led to the hyper-consumption of jipijapa palms and scarcity in some villages, pressuring the remaining source in San Jose, Belize. The pandemic stagnated the jipijapa craft production, revealing its fragility and hyper-dependency on the local tourism industry. Due to climate change, in May 2024, the Toledo District experienced intense wildfires that burned for weeks, destroying numerous farms and acres of jipijapa palms.

Learning from the year's perils, the Maya of San Jose Village seek to build a more resilient future. They aspired to engage in the international exportation of their crafts, alleviating the dependency on local tourism markets. They also aim to restore burnt farms, replant jipijapa palms, and adopt sustainable farming techniques, such as agroforestry, to protect their farmlands and the broader environment, ensuring the longevity of their natural resources in a constantly shifting world.

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This thesis is not only the product of academic endeavor but also a reflection of the community that has surrounded me with wisdom, compassion, and belief.

DEDICATION

Dedicated to the community of San Jose, Toledo, Belize.

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LIST OF ABBREVIATIONS

FTA	Forest Trees and Agroforestry
GED	Gender, Environment, and Sustainable Development
ICH	Intangible Cultural Heritage
ISCR	Institute of Social and Cultural Research
MLA	Maya Leaders Alliance
MOBA	Museum of Belizean Art
NRI	Natural Resource Institute
NTFP	Non-Timber Forest Product
TAA	Toledo Alcalde Association

GLOSSARY

Alcalde System	An Indigenous political system where residents live communally under the leadership of an elder (Moberg, 1992; Mesh, 2017).
Baretta	(*Mopan Maya Term*). The jipijapa pods the artisans turn into fibers to create baskets.
Biocultural Design	A 'design-thinking' framework whereby remote and rural communities innovatively utilize their resources, such as natural materials, knowledge, and skills, to create innovations that support their way of living and address contemporary challenges (Davidson-Hunt et al., 2012).
Biocultural Diversity	The interrelationships between all living things, encompassing biological, cultural, and linguistic diversity (Franco et al., 2022).
Biocultural Heritage	The knowledge or usage of biological materials linked to traditional resources and lands (Davidson-Hunt et al., 2012; Lindholm & Ekblom, 2019).
Caldo Jipijapa	A type of dish whereby the jipijapa shoots are prepared in a soup.
Fried Jipijapa	A traditional Maya dish where the jipijapa shoots are boiled and then fried with a variety of vegetables such as tomato, onion, and cilantro.
Future-Making	Creating and implementing imagined futures (Thompson & Byrne, 2021).
Gendered Relations	The attribution and organization of roles, responsibilities, resources, and values attached to men and women (UNWomen, n.d.).
Globalized Changes	The social, political, economic, and environmental changes occurring around the world.
I'ke	(*Mopan Maya Term*). Also known as the Heineken plant in Belize, or *Furcraea andina*, is a spikey plant whose leaves are made into fibres for sewing jipijapa crafts.

Intangible Cultural Heritage	The traditions, knowledge, skills, expressions, and representations that communities, groups, or individuals acknowledge as a part of their cultural identity (Brancoveanu, 2018; Bouchenaki, 2003).
Jipijapa Palm	Jipijapa (*Carludovica palmata*) is a native palm species to Central and South America, ranging from Mexico to central Bolivia, that grows in moist or wet soils, usually in open areas such as cleared agricultural fields, disturbed forests, and communal lands, thriving in high sunlight exposure (Poot-Pool et al., 2017; Bennett et al., 1992; Fadiman, 2001; Marshall et al., 2006).
Lancha Jipijapa	A traditional Mayan dish whereby the jipijapa shoots are steamed in a cow-foot leaf and served with steamed chicken and corn tortilla.
Life Projects	Practices that are "embedded in histories, […] encompass visions of the world and future (Blaser et al., 2004, p. 26).
Semiiya'hil	(*Mopan Maya Term*). After the jipijapa fruit ripens and turns red/ orange, this is the circular part that contains the seeds—also referred to as *unek'*.
Slash & Burn	A farming technique whereby a designated area is cleared in the forest or woodland by cutting and burning the trees and shrubs (Stinson & McLoughlin, 2025).
Slash & Mulch	An agricultural practice whereby the vegetation in a designated area is cut and then left to decompose into the surface of the soil, forming a mulch layer (Stinson & McLoughlin, 2025).
Tzun käla	(*Mopan Maya Term*). The green jipijapa fruit before it ripens.
Value Chain Analysis	A method used for evaluating and contrasting the extent of involvement of different actors in their utilization of natural resources and how costs and benefits are distributed throughout the chain (Gumucio & Hernández, 2015).
Ubarettahil	(*Mopan Maya Term*). The young jipijapa leaves that are about to sprout into mature leaves.
Uk'o	(*Mopan Maya Term*). The young jipijapa shoots that are eaten.

Unek’	(*Mopan Maya Term*). After the jipijapa fruit ripens and turns red/ orange, this is the circular part that contains the seeds—also referred to as *semiiya’hil*.
Uyok	(*Mopan Maya Term*). The stem of the mature jipijapa leaf.
Yä le’	(*Mopan Maya Term*). Mature jipijapa leaves.

CHAPTER 1: INTRODUCTION

1.1 Introduction

Despite the brutal disruption of colonialism, industrialization, and capitalism to their histories and ongoing stigmatization, the futures that Indigenous peoples seek to build are rooted in the value of reciprocity and living harmoniously with nature. Such values guide Indigenous peoples as agents of their own change, weaving paths for alternative, sustainable futures. In Belize, the Maya have cultivated an intrinsic relationship with their surrounding natural resources. One plant that has played a significant role in the southern Mayan communities is the jipijapa palm (*Carludovica palmata*), which has become an integral part of their intangible cultural heritage. The Maya's relationship with the jipijapa palm, however, is being affected by globalized changes, which, for the purpose of this paper, will be defined as social, political, economic, and environmental changes occurring around the world. Despite the disruptions caused by globalized changes, the Maya are determined to build a resilient future with the jipijapa palm, drawing on biocultural design ideals. Biocultural design is a 'design-thinking' framework in which remote and rural communities utilize their resources — such as natural materials, knowledge, and skills — to create innovations that support their way of life and address contemporary challenges (Davidson-Hunt et al., 2012). The jipijapa craft industry is a developing sector in Belize, and the Maya are among its core producers. As such, this thesis explores how the Maya people of San Jose, Belize, are responding to the pressures of globalized change and reimagining their future—utilizing a culturally rooted resource, the jipijapa palm—to foster ecological stewardship, cultural resilience, and community development.

Notably, men's and women's perceptions and involvement in natural resource use and management often differ, as is the case with the jipijapa palm. Therefore, there is a need to understand men's and women's gendered relations with the natural resource and the impact of these relationships on the broader community's environment. One approach to understanding the different roles from harvest through to consumption is value chain analysis. Value chain analysis is a method used for evaluating and contrasting the extent of involvement of different actors in their utilization of natural resources (Gumucio & Hernández, 2015). Value chain analysis

examines how relationships among actors shape their roles in the chain and assesses how costs and benefits are distributed throughout it (Gumucio & Hernández, 2015). Hence, a value chain analysis is most appropriate for determining the gendered involvement. To understand the impacts of globalized changes on the Maya people's relationship with the jipijapa palm, it is necessary to first examine how men and women interact with the plant.

1.2 Context of Research

Maya Governance System

Although the stigmatization as an ethnic minority has tremendously impacted the Maya people's "economic and political survival" (Wilk & Chapin, 1988), it has not thwarted them. Through cohesion and perseverance, they united to preserve their culture, developing systems that allowed their way of life to persist. One such political system is the *Alcalde system*. The Alcalde system was formalized during Spanish and later British colonial rule to administer Indigenous communities and recognize local leaders (Anaya, 1998; Mesh, 2017). Today, this customary system is legally recognized under Belize's Inferior Courts Act (Government of Belize, 2000). The Alcalde system is a traditional form of local governance that blends administrative and judicial roles (Mesh, 2017; Government of Belize, 2000; Anaya, 1998; Novogrodsky, 2012). Alcaldes are elected every two years by village members (Mesh, 2017). Under their judicial responsibilities, alcaldes preside over minor civil and criminal matters such as land disputes (for example, regulating access to milpa plots, forest resources like the jipijapa palm, and village boundaries), domestic conflicts, and petty theft (Government of Belize, 2000; Mesh, 2017; Anaya, 1998; Novogrodsky, 2012). Administratively, they oversee communal land use, enforce customary norms, and coordinate village activities and development projects. This customary system reflects Maya traditions of consensus-based leadership and communal responsibility (Novogrodsky, 2012; Mesh, 2017; Anaya, 1998). Alcaldes often work alongside village councils but retain unique authority over customary law and land matters (Mesh, 2017; Anaya, 1998). As such, they play a key role in defending communal land rights, especially in the wake of the Maya Land Rights Movement.

The Maya Land Rights Movement

The Maya Land Rights Movement in Belize is a legal and human rights struggle for self-determination against the state (Mesh, 2017). The conflict began when the Belizean government granted logging concessions over approximately 480,000 acres in the Toledo District – land historically occupied and used by the Mopan and Q'eqchi Maya communities (Anaya, 1998). These concessions were issued without consultation or consent, violating the Maya's customary land tenure and threatening their subsistence and cultural practices (Anaya, 1998). In response, Maya leaders began organizing themselves, holding village meetings, documenting land use, and building alliances with legal advocates. Thus, the genesis of the grassroots movement. On November 29, 1996, the Maya leaders filed a lawsuit in the Supreme Court of Belize to challenge the logging concessions, seeking "to have the concession enjoined and declared in violation of the Maya rights" (Anaya, 1998, p.17).

Later, in 2001, the Ministry of Natural Resources and Environment, in collaboration with the Commissioner of Lands and Survey, initiated a survey to divide and parcel lands in San Pedro Columbia into individual plots. The designated area they desired to divide was communal lands that had been in use for generations (Novogrodsky, 2012). The government then moved to formally register the parcels and planned to distribute leases and land grants to both residents and non-residents. Maya families residing on communal land were informed that they must lease their land or risk losing it (Novogrodsky, 2012). To lease their lands, residents had to pay $500 (BZD), which most did not have readily available (Novogrodsky, 2012). As subsistence farmers, residents had enough resources to meet their basic needs and limited cash to purchase other goods (Wilk & Chapin, 1988). This predicament was a deliberate violation of their human rights. In 2007, they filed another lawsuit at the Supreme Court of Belize "to block the parcelization, individuation, and threatened destruction of the communal land ownership structure that is central to their identity and village life as a whole" (Novogrodsky, 2012, p. 199). Several Mayan communities came together to contest the government's actions, and in 2015, they took the government of Belize to the Caribbean Court of Justice. Not only were they victorious, but the government of Belize had to pay reparations (Novogrodsky, 2012). The Maya persisted in the face of adversity, preserving their rights to communal land, an essential resource for their livelihood and sustenance.

The Future We Dream

The struggle for their land rights was only part of a grander goal—to maintain their way of life and live communally (Julian Cho Society, 2019). The Maya Leaders Alliance (MLA) and The Toledo Alcalde Association (TAA), in collaboration with their partners, embarked on a journey to articulate this collective dream that the Maya people envisioned for their future, producing a document entitled "The Future We Dream" (2019). In this document, the phrase "to be well and to be Maya" is a recurring theme as the Maya people describe a future where they live in a reciprocal relationship with nature and each other, establishing clear and defined boundaries between communities, and ensuring that all have access to opportunities that generate revenue for their families. Essentially, "The Future We Dream" is the foundation for developing an Indigenous economic model (Julian Cho Society, 2019).

Gender and The Maya Household Economy

The Maya household economy is a dynamic, adaptive system in which domestic life and economic strategies are deeply intertwined, shaped by both cultural values and external pressures, such as colonialism and market integration (Wilk, 1991). Wilk (1991) argues that Maya households are not passive recipients of economic change; rather, they actively shape and respond to it. As the primary economic unit, households combine multiple strategies to generate income, including subsistence farming, wage labor, craft production, and formal trade (Wilk, 1991; Peller et al., 2023; Wainwright, 2020). This diversification of income sources is intended to prepare for unforeseen or uncertain events, especially in the face of fluctuating market prices and environmental disturbances (Wilk, 1991). Each household member has a role to play, and labor is divided by gender and age. Men engage in wage labor (sometimes outside of the community) or milpa farming (Wilk, 1991; Peller et al., 2023). While women often manage the household finances and food production (Wilk, 1991). It is important to note that these roles do not pertain to a single gender, but rather often shift in response to circumstances and economic pressures.

Admittedly, very few women are employed outside the village. One plausible explanation is that, as the primary caregivers within the household, Maya women have fewer opportunities to obtain employment outside the village (Peller et al., 2023). Additionally, education is a key

determinant of acquiring employment within Belize. Those without a high school diploma have difficulty finding employment. As subsistence farmers, some parents lack the financial means to fund their children's entire secondary schooling, resulting in a high rate of high school dropouts in Mayan communities. "Given the discrimination in the educational system and the labor market, those at the bottom are predominantly poor, rural, women, and/ or Indigenous" (Peller et al., 2023, p. 2860).

Despite these limitations, Maya women created means to generate income. Carving out a place for themselves in the tourism industry, women began to use their traditional knowledge and skills to share their culture through cooking and crafting, creating more inclusive opportunities for themselves (Walter, 2011). One resource they used to forge this path was the jipijapa palm, a prevalent non-timber forest product (NTFP).

The Maya's cultural craft production within the tourism industry demonstrated significant potential to support community development, enhance environmental conservation, and ensure cultural preservation (Ya'axché Conservation Trust, 2022). The gender impact of commercializing this traditional practice within the tourism sector is unknown in the Belizean context. Little has been explored about the Maya's agricultural and artisanal interactions with the jipijapa plant in Belize, much less about the gender dynamics that shape the jipijapa craft value chain. Thus, there is a need to comprehend the gendered relations in the jipijapa craft value chain and its potential influence on future-making in Mayan communities.

This research aims to highlight the success of Maya autonomy and resilience in an ever-changing world and to assist in preserving Indigenous culture, identity, and environmental knowledge. The knowledge generated by this research can benefit not only by illuminating the value of Indigenous women's and men's work in their communities but also by serving as an essential tool in community development. Some Indigenous communities work frequently with conservation and environmental organizations. Generating effective, holistic conservation strategies that benefit both communities and the environment is limited if key stakeholders do not understand how these strategies will affect men and women and their relationship with the environment. This research can yield valuable information for the Maya people that propels their initiatives to build better futures for their communities in ways they best see fit, solidifying their right to self-determination.

1.3 Research Purpose and Objectives

This research aims to investigate the Maya People's gendered relations with the jipijapa palm along the jipijapa craft value chain and explore the implications of gendered relations with jipijapa for future-making, in the context of globalized change, within San Jose Village, Belize. The study will strive to achieve the following objectives:

1. To understand the significance of the jipijapa plant for the livelihoods of the community members.
2. To document the jipijapa craft value chain production process from extraction to market.
3. To examine the Maya people's gendered relations with the jipijapa plant along the craft value chain.
4. To explore the impact of globalized changes on the jipijapa craft production and San Jose's future-making.

1.4 Research Design

Stemming from a constructivist worldview, this research seeks to understand the impact of gendered relations on the jipijapa craft value chain and the implications of these potential factors on the Maya's future-making amid globalized changes. Constructivism seeks to understand, often relying on participants' views to determine the meaning behind a particular subject matter (Creswell & Creswell, 2018). Hence, it is the most appropriate worldview in approaching this qualitative research.

An ethnographic research design is adapted. Ethnography seeks to learn about the sociocultural life of communities and institutions through engagement over a period of time (LeCompte & Schensul, 1999; Lewis & Russell, 2011; Davies, 2008), striving to comprehend how people's lives are realized in their world and sociocultural context (Creswell & Creswell, 2018). Utilizing the eyes and ears as the primary data collection tool, ethnographic researchers gather data by conducting interviews and meticulously documenting what they see and hear to discover what people are doing and the reasons behind those actions before assigning interpretations (LeCompte & Schensul, 1999; Watson, 2010). For this reason, the data collection incorporated participant observations, semi-structured interviews, and structured interviews. Forty (40) individuals were invited to participate in this study. After receiving written consent

and before undergoing the interview, participants were given the option to choose a pseudonym instead of their legal names to be used in the study. For individuals who were indecisive about choosing a name, one was assigned to them.

Ten weeks were spent in the field collecting data. The collected data were transcribed and analyzed to identify recurring themes related to gender involvement, value chain nodes, jipijapa usage, globalized changes, and future-making impacts. These themes were coded, and daily memos were written about the findings. Using multiple data sources provided a holistic perspective for interpreting the data, which was compiled and submitted as a written thesis.

1.5 Organization of Thesis

This thesis is divided into six (6) chapters. The first chapter delves into the research's context, providing an in-depth description of the political, social, cultural, and economic spheres within the Maya community. Subsequently, the research purpose and objectives, along with the research design, are presented. The second chapter provides an overview of the existing literature related to the research topic, including Indigenous women's engagement with the environment and natural resources; gender and Forest Timber and Agroforestry (FTA)/Non-timber Forest Product (NTFP); autonomous living; future-making; and biocultural design. The third chapter is a detailed description of the research methodology, including the research approach, ethnographic research design, role of the researcher, participant recruitment, data collection procedures, data analysis procedures, strategies for validating findings, anticipated ethical issues, and dissemination of results.

The fourth chapter presents the research findings, including an introduction to the study site; an exploration of the Maya's ecological, cultural, and economic relationships with the jipijapa palm; and an examination of the impacts of globalized changes on the community. The fifth chapter provides an analysis of the data, highlighting the significance of the jipijapa palm to the Maya's livelihoods, the Maya's gendered relations with the jipijapa palm, and the community's future-making within the context of globalized changes. The sixth and final chapter provides an overall synopsis of the research, the application of biocultural design within the jipijapa craft production, and recommendations for further study.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

In response to the pressures of globalized changes, Indigenous people are reimagining their futures to foster resilience. The futures they aspire to create often involve using their natural resources. Although it is acknowledged that both Indigenous men and women utilize natural resources for their livelihoods, which are often complementary, most of the work carried out by women is inadequately recorded and, therefore, not well comprehended (Kermoal, 2016). For this reason, this literature review explores Indigenous women's interactions, involvement, and relationships with their natural resources and the wider environment. This review provides an overview of Indigenous women's roles within the household economy. Indigenous women's engagement with the wider environment is discussed to highlight how their work intertwines with nature, creating an intricate relationship that makes them natural resource managers. Subsequently, this assessment examines Indigenous men's and women's contributions to forests, trees, and agroforestry (FTA) value chains, highlighting the factors influencing gender differences and gendered outcomes of participating in the FTA value chain. This gender-based approach highlights Indigenous men's and women's contributions to living autonomously and to the future they aspire to build. Lastly, this review examines the importance of incorporating biocultural ideals into future-making and development initiatives.

2.2 General Gender Roles in Belizean Mayan Household Economy

In the 1950s, Mayan society was highly dependent on the family economy, where production and domestic labor involved the participation of every family member. Although men's economic domain was their agricultural site, a woman's economic domain consisted of the enclosed land around her house, where she raised poultry, collected water, gathered products from the forest, and selected and planted seeds (Pérez-Volkow et al., 2022; Greenberg, 2003). These essential practices assisted in cultivating many plants in the community and wider environmental ecosystems (Pérez-Volkow et al., 2022). As such, Mayan women played an essential role in their communities as mothers, spouses, producers, and catalysts for progress and

growth (Cruz, 1998). Traditionally, women's roles included preparing food, making textiles, looking after the children and small animals, as well as passing on their knowledge, techniques, and values to their children (Cruz, 1998; Manago & Greenfield, 2011; Pérez-Volkow et al., 2022); while men cultivated the land, made economic decisions, and represented the family in society (Manago & Greenfield, 2011). But in general, husbands and wives shared a strong interdependence and equality of responsibilities (Cruz, 1998; Manago & Greenfield, 2011; Pérez-Volkow et al., 2022).

After marriage, a woman was given chickens and ducks from her mother and mother-in-law to start her flock. She would then sell the eggs and poultry to earn cash. Whatever cash she earned was for her alone to control. However, most, if not all, of her earnings were spent on necessities for her children (Wilk, 1991). Men owned other animals, but the women and children cared for them. Pigs, for example, were men's property; however, the women and children cared for them daily, often shelling corn the men brought back from the milpa to feed the pigs (Wilk, 1991). Although men made major management decisions, they often sought their wives' opinions before doing anything significant. Women also had some influence over how the pigs and the income from selling them were used (Wilk, 1991). Women were skilled in handling and preserving grains, caring for animals, and cultivating herbs and plants near the home. Women's involvement was vital in various stages of agricultural activities (Wilk, 1991).

While Belize was under colonial control, the Toledo district experienced sporadic moments of investment. Established enterprises, mainly in the timber and agricultural industries, were small and dependent on fluctuating markets (Pemberton, 2012; Wainwright, 2020; Wilk, 1991). The Maya people, nevertheless, possessed sufficient land to cultivate both commercial and subsistence crops (Wilk, 1991). Any cash garnered was used for other necessities such as imported foods, essential goods, healthcare, children's education, and other services provided outside the community (Wilk, 1991). However, the agricultural domain was male-dominated. Recently, the growth of commerce has created multiple opportunities for women to seek wage labor, market their products beyond their communities, and gain more authority in household decision-making when their husbands travel for work outside the community (Manago & Greenfield, 2011). Women gained more freedom and status within their communities as they pursued other empowering initiatives that recognized their role in their homes and broader society.

2.3 Indigenous Women and the Environment

Women have had an intricately intimate relationship with nature and their surroundings throughout history (Salmon, 2000; Kermoal & Altamirano-Jiménez, 2016; Kermoal, 2016). In many cultures, women have played influential roles in managing plants and animals, collecting water and fuel, preserving and rationing food, and caring for natural resources. Women hold a wealth of knowledge that expands beyond their various roles. Kermoal and Altamirano-Jimenez (2016) argued that Indigenous women's knowledge can be considered a system of inquiry. Through interactions with their land, women undergo processes of observation and analysis to understand their ways of *being* and participation in the world (Kermoal & Altamirano-Jiménez, 2016). Indigenous women do not view themselves as separate entities from nature but as part of it. This sense of belonging "is based on the interconnections among social, political, spiritual, economic, and natural spheres" (Kermoal & Altamirano-Jiménez, 2016, p. 9).

Indigenous communities believe that they live in interdependence with all life forms. Their spiritual, physical, social, and mental well-being depends on their ability to coexist harmoniously with the natural world (Salmon, 2000; Kermoal, 2016). The Indigenous identity, language, land-based beliefs, and history are symbolic representations of culture that govern and demonstrate the health of both humans and the natural world (Salmon, 2000). This intricate and meaningful connection to their environment is often displayed through plant utilization, as Joseph (2021) recounted:

> *When I am out harvesting on the land, I am completely present in my body, mind, and spirit. I am partaking in an activity that my ancestors have practiced since the beginning of time, and when my children are with me, we are sharing ancestral knowledge. The act of harvesting connects me to plants, to the land on which I stand, and to my own heart and mind.* (Joseph, 2020, p. 167)

Indigenous women formed a moral relationship with their lands, and maintaining this balance ensured that everyone lived right (Kermoal, 2016; Salmon, 2000). Nathalie Kermoal (2016) explained that Metis women expressed their relationship with the land through stories, art, healing, and culinary practices (Kermoal, 2016). Indigenous women told their children stories to teach and remind them to maintain reciprocity and gratitude with nature (Kermoal, 2016). Additionally, their relationship was expressed through artisanal designs. This practice was

often intertwined with medical healing (Kermoal, 2016). Some Metis women did porcupine quillwork and used their plant knowledge to make medicines and dyes. Skilled enough women often fused the two, placing medicinal trinkets such as bead plants and flowers with curing properties into their designs to transfer healing (Kermoal, 2016). Indigenous women also prepared their meals with herbal spices such as oregano and basil for medicinal purposes (Kermoal, 2016).

To encapsulate the essence of Indigenous peoples' connectivity with their lands, Enrique Salmon (2000) coined the term "kin-centricity," which he defined as viewing oneself and nature as part of an "extended ecological family that shares ancestry and origins" (p. 1327). When Indigenous women would partake in their agricultural activities, natural disturbances, such as burning and pruning, encouraged new growth within forested areas. New growth attracted fauna such as birds, bees, and deer, which in turn played a part in pollination and seed distribution, causing more plants to grow and biodiversity to increase (Salmon, 2000); this reciprocal framework served as the basis for "kin-centric ecology," a basis which advocated for Indigenous people, especially women, as expert natural resource managers.

2.3.1 Indigenous Women as Natural Resource Managers

Most recent studies have adopted the Gender Environment and Sustainable Development (GED) approach, which highlights the significance of women as key players in the management and preservation of the environment (Mikkelsen, 2005). In its analysis, GED adopted a diverse perspective of women and considered other social stratification factors, such as age, class, and ethnicity, in addition to the gender-environment relationships within Indigenous communities (Mikkelsen, 2005). Few studies, however, distinguish between Indigenous women and other poor groups of women's interactions with the environment, implying that both groups encompass each other. Women and Indigenous Peoples are often portrayed similarly within the environmental literary discourse. They are depicted as having a deeper connection with nature, exhibiting a more spiritual interaction with the environment. As a result, they are both seen as victims of environmental degradation and simultaneously pivotal actors in promoting alternative frameworks for sustainability (Mikkelsen, 2005).

The international community has increasingly acknowledged the rights of Indigenous Peoples and the beneficial connection between their traditional knowledge, customary practices,

and nature conservation. This sparked an interest in Indigenous community-based conservation and natural resource management initiatives (Mikkelsen, 2005). Mikkelsen (2005) distinguished two primary approaches concerning the role and rights of Indigenous Peoples as managers of natural resources within their ancestral lands. Firstly, the 'rights-based approach' asserts that Indigenous peoples have an indisputable right to their ancestral lands and self-determination and that it is the historical responsibility of the Western world to uphold these rights (Mikkelsen, 2005). Secondly, the 'performance-based approach' suggests that Indigenous Peoples should be given access to and control over their traditional territories and the embedded natural resources, provided they demonstrate sustainable practices towards vulnerable environments (Mikkelsen, 2005). The rights-based approach has resulted in developing strategies to protect Indigenous peoples from external interference while empowering them to take control of their own social, cultural, and economic development. This approach acknowledges their role as historical actors and their right to pursue development as they define it (Mikkelsen, 2005). Hence, most studies employed the second approach when referring to Indigenous peoples as natural resource managers.

Indigenous women contribute significantly to promoting and preserving plant biodiversity (Mikkelsen, 2005; Greenberg, 2003). Although they interact with a diverse array of ecosystems and natural resources to supply their families with necessities such as food, medical care, and income, they do more than collect wild plants. Women engage in landscaping activities, such as designing home gardens to their specifications and organizing desired plants in a particular location to serve a purpose (Mikkelsen, 2005; Greenberg, 2003). Home gardens have been an area long ignored. In their studies, Greenberg (2003) found that Yucatec Mayan women played a crucial role in managing plant genetic resources within their home lots. The Yucatec Mayan women's decisions about which plant species and varieties to preserve were influenced by various factors. However, a prevalent deciding factor in the La Colonia community was the desire to conserve their ethnicity through cuisine (Greenberg, 2003). Edible plants were cultivated behind the house near the kitchen for easy access. Precious plants, such as herbal spices and rare varieties of peppers, were grown out of sight from the street to prevent theft (Greenberg, 2003). In contrast, decorative plant species were positioned along the roadside, likely for public display. Plants were seldom positioned near the house to avoid attracting pests or providing a hiding spot for snakes; some herbaceous plants were grown directly in the soil,

while others were planted in pots (Greenberg, 2003). These women's choice to replant traditional crops played an influential role in the local ecology.

A study conducted in the Philippines showed what occurred when women's involvement in the forest was limited. Gabriel et al. (2020) examined the role of Indigenous women in forest preservation and how the interplay of gender, ethnicity, and traditional knowledge influenced forest conservation. The research found that Indigenous communities with gender restrictions [women's subordination and limited involvement] contributed to a higher level of environmental degradation (Gabriel et al., 2020), indicating a link between women's work and the forest's flourishment, and implying that women's involvement was necessary for the maintenance of environmental stability. Ingram et al. (2016) argued that enhancing women's involvement in decision-making processes for natural resource utilization has the potential to establish better management strategies of forest resources at the micro and macro levels within communities. The lack of support for both women's and men's participation in forestry-related activities and businesses not only stifled opportunities to enhance the lives of women and their families but also hindered the utilization of natural resources equitably and sustainably (Ingram, 2016).

2.4 Gender and FTA/ NTFP

Forests, trees, and agroforests (FTA) have the potential to alleviate poverty, increase gender equality, and promote ecological sustainability. Numerous non-timber forest products (NTFPs) are obtained from FTA resources (Ingram, 2016). In addition to the multiple benefits offered in terms of food security, nutrition, energy, health, and cultural sustenance, NTFPs account for an average of 20-25% of the annual household income of individuals in developing countries (Ingram, 2016). The production and commercialization of NTFPs plays a significant role for marginalized groups, such as women, whose limited access to resources like land, credit, and other assets restricts their exploration of alternative livelihood opportunities.

2.4.1 FTA/ NTFP Value Chain Analysis

Value chain analysis is a useful method for evaluating and contrasting the extent of involvement of different actors in the utilization of natural resources (Gumucio & Hernández, 2015). Value chain analysis examines how the relationships between actors affect their respective

roles and assesses how costs and benefits are distributed throughout the chain (Gumucio & Hernández, 2015). The value chain commonly features four stages: harvesting, transporting, processing, and selling, as depicted in Figure 1. Scholars have investigated how gendered norms, ideologies, and power dynamics are intertwined with value chains, which examines the extent to which women and men engage in and reap the benefits of value chain development (Pierce et al., 2016). After reviewing the literature, three key findings have emerged regarding the involvement of men and women in FTA/ NTFP value chains. These are the significance of both men's and women's contributions, factors influencing gender differences within the value chain, and gendered outcomes of participating in the FTA/NTFP value chain.

Figure 1: Diagram displaying the basic stages along the NFTP value chain.

2.4.2 Contribution of Men and Women to FTA/ NTFP Value Chain

A cross-regional review of the literature has revealed that the gendered contributions to the FTA/ NTFP value chain were highly dependent on the geographic region and production. Although men and women have contributed significantly throughout the FTA/ NTFP value chain, women dominate as collectors, processors, and small-scale retailers in the African region. In contrast, men dominated as collectors in Asia and Latin America (Ingram, 2016). In Latin America, although both men and women participate significantly in the collection of forest products, men were more involved than women (Gumucio & Hernández, 2015; Gumucio et al., 2018). Gumucio et al. (2018) found that women contributed significantly to the processing and selling stages along the value chain, whereas men had minimal input in sales.

A study of sixteen commercialized NTFP value chains in Mexico and Bolivia found that women were more likely to be involved in cultivation and processing activities, although those activities were sometimes carried out with men (Marshall et al., 2006). A study on cocoa agroforestry in Ecuador also noted that both women and men participate in all stages of sowing, maintenance, and harvest (Gumucio & Hernández, 2015). In their study on food harvesting in

Costa Rica, Sylvester et al. (2016) discovered that both men and women participated in harvesting equally, as no task was exclusive to one gender, thereby emphasizing the significance of gender collaboration.

Marshall et al.'s (2006) study of women's contributions to commercial NTFP value chains in Mexico and Bolivia found that women predominantly handled processing and sales in three cases but depended on men for the resource. These cases included a rubber value chain in Bolivia and value chains in Mexico and Bolivia based on soyate palm and jipijapa palm, respectively (Marshall et al., 2006). In these instances, men provided the palm fibers that women used to create craft products for sale (Marshall et al., 2006). The study further highlighted several cases where men controlled all value chain activities from cultivation to sales, while there were no cases where women were solely responsible for all activities (Marshall et al., 2006).

A cross-region analysis revealed that women were mainly involved in the collecting and small-scale retailing stages along the value chain, while men operated businesses that yielded higher income (Ingram, 2016), explaining the disparity in income generation. As the main provider in most cultural households, men were obligated to generate substantial revenue to cover most, if not all, expenditures, whereas women's income was viewed as an additional source (Almamari, 2015). Hence, the reason men targeted and undertook roles that generated more money. Studies have shown that men in Latin America, Asia, and Africa tend to earn more than women from processed and unprocessed forest products, contributing more to the household income (Gumucio & Hernández, 2015). In contrast to Asia and Africa, the disparity in earnings between men and women in Latin America was more noticeable for unprocessed forest products (Gumucio & Hernández, 2015). Men were primarily responsible for gathering unprocessed products such as construction and fibre materials, medicines, resins, dyes, animal food, fodder, and manure. In contrast, women primarily engaged in collecting unprocessed food from plants and mushrooms (Gumucio & Hernández, 2015; Marshall et al., 2006).

2.4.3 Factors Influencing Gender Differences within the FTA/ NTFP Value Chain

Women face more barriers than men when joining or benefiting from FTA/NTFP chains. These barriers differ depending on the product, the place, and the culture and are influenced by

social, political, economic, and environmental factors (Ingram, 2016). The following is a list of factors influencing gender differences within the value chain compiled by Ingram et al. (2016).

- Social and cultural factors shaped the governance of FTA/NTFP chains and created gender gaps in participation. These factors affected how women and men accessed, owned, and used land. As a result, women often faced more barriers or disadvantages in securing or exercising their rights, or their rights were not clearly defined or enforced (Ingram, 2016).
- The type of product and activity affected the gender division of labor, with men taking part more in activities that required physical strength, such as collection and processing. However, women also performed labor-intensive tasks (Ingram, 2016).
- Gender power relations at the household level and within enterprises displayed differentiated benefits for women (Ingram, 2016).
- Governance, political, and industrial factors, characterized by overlapping customary and formal regulatory arrangements, caused the under-representation of women in forest management and value-chain organizations (Ingram, 2016).
- The demand for products from FTAs in local and international markets is influenced by economic factors such as the global economy's integration and the reforms resulting from economic crises (Ingram, 2016).
- The quality and quantity of specific FTA resources declined due to resource degradation. Women, who are more dependent on natural resources and have limited participation in decision-making processes within institutions that regulate access to FTA resources and markets, are sometimes more vulnerable than men (Ingram, 2016).

2.4.4 Gendered Outcomes of Participating in the FTA /NTFP Value Chain

The reviewed literature lacked information on the benefits of men and women along the value chain. Most publications concentrated on the benefits that women received, while only a few discussed the benefits for both genders. In the cases focusing on women's benefits, several highlighted the potential for women's economic and political independence through earnings from participating in the value chain (Gumucio et al., 2018); however, these factors were discussed from an economic perspective, lacking the intrinsic value and relationship that women

shared with their resources and the broader environment. Nevertheless, the findings revealed that women achieved the most financial gains through their involvement in artisanal and fruit value chains, providing an independent income source (Gumucio et al., 2018). Gumucio et al.'s (2018) research on women's work in Brazil nut processing highlighted that while participating in resource processing in industrial environments yielded some financial earnings, employment was often temporary and offered limited or no contractual benefits for subcontracted women. In contrast, men were more likely to hold permanent positions in these sectors (Gumucio et al., 2018), yielding more benefits.

Globally, men and women have contributed almost equally to household income, with men contributing a considerably higher share of income from processed FTA products (Gumucio et al., 2018; Ingram, 2016; Gumucio & Hernández, 2015; Haverhals et al., 2016). When women are involved in selling FTA products, they gain greater control over the income generated (Haverhals et al., 2016). Increases in women's income significantly impacted the household as earnings go towards food, health, and education expenditures (Ingram et al., 2016). Therefore, the overall household's well-being increases, which also benefits men. Women's participation in these chains helps households to cover essential expenses (Ingram, 2016; Haverhals et al., 2016).

Marshall et al.'s (2006) analysis of the NTFP value chain in Mexico and Bolivia was one of the few publications that revealed non-financial benefits for participants. Women who engaged in Bolivia's jipijapa palm artisanal production benefited from training, social support, and funding from governmental and non-governmental organizations. Besides acquiring professional skills, women developed self-confidence and empowerment through their work and the networks created with other organizations (Marshall et al., 2006; Gumucio & Hernández, 2015).

The benefits offered by the FTA value chain transcended gender and revealed a reciprocal relationship with the environment. Granting tenure and management authority to local communities and households (both men and women) could enhance forest biodiversity (Ingram, 2016). Men engaged in timber production were considered significant environmental contributors and responsible for forest management (Marshall et al., 2006; Gumucio & Hernández, 2015). Involving women in the decision-making process in community-based forestry initiatives promoted forest regeneration, as women were perceived as natural resource managers. Women provide a different approach and perspective on the importance of various

plant species to the overall sustainability and stability of the ecosystem. The FTA value chain encouraged biodiversity conservation because extracting FTA species from the forest and other sustainable human disturbances can positively impact local ecology (Ingram, 2016).

2.5 Non-Timber Forest Product (NTFP): Jipijapa (*Carludovica palmata*)

2.5.1 Ecology of Jipijapa

One vital forest resource is the *Carludovica palmata* of the family *Cyclanthaceae*, locally known as the jipijapa palm. The jipijapa palm is a native species to Central and South America, ranging from Mexico to central Bolivia (Poot-Pool et al., 2017; Bennett et al., 1992; Fadiman, 2001; Marshall et al., 2006). It grows in moist or wet soils, usually in open areas such as cleared agricultural fields, disturbed forests, and communal lands, thriving in high sunlight exposure (Bennett et al., 1992; Poot-Pool et al., 2017; Marshall et al., 2006; Fadiman, 2001). The jipijapa palm is a 1m to 4m high plant with multiple fan-shaped leaves that are wide and long and composed of four wedge-like segments (Fadiman, 2001; Bennett et al., 1992). A small root (rhizome) is often planted to generate more buds. These buds give rise to new shoots, forming small groups of stems (Fadiman, 2001).

In Santa Cruz, Mexico, where the jipijapa palm is cultivated for production, the growers tend to the fields every few weeks to remove weeds until the plant is mature enough to provide shade on the ground around its base, suppressing weed growth (Fadiman, 2001). The jipijapa palm grows in clusters; cultivators occasionally thin out the fields to avoid overcrowding, selling the surplus plants to nearby towns (Fadiman, 2001), as every 15 days, a jipijapa plant produces a leaf suitable for use. The Jipijapa plant requires approximately 10 liters of water per plant per day to produce high-quality leaves. Cultivators water their plots by filling soil trenches between the rows. Fertilizers were seldom used, as the soil retained its fertility over long periods, capable of supporting a large plant population (Fadiman, 2001). For instance, the plantations in Santa Cruz have been cultivating jipijapa on the same soil for more than a century (Fadiman, 2001). The jipijapa palm does not deplete soil nutrients, and primary forests do not need to be removed

to cultivate it (Fadiman, 2001; Bennett et al., 1992); as a result, it is a suitable and sustainable plant to utilize in production.

2.5.2 Uses of Jipijapa

The jipijapa palm has been utilized for numerous purposes in Indigenous and rural communities throughout Central and South America. The jipijapa palm leaves have been traditionally used for construction purposes, such as building roofs (Poot-Pool et al., 2017), specifically for houses, kitchens, and animal shelters (Bennett et al., 1992). In Amazonian Ecuador, it is widely used as a food source. The base part of the unopened leaf bud, as well as the fruits, is edible. The Quichua people often eat the buds raw while in the field or gather them to put in salads (Bennett et al., 1992). In other instances, it is used in food preparation, where the food is wrapped in a package made from the leaves and cooked directly over a fire (Bennett et al., 1992). Moreover, the Quichua people utilize the plant for medicinal purposes, applying the chewed meristem to wounds to prevent infections. They also blend the leaves with clay to safeguard pottery. Other instances display cases where Indigenous people and Mestizos use the leaf as an umbrella (Bennett et al., 1992). When the leaves have been sun-dried and stripped into fibers, they are tied to a stick and used as a broom within the household (Fadiman, 2001).

In Ecuador, Indigenous and rural communities used the fibers to make baskets. Quichua men utilize the baskets to transport items such as fruits, eggs, and fish, and to confine small birds. On the other hand, Quichua women create more intricate baskets with detailed designs (Bennett et al., 1992). Traditionally, women primarily participated in basket weaving and handicraft creation (Walter, 2011). Employing their traditional knowledge of the jipijapa's fiber usage for producing crafts such as hats, rugs, and bags (Poot-Pool et al., 2017). In countries such as Mexico, Panama, and Ecuador, the utilization of the jipijapa palm to make hats has become very popular and serves as a major income generator in the tourism market (Fadiman, 2001; Marshall et al., 2006); hence, numerous Indigenous and rural communities began cultivating jipijapa palm, creating an industry, both locally and internationally, for woven hats and crafts (Marshall et al., 2006). Engaging in the culture and creative industry by utilizing this NTFP is how Indigenous people are pursuing developmental initiatives.

2.6 Indigenous Perspectives and Development

Although the term underdevelopment was coined in 1942 by Wilfred Benson whilst writing on the economic basis for peace, the term became popularized after President Truman's speech in 1949 (Esteva, 1992). Truman's speech divided the world into the global north and south, describing the northern hemisphere as the desired economic standard (developed) and denouncing over two billion people in the southern hemisphere as underdeveloped, not because they were extremely impoverished, but because they did not meet the requirements for being developed (Esteva, 1992). Attempting to forgo the "underdeveloped" title, countries began to pursue development. However, this transition came with a cost: "They ceased being what they were, in all their diversity, and were transmogrified into an inverted mirror of others' reality: a mirror that belittles them and sends them off to the end of the queue" (Esteva, 1992, p.2). Nevertheless, as time progressed, what was intended to be a dream became a nightmare (Escobar, 2012). Instead of the abundance promised by 'development,' it led to the opposite: widespread underdevelopment, impoverishment, exploitation, and oppression— pathetic indicators of the failure of development (Escobar, 2012).

This backlash prompted scholars and local communities to reassess development strategies and explore alternative approaches, focusing on inclusive and democratic regulations for social co-existence (Bridge, 2015). Esteva (1992) proposed the concept of *New Commons* as a solution. The *New Commons* sought to transform traditional men and women (vernacular societies) into economic individuals who work on their terms, highlighting the resourcefulness and creativity of ordinary people who use their sociological and cultural skills and environmental resources to chart their course in challenging circumstances. Rahnema (1992) added that the only way to combat poverty and other related socio-economic challenges was for vernacular societies to be given absolute freedom (autonomy) from both state and foreign affairs to operate within their own communities. The concepts of 'autonomy' and 'commonality,' along with their related practices, were viewed as establishing the foundation for a fresh approach to design that is both collaborative and community-driven (Escobar, 2017).

> *Take as a whole, these manifestations of multiple collective wills evince the unwavering conviction that another world is indeed possible [...] relational and cooperative modes of living with humans and nature* (Escobar, 2017, p.16).

2.6.1 Living Autonomously

Indigenous people do not simply seek monetary wealth but view growth as *life projects* because the environment, their cultural heritage, spirituality, and livelihood sustenance are intrinsically linked (Davidson-Hunt et al., 2012; Blaser et al., 2004). *Life projects* consist of practices that are "embedded in histories, […] encompass visions of the world and future (Blaser et al., 2004, p. 26). Most development practices have converted self-sufficient and self-governing communities, which have established a close bond with their lands over time, into dependent communities controlled by transnational markets and nation-states (Blaser et al., 2004, p.28). Despite Indigenous communities' resistance to many development agendas, their agendas are not simply a reaction to external forces. Instead, they are emergent and reflect a socio-cultural approach to life that is broad and inclusive rather than narrowly focused on specific goals to seek autonomy (Blaser et al., 2004, p.28). Escobar (2017) stated that autonomy is not about criticizing formal democracy but about creating a new form of governance rooted in people's lives and striving for freedom, a new society in holistic harmony with other cultures and nature. Indigenous peoples have become the protagonists of their futures. Life projects and autonomy intend to change the power dynamics that limit Indigenous peoples from acting and living according to their way of expressing themselves and their existence (Blaser et al., 2004).

> *It was not until we started to discuss our worldviews and the things that mattered to us that we realized that we have creation stories to tell us who we are and how we are supposed to live sustainably*. (Blaser et al., 2004, p.75).

2.6.2 Future-Making

The study of future-making, which refers to creating and implementing imagined futures (Thompson & Byrne, 2021), has become fundamental in comprehending the temporal dynamics in organizations. Comi and Whyte (2017) argued that temporal continuity is not represented as a sequence of current points linearly but rather as a continuous flow of present actions that draw on

past and future events as a source of knowledge subject to constant revision. When addressed as a cyclical process, future-making can transform visions into actions that bring change (Pettit et al., 2023). Nevertheless, future-making reflects practitioners' actions to achieve their goals rather than what they claim or desire to do (Thompson & Byrne, 2021). Creating imagined futures is not an objective process or solely the product of individuals' subjective thoughts. Instead, it is produced through social practices in which practitioners collectively exercise their creative imaginations (Thompson & Byrne, 2021). There are two modes of future-making: practices that enable and transform, and practices that preserve and sustain. These practices are often fostered through different sustainable future narratives (Knappe et al., 2019). Knappe et al. (2019) argued that future-making practices, when done effectively, are influential tools for creating new orders and transforming or preserving fundamental values that shape people's perception of what constitutes a 'good life' or a desirable future.

Indigenous perspectives on the future frequently address the differences between Indigenous people's rich histories and the short but highly disruptive periods of colonialism, capitalism, and industrialization (Whyte, 2017). The futures that Indigenous people seek to create are rooted in the value of reciprocity, fostering a harmonious relationship with nature and ensuring sustainability for future generations to build upon. For example, the Menominee Nation's creation of a "culturally, spiritually, and economically sustainable forest was their response to the colonially induced destruction of their relationships with many species" (Whyte, 2017, p.160). The shift to forestry required the creation and execution of specific relationships and duties that would have been significant to their predecessors (Whyte, 2017).

Indigenous people believe that their actions in the present are cyclical performances influenced by the reflection on their ancestors' viewpoints and their aspirations to be good ancestors for future generations (Whyte, 2017). Walker-Swaney (2021) added that reflection is a pivotal tool that enables the comprehension of experiences, overcoming difficulties, and making strategic decisions. Recovering from the effects of historical and political trauma paves the way for self-reconciliation, contemplation of the past, and a progressive future (Walker-Swaney, 2021), utilizing Indigenous knowledge to direct decisions, processes, and actions.

Indigenous communities and peoples have been safeguarding their ancestral lands for many generations, and their efforts have contributed to the mitigation of numerous environmental issues, especially global climate change (Oakley et al., 2022). Three Indigenous

movements indigenizing biodiversity conservation in Latin America and sustaining Indigenous people's way of life are *Buen Vivir*, *Vida Harmonica*, and the *Law of Origin*. The Buen Vivir philosophy prioritizes the community and extends inclusivity to other humans, plants, animals, and entities. This philosophy is constantly evolving and customized to meet the community's needs (Oakley et al., 2022). Similarly, the Vida Harmonica ideology fosters living sustainably and harmoniously with Mother Nature. The Law of Origin, however, is a more comprehensive concept that pertains to the ancestral knowledge of managing the spiritual and material realms (Oakley et al., 2022). Wildcat (2005) argued that exploring traditional ways of life is essential for humanity's survival and the planet's well-being.

> *The Western desire and energy invested in reshaping the exterior world has resulted in neglect for our 'interior' selves or, more appropriately, for that which moves and moves through us.* (Wildcat, 2005, p. 436)

2.7 Biocultural Design and Heritage

Indigenous people have utilized their traditional knowledge, skills, and resources to innovatively respond to contemporary challenges and safeguard their way of life. In other words, they have a long-standing history of being biocultural designers.

Biocultural diversity refers to the interrelationships between all living things, encompassing biological, cultural, and linguistic diversity (Franco et al., 2022). This concept fosters the idea that humans and nature are intrinsically interconnected. Regrettably, biocultural diversity is diminishing at an unparalleled pace in numerous regions across the globe. This decline is accompanied by numerous unsustainable biophysical and socio-economic transformations, including the overexploitation of resources, deforestation, and the depletion of water and soil, all of which are consequences of intensive industrialization (Maffi & Woodley, 2010). Preserving and nurturing biocultural diversity has the potential to stimulate and facilitate transformative pathways toward achieving long-term sustainability. The notion of biocultural diversity has yet to be extensively employed in the field of sustainability science, but there is a pressing need to broaden its scope and application. Hence, employing a biocultural design approach could foster this paradigm shift. Biocultural design is a design-thinking framework

whereby rural and remote communities utilize their biocultural heritage innovatively to respond to globalized changes (Davidson-Hunt et al., 2012).

Biocultural heritage is the knowledge or usage of biological materials linked to traditional resources and lands (Davidson-Hunt et al., 2012; Lindholm & Ekblom, 2019). The concept of biocultural heritage strives to adopt a comprehensive approach that transcends traditional boundaries between biological and heritage conservation, rural development, and local participation (Lindholm & Ekblom, 2019). From an extensive review of the literature, Lindholm and Ekblom (2019) created a list of elements that constituted the biocultural heritage framework: (1) *Ecosystem Memories,* which refers to biophysical characteristics, non-human organisms, and agents that have been directly or indirectly altered or impacted by humans (Lindholm & Ekblom, 2019, p.3). (2) *Landscape Memories encompass concrete, materialized human practices and partially intangible methods of organizing landscapes, such as constructed environments, archaeological sites, and settlement systems* associated with users and property rights (Lindholm & Ekblom, 2019, p.3). (3) *Place-based Memories* are intangible knowledge. These elements encompass features such as 'know-how,' place names, orature, arts, ideas, and culture that have been passed down through generations and preserved over time (Lindholm & Ekblom, 2019, p.3). (4) *Integrated Landscape Analysis* is the theoretical framework for creating knowledge and managing landscapes (Lindholm & Ekblom, 2019, p.3). (5) *Stewardship and Change* refers to exploring memory reservoirs of biocultural heritage to transfer knowledge of policy and management and shape collaborative initiatives (Lindholm & Ekblom, 2019, p.3). Employing a biocultural heritage framework enables the exploration of traditional knowledge that draws on the past to envision the future.

Over the centuries, traditional knowledge has evolved, but the interdependence between Indigenous peoples and the natural environment has remained persistent. The application of traditional knowledge is crucial to the preservation of biodiversity. Incorporating Indigenous traditional knowledge into biocultural approaches can influence the construction and implementation of conservation policies and developmental initiatives that safeguard humanity and the natural environment (Burke et al., 2022). This shift empowers Indigenous peoples and sustains their cultural practices in line with their way of life, sparking the creation of alternative futures that advocate for the thrivability of all living systems.

CHAPTER 3: METHODOLOGY AND METHODS

3.1 Introduction

This chapter provides an in-depth description of the various methodological procedures employed in this qualitative ethnographic study, with a focus on the gendered relations surrounding the jipijapa palm in San Jose Village. Employing a constructivist worldview, this approach allows for a deeper understanding of the community's relationship with the jipijapa palm before and after the craft creation process from field to market, the key players involved in production, and the craft creation's impact on the community. This section outlines the following: research approach, qualitative design, researcher's role, participant recruitment, data collection procedures, data analysis procedures, validation, ethical concerns, and dissemination of results.

3.2 Research Approach

A qualitative approach aims to explore and understand the meaning individuals give to their social reality and experiences (Hesse-Biber, 2010; Creswell & Creswell, 2018; Kalu & Bwalya, 2017), allowing the researcher to be in the "natural setting," which permits close-up interactions with the participants and where the researcher can observe firsthand how participants behave and act in their environment (Creswell & Creswell, 2018, p. 300). The participants are the 'experts' in the study, as it is their perception of reality that the researcher seeks to explore and understand (Hesse-Biber, 2010; Creswell & Creswell, 2018). Employing a qualitative approach is most appropriate in this study as the overall objective is to explore the Maya People's gendered relations with the jipijapa palm along the jipijapa craft value chain in order to understand the influence of their relationship with the jipijapa palm on future-making within the Mayan community amidst globalized changes. Essentially, the study aspires to allow the Mayan community to tell the story of how their current cultural practices are sustaining their livelihoods and way of life, as well as the future they hope to build out of it, even though globalized changes are affecting them.

Understanding the concept of social reality is quite complex, as there will be multiple stories, and each participant's story may vary, but the variety in stories is essential for compiling

and interpreting a holistic image. Social realities are subjective (Hesse-Biber, 2010). As a result, this research will adopt a constructivist worldview. A constructivist approach assumes that reality is "representational," not objective (Hesse-Biber, 2010, p. 455). It seeks to understand, often relying on participants' views to determine the meaning behind a particular subject matter (Creswell & Creswell, 2018), aligning with the research's purpose.

3.3 Qualitative Design: Ethnography

An ethnographic design will be utilized in this study. Ethnography is a research design based on fieldwork that seeks to learn about the sociocultural life of communities and institutions through engagement over a period of time (Green et al., 2006; LeCompte & Schensul, 1999; Lewis & Russell, 2011; Davies, 2008). The study of ethnography originated in anthropology and later spread across the social sciences (Green et al., 2006; Hammersley, 2018). Ethnography aims to comprehend how people's reality makes sense to them. Hence, it is scientific and investigative, striving to unravel 'how things happen and work' in a community or context through observational and participatory research (Watson, 2010). Utilizing the eyes and ears as the primary data collection tool, ethnographic researchers gather data by conducting interviews and meticulously documenting what they see and hear (LeCompte & Schensul, 1999). A critical difference between ethnography and other designs is that ethnography strives first to discover what people are doing and the reasons behind those actions before assigning interpretations (LeCompte & Schensul, 1999; Watson, 2010).

Several elements characterize a qualitative design as ethnographic. The first distinguished characteristic of ethnography is that it *views all study elements in contexts* (LeCompte & Schensul, 1999). Context is loosely defined as culture, demography, and history. Secondly, it *recounts events as they occur in the natural setting* (LeCompte & Schensul, 1999; Creswell & Creswell, 2018; Hammersley, 2018). Notably, it is of utmost importance to mention that "ethnographers generally do not manipulate or create the settings or situations in which responses to interventions are solicited, obtained, or measured" (LeCompte & Schensul, 1999, p.10). Thirdly, *ethnographers must build a good rapport with the communities or participants involved in the research* (LeCompte & Schensul, 1999). Researchers are 'invited guests' into participants' personal spaces. Hence, this engagement requires the development of a mutual friendship founded on trust and respect. Fourthly, ethnographic research *utilizes recursive*

analysis to develop theories to understand or explain the study subject (LeCompte & Schensul, 1999). This means that researchers first start with a general idea or hypothesis (hunch) of what is occurring in a particular subject area. They would follow up on their hypothesis through initial interviews, observations, and participant observation. The data gathered is further tested using similar or different methods until a stable pattern appears. This method is repeated until the model is complete (LeCompte & Schensul, 1999). Essentially, ethnographers follow a pattern of observation, data collection, and data organization to generate ideas that conceptualize and interpret the data to make assertions related to larger social phenomena (Burns, 2022). Lastly, ethnography can *incorporate both qualitative and quantitative data* (LeCompte & Schensul, 1999). Ethnographers aspire to develop a holistic perspective on phenomena. Most ethnographic research starts qualitatively by drawing information from multiple sources to illuminate the research problem (LeCompte & Schensul, 1999). The qualitative findings can assist in identifying key variables that can be further investigated quantitatively. These quantitative measures justify the qualitative findings (LeCompte & Schensul, 1999; Lewis & Russell, 2011).

Ethnographic research approaches a subject holistically, developing intricate and complex variables to tell the whole story (Hammersley, 2018), making it an appropriate research design choice. The first step in ethnographic research is to define and describe what is occurring, subsequently identifying patterns and linking them to understand the underlying meaning. The data is then integrated to formulate a substantive theory of what is happening (Borman et al., 1986; Creswell & Creswell, 2018; Burns, 2022). Another strength of ethnography is that it gives the researcher direct access to the studied groups' cultures and practices. Ethnography requires an in-field, hands-on approach, giving researchers an intimate perspective of what is occurring and acquiring authentic information (Borman et al., 1986; Hammersley, 2018). Lastly, ethnography operates in a multivariate framework with an open and flexible method (Borman et al., 1986). Data collected during the research is linked with other components after the information is known, increasing the validity of the analytic process (Borman et al., 1986). Aiming to create a rich narrative of the occurrence, researchers can explore many aspects of the studied group and then link and integrate the data. This method will assist in achieving the research objectives.

3.4 Role of Researcher

In qualitative research, the researcher is the primary data collection tool. Hence, it is essential to identify the researcher's values and biases from the outset of the study (Creswell & Creswell, 2018). I hold a bachelor's degree in Anthropology and Environmental Science. Throughout my undergrad studies, I visited several Mayan communities in southern Belize. Having previous knowledge of the context within Mayan communities enhances my awareness and sensitivity to their challenges. As an Indigenous person myself, there are some emotional connections. I understand that Indigenous people have been treated unfairly in Belize. The Maya people, primarily, have been stigmatized and marginalized. Although I want to highlight those unfair aspects, it is not my primary intention to paint the Maya people as victims. Removing preconceived notions from the equation, I entered the field with child-like eyes and an open mind, allowing me to stay objective. Practicing reflexivity throughout the research helped to keep unnoticed personal and emotional biases at bay. I kept a journal to reflect on the day's events, writing down any negative feelings, frustrations, challenges, and triumphs I encountered. This process helped to remove my biases and allow me to enter the field with a clear mind. Treating the participants as the experts and co-researchers, I want them to tell their stories authentically. As a result, the collected data tells the story.

3.5 Participant Recruitment

As part of scoping and following traditional Maya governance protocols, I met with the Maya Leaders Alliance (MLA) / Toledo Alcalde Association (TAA). The MLA/TAA is an Indigenous-led community based organization that works along with the forty-one (41) communities in the southern district of Toledo. As such, building relationship with the MLA/TAA and seeking their assistance and guidance was pivotal in the initial steps of this research. Notably, the MLA/ TAA does not make governing decisions on behalf of the Maya people, however, working alongside the Maya people allows the MLA/TAA to be facilitators between the communities and researchers. They also assist researchers in determining which community their project idea would be best applicable to, and seek the community's input to determine whether or not they are interested in participating in the research. Nonetheless, with their guidance and assistance, the MLA/TAA directed me to a women's group that used jipijapa

to create crafts in San Jose village. I then met with the women's group, described the project, and asked if their members would be interesting in participating in the project. The women notified me on April 24th that they met and made a collective decision to hosting me in the village and participating in the project. In May 2024, I spent roughly two weeks in the village to develop a relationship with the members before I started the data collection.

The study followed the craft production chain from creation to market, as such three primary participant groups were identified: (1) the artisans [*people who create crafts using jipijapa*], (2) secondary contributors [*people within the family/community who harvest or do some other task within the value chain*], (3) retailers [*people who purchased the crafts from the artisans and resold them in touristed locations*]. A representative from the women's group and myself went to meet with the Alcalde to inform him that they had invited me to undergo my research and work alongside them to document their jipijapa craft practice. Once the Alcalde was informed, I met with the women's group again to provide a detailed overview of the project, distributing posters that contained key information about the research. Interested people were asked to provide their name and contact information on a signup sheet. Email is not a common form of communication, so recruitment was done as a part of a meeting to identify who would like to be involved. I then followed up with the artisans to identify days and times to undertake participant observation of jipijapa artisanal activities and to schedule interviews. Likewise, for participant observation, secondary contributors were invited by the artisans. Notably, some secondary contributors were the artisan's family members and resided within the same household. As such, I explained the research and invited them to participate in the study. Before undergoing the interview, participants were given the option to choose a pseudonym as to not use their legal names in the research and protect their identities. For individuals who were indecisive about choosing a name, one was assigned them. In June 2024, I started the data collection process which lasted six (6) weeks.

For ease of communication, all participants were fluent in English or Creole, but English and Creole did not have to be their native language. A translator (often a participant in the study who had signed an oath of confidentiality) was present during all the interviews to assist in translating participants responses who had a hard time expressing themselves in Creole or English and preferred to speak Mopan Maya.

It is important to note that some artisans sold their crafts at different locations outside of the village, such as the Nim Li Punit archaeological site, Punta Gorda town, and Placencia Village. As such, I ventured to those locations to interview potential retailers. Interviews with the retailers were kept confidential. At the various craft stores, I approached the manager or owner of the establishment to explain the purpose of the research. They were then invited to participate in a short ten-minute interview.

During the data collection, crucial information began surfacing, and I had to delve deeper into those themes, but was limited due to the study's timeframe. As a result, I had to return to the field for a second data collection session in January 2025. I then created two other participant groups for further exploration of those surfaced themes: (4) jipijapa (shoots) vendors [*People who sold the jipijapa shoots for food in the village or at local markets*], and (5) villagers [*everyday people who consumed the jipijapa (shoots) for food*]. Participant recruitment for these groups followed similar procedures as described above. Initially, I had anticipated 35 participants for this study; instead, I had 40 participants: sixteen (16) artisans, six (6) secondary contributors, twelve (12) retailers, two (2) jipijapa (shoot) vendors, and four (4) villagers.

3.6 Data Collection Procedures

The data for this study were collected from June through mid-July 2024. A second session was held for two weeks in January 2025. This process included participant observations and daily semi-structured and structured interviews (see interview questions in Appendix A). I met with the MLA/TAA before commencing the research to present my proposal and get their input. Per the University of Manitoba's ethics standards and Belize's ISCR regulations, participants were notified of their freedom of choice to participate in the study before undergoing any of the following procedures.

3.6.1 Participant Observation

Participant observation is the process in which the researcher partakes in various activities with the group they are studying (Creswell & Creswell, 2018). As the activity occurs, the researcher takes field notes, keeping a detailed record of behaviors and interesting occurrences, describing what they see, hear, smell, taste, and feel that may contribute to

achieving the study's objectives (Creswell & Creswell, 2018). In this instance, the role of the researcher is known. Participant observation is a key method employed during the study. In order to achieve the first objective, *to document the jipijapa craft value chain production process from extraction to market*, there is a need to follow the craft creation process step-by-step. This documentation involves visiting the farms where the jipijapa palms are planted, examining the leaves' quality for suitability, cutting the leaves, transporting them to the artisans' workspace, stripping the leaves into fibers, sun-drying the leaves to get the color variations, and finally weaving the crafts. Hence, I visited the women's group to observe how they organize themselves and see who was responsible for completing each task along the chain. This process helped to fulfill the third objective, *examining the Maya people's gendered relations with the jipijapa plant along the craft value chain*. Any downtime was used to observe the social-cultural and economic context of the community, particularly the everyday life activities and duties, as well as other ways in which the jipijapa palm is being used, for example, in food, answering the second objective: *to understand the significance of the jipijapa palm on the livelihoods of the community members*. Non-identifiable photos were taken and incorporated into the data analysis. I also ventured to sites outside the community where the artisans sold their crafts in other villages and tourist-attracted areas. One week was allotted to visiting these areas.

Detailed field notes were written and organized at the end of the day to answer the critical questions: when, where, what, who, how, and why. After answering these questions, the notes were organized into three categories: descriptive, methodological, and analytical, in preparation for writing the final report. The field notes were invaluable in bringing together the participants' stories and contextualizing daily life in San Jose. I also kept a personal journal to help me reflect on the day's events and assess my emotions toward them, thereby mitigating any personal bias in the field. Each day's schedule was planned and recorded in a separate log.

3.6.2 Semi-structured and Structured Interviews

Semi-structured interviews entail face-to-face interaction where participants are asked open-ended questions to further elaborate on their responses, whereas structured interviews employ closed-ended questions (Creswell & Creswell, 2018; Magaldi & Berler, 2020). Semi-structured interviews enable the researcher to ask follow-up questions about an intriguing point mentioned during the interview. Whereas within structured interviews, participants are asked

structured questions that require ‘straight-to-the-point’ answers with no follow-up questions, allowing the interview to be conducted efficiently. This study, therefore, employed semi-structured and structured interviews to communicate with participants and build a better context.

Five participant groups were interviewed. However, the interview approach for each group was different. I spent more time with the artisans, learning how to make the craft and using this period to build rapport. The knowledge and rapport-building period allowed me to become acquainted with the various personnel who contributed to the craft creation and introduced me to the secondary contributors. With the participants' permission, interviews were scheduled according to their availability. I conducted semi-structured interviews with the artisans, secondary contributors, and villagers. Three interviews were scheduled at most per day. The interviews lasted between 10 and 25 minutes in locations where participants felt most comfortable. I left my contact information with the participants if they had any further information to contribute or wanted to recommend another participant. The other participant groups, the retailers and jipijapa (shoots) vendors, were chosen based on convenience; structured interviews were conducted with them. I informed the participants about the purpose of my research, their freedom of choice to participate, and requested their participation. The timeframe for interviewing these individuals was relatively shorter than the other groups; hence, interviews lasted about 10 minutes and were conducted on-site.

As previously mentioned, before the interview commenced, participants provided written consent by signing a consent form. Although I intended to interview one person at a time, there were instances where a family member or someone nearby paying attention to the interview contributed to the conversation. In cases like those, the additional individual was given a consent form to sign so that their responses could be used in the study. Each respondent was given an identification code after signing the form. This code differentiates between the responses on the tape recorder as each participant was voice-recorded. If participants were uncomfortable with being recorded, their responses were written down. At the end of the day, the interviews were transcribed using Otter.ai and analyzed for recurring themes based on gender involvement, value chain nodes, jipijapa usage, globalized changes, and future-making impacts. By using a code, I can break the link between the participant and the data for purposes of confidentiality, but by having a codebook that links a person with the data, it ensures I can provide them with a

transcript for review and remove their interview if they choose to withdraw from the study. It also allowed me to assign a pseudonym so that confidentiality was retained in my writing.

3.7 Data Analysis Procedures

The researcher analyzes data within an ethnographic study by observing and recording people's actions, interactions, and behaviors (Burns, 2022). Subsequently, the data is organized to generate concepts, interpret the behaviors, and draw substantive conclusions (Burns, 2022). Such a format is employed within this study. Semi-structured interviews and participant observation yielded raw data, such as field notes, audio recordings, and audiovisual digital materials. Notably, field notes, jottings, and interviews were electronically transcribed verbatim and labeled using the interviewee's ID code, file type initial, and date. Each image taken was labeled based on the location and date.

In order to make sense of the information collected, the data was organized, coded, and reviewed based on recurring themes. Coding is the process of organizing data into large categories (images or text), for example, behavior or physical setting (Creswell & Creswell, 2018). Although the data was evaluated intentionally for themes related to the research questions (i.e., gender involvement, value chain nodes, jipijapa usage, globalized changes, and future-making impacts), the coded categories were continuously reviewed daily to identify other significant themes. The themes were then placed in a hierarchy based on their prominence. Organizing these themes revealed ways the categories interacted or related. Analytical memos were written about the day's data. Analytical memos entail a brief synopsis of the researcher's reflection on the data (Burns, 2022). Each memo was dated and given a title and subtitle as the title summarizes the context of the memo, and the subtitle is a more descriptive point of focus, narrowing it down to a small area of analysis (Burns, 2022). A list of all the information learned and those yet to be acquired was kept. This process allowed me to better understand the community and the data gathered by revealing possible patterns or relationships across the field notes, interview transcripts, and audiovisual materials. NVivo, a qualitative data analysis software, was utilized to assist in coding the data. At the end of each day, the data was reviewed, revised, and refined to be interpreted in preparation for the final written report.

The collected data was stored on my personal Microsoft OneDrive, a secure cloud storage that provides end-to-end encryption, ensuring that only I have access. My Microsoft account

offers two-factor authentication to provide an extra layer of security. My personal computer is also connected to the Natural Resources Institute (NRI) server, which the University of Manitoba's firewall protects. This firewall not only prevents unauthorized users from accessing the network but also blocks unauthorized access to my research data. To access the NRI server, I must first log in using my assigned username and personal password, offering another layer of security for the data and maintaining confidentiality for all participants. The data was securely maintained until the completion of this study, after which it was deleted from my personal computer, cloud server, and all other secured storage areas.

3.8 Strategies for Validity Findings

The following strategies were implemented to ensure the study's trustworthiness, authenticity, credibility, and qualitative validity.

1. To develop an in-depth understanding of the community's way of life, the practices surrounding jipijapa craft production, and the various cultural, socio-economic, and environmental factors affecting San Jose, I spent 10 weeks living in the village. The more interaction I have with the artisans and community members in the natural setting, the more accurate the data.
2. The data within this study were acquired from multiple sources, such as semi-structured and structured interviews, participant observation, field notes, and audiovisual materials (see Data Collection Procedures). These strategies were employed to verify the themes that emerged throughout the study.
3. I worked with the community as a co-researcher, giving the Maya people credit and acknowledgment for the knowledge shared. Hence, at the end of the fieldwork session, the participants were presented with a draft of the collected data to receive their feedback on the validity of my interpretations.
4. The written thesis will be peer-reviewed and critiqued by my academic advisors before its submission to the advisory committee. Based on their feedback, changes will be made accordingly.
5. To clarify any biases held by the researcher, see the Researcher's Role for further elaboration on how I mitigated any biases throughout the study.

6. Keeping a detailed description of the occurrences within the study and meticulously documenting the various processes assisted in maintaining the reliability of the data collected. Each raw data, such as field notes, jottings, interview transcripts, journal entries, memos, and audiovisual materials, was labeled and dated. Each transcript was transcribed verbatim and edited for mistakes. The study's definitions remained consistent, so readers can follow the content easily.

3.9 Anticipated Ethical Issues

The assurance that this research is conducted ethically is of utmost importance. I was working in an Indigenous community; hence, their protection, the development of trust, and the maintenance of research integrity were pivotal for the success of this research. The risks to human subjects associated with this study are minimal. Employing participant observation as a data collection procedure may prove slightly invasive in participants' lives, and private or sensitive information may be mistakenly revealed. I am obligated to respect the rights, needs, and values of the participants and other community members. The following measures were instilled to protect the participants' rights and uphold the University of Manitoba's and the Institute of Social and Cultural Research's (ISCR) ethical code of conduct.

1. Before undergoing the study in San Jose, I met with the MLA/TAA to get their assistance in determining a community where my research project would be most applicable and who would be open to participating. Numerous types of research have been conducted in San Jose; as a result, members are accustomed to having researchers in their community. Nonetheless, I was transparent, clearly articulated the purpose of my study, and explained in depth how the data collected from their community was used. Participants were made aware of all the data collection devices and activities that were used in the study.
2. All participants in this study were 18 or older. Participants gave written consent to participate in the study via a consent form. Participants were made aware of their rights to participate in the study. The decision to participate in this study was entirely up to the participants. They had the option to refuse to participate in the study *at any time* without affecting the relationship with the investigator or the University of Manitoba. They have the right not to answer any question and to withdraw completely from the interview at

any point during the process. They also have the right to request that the interviewer not use any of their interview material. Participants had the right to ask questions about this research study and to have those questions answered by me before, during, or after the research. The autonomy and privacy of participants were of utmost importance; although their responses were kept confidential, they could have requested anonymity.

3. The community's norms, customs, and way of life were respected. My engagement with the community members was solely for data collection purposes. As such, I strived to cause as little disruption as possible. Interviews were scheduled in advance and conducted within that agreed-upon timeframe.
4. Both positive and negative results were reported. However, the interests and protection of participants were first taken into consideration when reporting on the study. To ensure that participants agreed with the interpretation of the data, I presented a draft of the findings. Their feedback was taken into consideration, and amendments were made. This process was essential to ensure the study's validity and reliability.

3.10 Dissemination of Results

This is an ethnographic study; hence, the results are presented as a "detailed descriptive report" (Creswell & Creswell, 2018, p. 327) of the cultural practices in San Jose village as part of an MNRM thesis. This style was chosen to create a holistic portrait of the natural setting, the process undertaken in the craft creation, and the Maya people's encounters and challenges in the pursuit of sustaining their livelihoods. The thesis features participants' quotations and anecdotes to relay their stories directly and the meaning they ascribe to them. This method allows participants to authentically tell their stories and the readers to experience the Maya people's journey of living autonomously and making a resilient future. In the event of publication, the MLA/TAA and participants will be contacted to discuss ownership and authorship to give credit and acknowledgment to those involved in the study.

CHAPTER 4: FINDINGS

4.1 Introduction

This chapter strives to encapsulate the long-standing relationship the Maya have with the jipijapa palm in San Jose Village. The Maya have relied on their surrounding natural resources to ensure their socio-economic and cultural well-being. As such, a detailed description of San Jose Village is provided to develop an in-depth understanding of the environmental, cultural, and socio-economic context. Highlighting the jipijapa palm as a vital resource, this section discusses the ecological, cultural, and economic values that emerged from the collected data. Firstly, the Maya's traditional ecological knowledge of the jipijapa palm is explored, with special emphasis on how they perceive its contribution to the wider environment through animal consumption and seed dispersal. Secondly, the cultural usage of the jipijapa is discussed, as the Maya utilize the palm for work and food. Thirdly, the jipijapa palm's use for economic purposes is examined, highlighting its role as a minor agricultural product in the community and in craft production within the tourism industry. After exploring the Maya's relationship with the jipijapa palm, this section examines how that relationship is being affected by globalized changes. Essentially, this chapter shall explore the jipijapa palm as a culturally rooted resource within the community of San Jose.

4.1.1 Study Site: San Jose Village

San Jose, a predominantly Mopan Maya village, has a population of approximately 849 individuals, comprising 403 males and 446 females, who reside in 175 households, according to Belize's 2010 census (Statistical Institute of Belize, 2010). However, this figure is assumed to have increased over the past decade to a population of over 1000 individuals.

San Jose Village is hidden in the mountains (see Figure 2), about 90 minutes from Punta Gorda Town, which buffers the Colombia River Forest Reserve, which stretches across 103,000 acres of tropical forest and is one of the largest forest reserves in Central America (Belizean Travel, 2024). Possessing diverse ecosystems with rich biodiversity, the Colombia River Forest Reserve provides habitat for various flora and fauna, including endangered species such as jaguars and scarlet macaws (Belize Digital Media, n.d.). The community members of San Jose

strive to live harmoniously with their surrounding environment, collaborating with the Ya'axché Conservation Trust to steward the forest and bordering reserve.

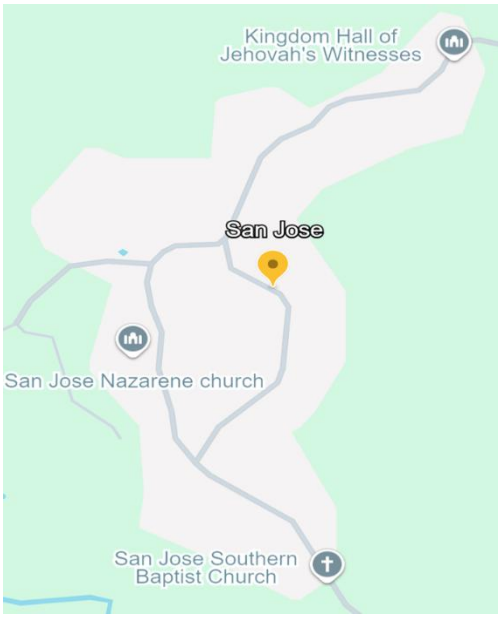

Figure 2: Map of San Jose Village, Toledo District

In 2001, Hurricane Iris struck the village, uprooting large trees and sending them hurling at people's homes, decimating the community. Left with debris and destruction, the villagers knew they had to rebuild their homes with stronger materials. Villagers began transitioning their homes from traditional thatch and wooden structures to zinc and concrete. Currently, both types of architecture can be found in the village, as most families have both structures. Due to climate change, the sun has gotten hotter, and the zinc roof and concrete walls trap the heat inside. Performing tasks such as cooking on the fire hearth inside the concrete structure makes it warmer. Most families maintained their thatched structures because it is often cooler during the day than in concrete buildings. The high roofs and thatch leaves help provide proper insulation, allowing sufficient air to circulate and cool the structure. Maintaining both concrete and thatch houses is one of the many ways the Maya are adapting to environmental changes to remain resilient.

Nevertheless, households have limited access to electricity, so they use solar panels to provide energy for light at night and to power up essential electronic devices such as radios, smartphones, tablets, and laptops. There is also limited internet access. Although most people do not have personal vehicles, two local buses, Wook's Bus and Sho's Bus, take trips to Punta Gorda Town on Mondays, Wednesdays, Fridays, and Saturdays for those who need to conduct business outside the village.

Everyone in the household plays a pivotal role in San Jose. In accordance with Belize's educational laws, children between the ages of three and five and five and fourteen must attend preschool and primary school, respectively (Government of Belize, 2020). In 2024, the Belizean government launched an initiative to cover tuition fees for several high schools in the Toledo District (Government of Belize, 2024). This endeavor was undertaken to ensure that individuals from low-income households had the opportunity to receive formal education. Hence, primary

and secondary schooling were subsidized by the government. This financial assistance was a great help to parents who struggled to cover the cost of secondary education for their children. Previously, only the first two years of high school were subsidized by the government, indicating that students whose parents could not afford the subsequent years were forced to drop out of school (Peller et al., 2023), which greatly affected the community's youth, who were forced to find alternatives. In Belize, obtaining employment depended on educational attainment, specifically a high school diploma as the minimum requirement (Peller et al., 2023). Individuals who did not complete high school were left in a conundrum. Receiving a high school diploma increased one's chances of getting a job; however, the income earned was minimum wage. If an individual desired to increase their income bracket, they needed a tertiary-level education (Peller et al., 2023). Parents who wanted their children to earn a tertiary-level degree had to cover the costs themselves. Unfortunately, as low-income earners, most families do not have the funds readily available to pay for university.

As an agriculturally based subsistence economy, most of the revenue in San Jose is generated by selling surplus agricultural crops such as cacao, beans, and corn in the local market. Although some women cultivate milpas, it is predominantly the men who take up farming as an occupation in the community, working in cooperatives (Vrettas, 2020; Ya'axché Conservation Trust, 2022). In some instances, men work other jobs as security guards, teachers, soldiers, resort workers, and public servants outside the community while also cultivating the milpa on the side. In contrast, women operate within the domestic sphere, working as caretakers in the home. Very few women hold employment outside the home. However, one interviewee was a teacher in a neighboring village, another was the village's health representative, and another had a daughter who was a soldier. Although most women work in the home, some find alternative ways to make cash by selling produce from their gardens, cultural clothing, and handmade crafts (Vrettas, 2020; Ya'axché Conservation Trust, 2022).

Notably, the jipijapa palm grows only in the Toledo District. San Jose is one of the few villages where the jipijapa palm grows abundantly. Community members have been using the jipijapa palm culturally for a long time. With the advent of tourism, women began commodifying palm products to create crafts for sale to tourists. This ecotourism initiative empowered Mayan women by enabling them to generate income to sustain their livelihoods (Ya'axché Conservation Trust, 2022). Craft creation for ecotourism, however, is heavily dependent on the resources from

the surrounding forest. Overconsumption of a finite resource can be problematic. As a buffer Indigenous community to a protected area, where jipijapa palms grow abundantly and men and women engage with the palm in both cultural and economic ways, San Jose is the most suitable community for this study.

4.2 Understanding the Mopan People's Relationship with the Jipijapa Palm

Twenty-six (26) individuals were interviewed in San Jose, and numerous more informal conversations were held with other community members. After analyzing the collected data and reflecting on the conversations, several recurring ideologies for the Mopan people valuing the jipijapa palm surfaced. These ideologies were grouped into three categories: ecological value, cultural value, and economic value. Figure 3 strives to encapsulate these values to provide an overview of the relationship between the jipijapa palm, the people of San Jose, and the wider environment. As the diagram portrays, ecologically, the jipijapa palm is a food source for multiple species in the terrestrial ecosystem. Culturally, it is also utilized as a food source by the community and serves as a handy tool during their work. Economically, it serves as a commodity for generating income through craft production. Hence, this section provides an in-depth explanation of each value.

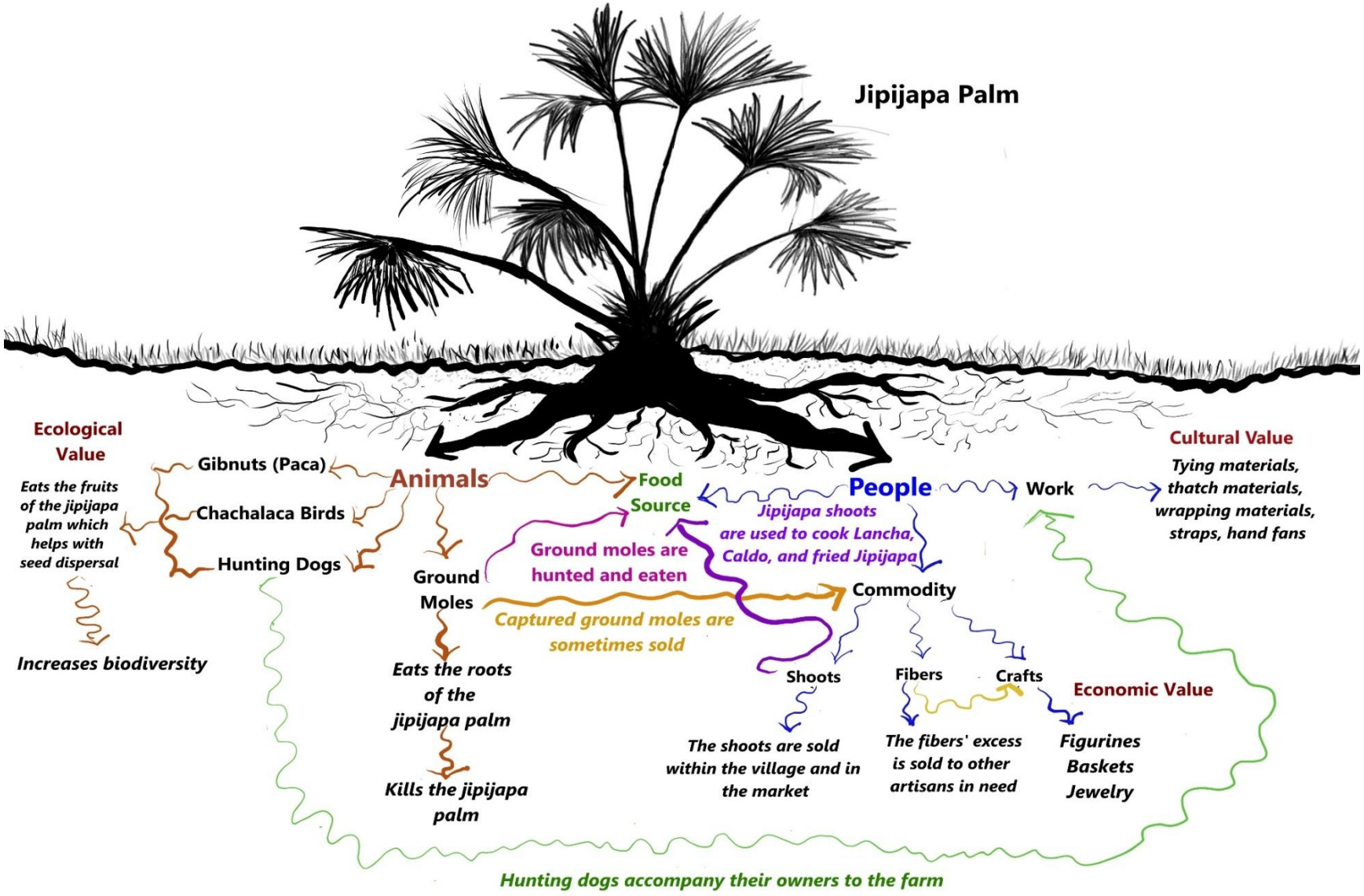

Figure 3: Web diagram depicting the jipijapa palm's relationship with the San Jose community and the surrounding environment. The diagram is illustrated by the author.

4.2.1 Ecological Value: Mopan Maya's Traditional Knowledge of the Jipijapa Palm

Justice, one of the elders in the community, sat in the hammock, recalling the various ways the villagers interacted with the jipijapa palm. "*Jipijapa is originally known as a common palm in San Jose,*" he began (Justice, Interview, June 08, 2024). It flourishes abundantly in San Jose, acting as an essential resource in the community. The plant grows abundantly in January and February and is easily accessible year-round. The jipijapa palms are primarily found in disturbed areas in the forest with high sunlight exposure (Fieldnotes, June 7, 2024), such as cultivated farms. "*Around the community, everybody has a piece of cacao farm growing on the side, that's the only way they can easily find their jipijapa,*" explained Fernando, a cacao farmer (Fernando, Interview, January 10, 2025). At the base of the plant cluster grows the jipijapa fruit, which has a cylindrical shape that almost resembles corn. In its early stages, the fruit is green, changing to orange-red when mature. At full maturity, "*the jipijapa fruits burst open, sending seeds flying in different directions*," recalls Mary, who planted several jipijapa clusters in her yard (Fieldnotes, June 12, 2024). These seeds then germinate into little shoots. The locals in the community have a saying that goes, "whenever there is a new moon, there are new shoots." This phrase is indeed catchy and rich in knowledge, as it helps the Mopan people track the growth of the jipijapa palm using lunar phases. They also know that no new shoots will be grown during a full moon (Mary, Interview, June 10, 2025). When the shoots are about six (6) inches off the ground, as seen in Figure 4, they are suitable for eating. The new shoots are the young plants that the villagers consume (Fieldnotes, June 7, 2024).

> *Within the environment, the people use jipijapa mainly for food. The young heart is used for food. They either steam it, or they stew it.* ***Justice*** (Interview, June 08, 2024)

These shoots, though, had to be picked within a specific timeframe. The white flesh (the base of the stem) was soft enough for consumption. As the shoots grew, the white fleshy part became thicker, making it hard to consume. Shoots past this stage were left to grow, turning into bigger pods. When left undisturbed, the pods became mature, fan-shaped, long, broad leaves that grew to about 4m (12 ft) high (Fieldnotes, June 7, 2024). Depending on the soil's fertility, a

jipijapa plant takes about 1 to 2 years to mature. The jipijapa plant, nevertheless, produces a mature leaf every 15 to 30 days (Fieldnotes, June 7, 2024).

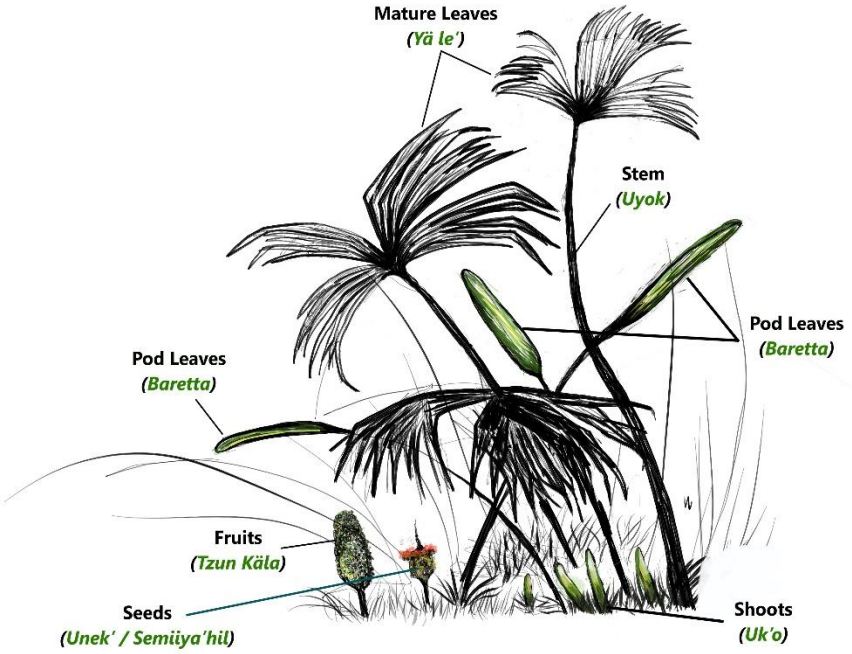

Figure 4: Parts of the jipijapa palm. The diagram is illustrated by the author.

Serving as a food source, however, is not the only common use of the jipijapa; it has a variety of uses, including acting as a makeshift umbrella to those who were caught in the rain while in the field, sheltering themselves under the thick wax-coated leaves that fanned out and repelled the raindrops (Fieldnotes, June 8, 2024).

> *And, also, out in the farm, the people in this community [generations ago] didn't know [about] umbrellas before. So, they use [the] jipijapa leaf. The broadleaf to shield themselves from rain, or even hot weather conditions. [They] cut it there [in the field] and hold it over their head to shelter in the rain.* ***Justice*** (Interview, June 8, 2024)

Although there are no written rules about jipijapa management and usage, community members' engagement with the jipijapa follows the practices of the land tenure system. The Maya land tenure system is rooted in customary practices whereby land is held communally and managed through traditional governance systems like the Alcalde System (see *Maya Governance System*). Land is not privately owned, but accessed through kinship ties and community membership, with use rights allocated for farming, hunting, and cultural practices (Peller et al., 2023). Maya land tenure is not just about territory—it is interwoven with social reproduction, ecological stewardship, an cultural identity. As such, the community of San Jose created practices that ensured everyone had access to the jipijapa and that the plant was managed. They distinguished between the jipijapa that grew on farmlands and those in the bush (forest). Jipijapa that grows in an area that someone is cultivating is considered farmed jipijapa. Therefore, the

jipijapa that grew on farmed land belonged to the family working there. They were often willing to share their jipijapa, but others needed permission. Farmland jipijapa was well taken care of, as the weeds growing around the roots were cleared, encouraging the plant's growth and flourishment. In contrast, jipijapa, grown in the forest, was considered as a part of the commons and could be utilized by members of the community. The forest jipijapa, however, was left to grow wild and free.

4.2.1.1 Animal Consumption and Seed Dispersal

One animal that finds the jipijapa plant quite delectable is the ground mole. The ground mole, as the Mopan Maya call it, is a small, brown rodent that grows to about eight to twelve inches (Fieldnotes, June 7, 2024), mostly found on farms, where they build their mounds close to the base of the jipijapa palm clusters. The ground moles consume the roots from underneath, destroying the root systems and ultimately killing the entire jipijapa plant (James, Interview, June 18, 2024).

> *And a lot of ground moles [are eating] the jipijapa, now. I see a lot of ground moles [are coming for and affecting our jipijapa. The jipijapa now [are getting dry and dying].*
> ***James*** (Interview, June 18, 2024)

To combat this, the villagers, mostly the men who worked on the farms, set underground traps to catch the moles (Fieldnotes, June 7, 2024). Inside the ground mole's hole, they created makeshift traps that consisted of a stick and a string. Slightly covered with dirt, the string ensnares the ground mole, while the stick holds it in place. Captured ground moles were killed and eaten. Some farmers skinned and sold the ground moles in other communities, such as Maya Center, for $5 (BZD). If the ground moles were cleaned and gutted, they sold for $7 (BZD) (Sharla and Jorge, Interview, January 15, 2025). Besides the villagers' account, not much is known about the ground mole.

Figure 5: The jipijapa fruits with seeds inside. Photo taken by the author on June 07, 2024.

Unlike the ground moles, other animals, such as gibnuts (paca), chachalaca birds, and turkeys (poultry raised by the villagers), enjoyed feeding on the jipijapa's fruits and seeds (Fieldnotes, June 7, 2024) (see Figure 5). Hunting dogs accompanying their owners to the farm also ate the ripe jipijapa fruits when they came upon them. When these animals defecate, their feces provide the seeds with the nutrients needed to germinate, playing a crucial role in dispersal (Fieldnotes, June 7, 2024).

4.2.2 Cultural Value: Usage of the Jipijapa Palm in Work

The jipijapa palm is a very versatile plant, and if one has the creativity and ingenuity to bring those ideas to fruition, one can create almost anything from the palm. Within the community of San Jose, both men and women utilize the plant in their work; however, they utilize it differently. The following accounts aim to capture the average day of a man and a woman in San Jose and how they use the jipijapa palm in their daily tasks. It is important to note that the following narrative does not apply to all households and should not be considered as a generalization of everyone's daily activities. The following is an illustration of a man's and a woman's day-to-day activities based on the families with which the author resided for the duration of the data collection.

4.2.2.1 A Day in A Maya Man's Life

Before the crack of dawn, the father emerges to the smell of hot tortillas baking on the comal. He greets his wife as she continues to prepare breakfast for the family. He sits around the table in the warmly lit room, and his wife places a plate of corn tortilla, beans, and eggs in front of him, along with a cup of steaming hot coffee. He has his fill and prepares to leave for the farm. Darkness hovers over the mountains as the cool morning air brushes against his skin. He starts his trek up the hill, as he knows it's a matter of time before the day breaks. When the summer sun hits its peak, it will become difficult to work on the farm. So, off he goes with a machete in one hand, food his wife packed in the other, and his trusted hunting dog at his side (Fieldnotes, June 8, 2024).

The summer season heralds the time for field preparations to plant corn, which will be harvested early next year. Most men practice *slash and burn* or *slash and mulch* to clear and prepare the fields. He clears the field to the best of his ability, uprooting weeds, removing tall bushes, and cleaning around other planted crops. Before returning home, he gathers firewood, fruits, and vegetables from the farm to return to his wife. If she makes jipijapa baskets, he also looks for the *Baretta* (pods) and mature leaves to bring back. He has to carry heavy loads from the farm, so he looks for his straps. Straps are strong fabrics that men use to wrap and carry heavy materials from the farm. He would place a portion of the strap around his forehead, while the weight dangled behind him. This arrangement helps to balance the load. Unfortunately, he forgot to bring his straps, so he must find an alternative. He goes looking for the jipijapa plant to create new straps. He searches for the tallest stem and chops it from the cluster. He then removes the mature leaves, leaving only the stem. He cuts the stem vertically down the middle, removing the white innards with his thumb, bending and peeling the two sections apart. What remains is a thick fabric-like strip. He uses this strip as a strap, wrapping it on both ends of his load (e.g., jipijapa pods or firewood). He then wraps the straps around his forehead or arms to carry the load (Fieldnotes, June 8, 2024), as portrayed in Figure 6.

Figure 6: Man carrying barettas (pods) tied with jipijapa strips and fastened by straps made from the plant's stem. Photo taken by the author on June 07, 2024

After collecting the fruits and vegetables, he realizes that he does not have a bag to carry them. He decides to create a pouch from the mature leaves he removed from the stem. He strips another jipijapa leaf to create a string and wraps it around the pouch's mouth to secure it. If he has any leafy vegetables, such as callaloo, he uses the mature leaves to wrap them in. Hence, in this short period, he has used the jipijapa as a strap, a pouch bag, and a wrapping cloth, revealing the plant's versatility. The jipijapa doesn't only serve as a handy tool for farm work. The mature leaves are also used for thatching holes in the roofs of thatch houses and building the roofs of the

chicken coop. Nevertheless, completing the day's work, he starts his trek back home (Fieldnotes, June 8, 2024).

4.2.2.2 A Day in A Maya Woman's Life

The mother awakens when the rooster crows at 4:00 am, leaving her husband and children to continue their slumber and mentally preparing herself for the day's events. She walks outside into the cool mountain air to fetch firewood stocked at the house's edge for the hearth. Returning indoors, she places the wood aside and begins kneading the corn tortillas, gathering and prepping the other ingredients to make a hearty and healthy meal for her loved ones. She walks over to the hearth and lights the firewood. She takes a hand fan woven from the mature leaves of the jipijapa palm, fanning the flames alive. Between 5:00 am and 6:00 am, breakfast is ready. She diligently serves her husband, who eats and then leaves to start his day at the farm. On weekdays, her high school children have breakfast at 5:00 am and then leave to catch the school bus by 6:00 am. The village has no high schools, only a primary school and a preschool. Preschool and primary school children have more time in the morning at home (Fieldnotes, June 8, 2024).

After the family eats, she clears the table, washes the dishes, and sweeps the floor, ensuring the entire house is clean. Around 8:00 a.m., she gathers her laundry and makes her way down to the creek. Large trees buffer the creek bank, and the canopies drape over the waterbed, casting enough coverage to keep the water cool and providing shade for the women as they wash, bathe, and relax in the refreshing waters (*See Figure 7*). Between 9:30 am and 10:30 am, she returns home. She hangs the laundry on the line and then goes to prepare lunch. Children attending primary school take lunch breaks at 11:30 am, so she must prepare a meal by then. The Maya's diet contains a lot of corn. On a good day, she prepares tamales. Getting freshly ground corn from the mill, she seasons it to her preference and spreads

Figure 7: Maya woman washing laundry in the creek. Photo taken by the author on June 11, 2024.

Figure 8: Tamales fastened by a stripped jipijapa leaf. Photo taken by the author on January 11, 2025.

the mixture over a freshly cut banana leaf. On top of the corn paste, she delicately places a piece of stewed local chicken. She wraps the mix in the banana leaf and fastens it with a strip of jipijapa leaf, as depicted in Figure 8. She places the tamales in a pot of boiling water over the fire hearth to cook (Fieldnotes, June 8, 2024).

After lunch, she washes the dishes and sweeps the home again. Between 1:30 pm and 3:00 pm is her free time to rest. Women who create jipijapa crafts often use this period to sew their baskets. Around 5:00 pm, she starts supper and gets firewood to feed the flames in her fire hearth. She fans the flames alive with her jipijapa fan. After supper, she washes the dishes and cleans the kitchen, ensuring her home is clean for when she starts the day all over again in the morning (Fieldnotes, June 8, 2024).

4.2.3 Cultural Value: Usage of the Jipijapa Palm as Food

4.2.3.1From Farm to Market

As a plant that grows abundantly in San Jose, the jipijapa palm is a valuable food source in the community. Figure 9 depicts the process of acquiring and consuming the jipijapa palm from the farm to the household. When individuals want to eat jipijapa, they must go looking for it. There are three primary areas in the community to harvest jipijapa shoots: farms, “bush” (forest), and personal yards (Samantha, Interview, January 10, 2025; Rosa, Interview, January 16, 2025).

> *I have some (jipijapa) in my cacao field. That’s the only place where I get my one [jipijapa shoots] because we can’t really go into any other field again.* **Samantha** (Interview, January 10, 2025)

Figure 9: The flow of the jipijapa shoots from the farm to consumption.

There is a clear distinction between the three locations. The farm is cultivated land. Any jipijapa palm that grows in that area belongs to the individual cultivating it. The 'bush', as the community members describe it, is an area in the forest that no one cultivates. Jipijapa, which grows in the bush, is free for all to access. As the population grows, most of the surrounding vegetated areas are farms cared for by families who live nearby, meaning areas considered bush are far from residential areas. Therefore, people who have the jipijapa palm but no new shoots on their farm must venture farther away from the village to find it (Fernando, Interview, January 10, 2025).

> *You have to go further to find it [jipijapa shoots]. The only place you can find it now is the place where you clean it on your farm. Let's say I am growing cacao right now. I left some jipijapa to grow in my cacao farm. It's right there in the cacao fields that I go to pull my one. So, just have to stay with the amount we have* in the cacao. ***Fernando*** (Interview, January 10, 2025)

Those who seek it in large quantities must sometimes walk about thirty (30) minutes to two (2) hours away from the village, deeper into the forest, and up the mountains. Jipijapa, which grows in the bush near the community, is heavily sought after due to its ease of access and proximity (Fieldnotes, June 7, 2024). Given the high competition for jipijapa in open areas near the village, some individuals have sought to mitigate this issue by growing jipijapa palms in their yards (Mary, Interview, January 10, 2025).

> *And that's the reason why we plant it around [the yard]. Because we don't have to go to the farm to get it. It's better to have it around the house. So, whenever you want to eat it, especially when there is a new moon, you can just go and get the shoots. […] it all depends on how much you can find. Let's say that I find 15… because for us, it's five [in*

> *the family]. So, sometimes I would find 15 or 20 [jipijapa shoots] around the house. And that's enough for my family. –* ***Mary*** (Interview, January 10, 2025)

Harvest/ Transportation

Jipijapa shoots are harvested in two ways. The shoots are either extracted by pulling them from the cluster or by cutting them with a knife (Fernando, Interview, January 10, 2025). The pull method, however, leaves a jagged breakage at the base of the shoot. Jipijapa shoots last for about two to three days before turning black and going bad, beginning at the base where it was broken. People who intend to consume the jipijapa shoots immediately after harvesting often employ the pull method. However, vendors who harvest the shoots to sell prefer using an alternative method, such as harvesting with a machete or knife. Using a blade to harvest the shoots leaves a clean, smooth cut (Fernando, Interview, January 10, 2025).

> *Well, actually, you can just break it off, or you can use the knife or machete to cut it off where you want to cut it. If you want to sell it in PG, it's best to cut it with a machete or knife. When you get to the town, the buyer can buy it, they can feel where the hard part is, and where the soft part is, and they can cut it at the soft part.* ***Fernando*** (Interview, January 10, 2025).

When shoots begin to go bad at the base, the ends are removed, which serves as a preservation technique. After harvesting, the shoots are wrapped in a *waha* leaf (scientific name: *Calathea lutea*), which also helps preserve them (Sharla and Jorge, Interview, January 15, 2025). Once wrapped in the *waha* leaf, the shoots are placed in a makeshift pouch woven from the mature jipijapa leaves to be transported to their desired location. Most harvesters walk to and from the farm/ bush to collect the jipijapa shoots. Hence, there is no elaborate transportation process.

Process/ Sell

After being wrapped in *waha* leaves for preservation, the shoots do not undergo any other preparatory process. They are sold completely organic. The two primary selling locations for the jipijapa shoots are the village and the local farmers' market in Punta Gorda Town (Fieldnotes, January 10, 2025). Most village vendors sell on a small scale, harvesting about five (5) to thirty (30) shoots to sell in the community (Sharla and Jorge, Interview, January 15, 2025). Village

vendors usually walk around San Jose, asking individuals if they would be interested in purchasing the shoots. This inquiry is undertaken to advertise and inform villagers of the availability of freshly harvested shoots. This method is helpful for village vendors because it allows them to make quick cash to meet immediate needs. On the other hand, some cocoa farmers harvest the shoots and sell them to individuals outside the village, such as Maya Center or Crique Jute (Sharla and Jorge, Interview, January 15, 2025). Sometimes, these individuals take the jipijapa to the local market in Punta Gorda Town to sell. When the jipijapa shoots are resold at the market, they are harvested in the evening and given to the vendors who take them to the market early in the morning. These market vendors arrive between 4:00 am and 5:00 am. They place the produce on a large wooden stall in front, displaying the jipijapa shoots for potential customers. The shoots cost an average of $3 (BZD) per pound (Fieldnotes, January 10, 2025).

Although the Maya (both Q'eqchi' and Mopan) mostly purchase and consume jipijapa shoots, people from other ethnic groups have shown interest in them (Lavender, Interview, January 10, 2025). When these individuals see them on display at the market, they are intrigued. Desiring to make a sale, the market vendor diligently explains the shoots and offers recipes and instructions on preparing them (Fieldnotes, January 10, 2025).

Notably, no known restaurants or food establishments serve jipijapa shoots on their menu. At one point, *The Fajina,* an Indigenous-owned and operated cultural establishment in Punta Gorda Town, offered it, but it was removed from the menu (Lisa, Interview, January 14, 2025). In other villages, some women who engage in ecotourism offer cultural cuisine demonstrations to tourists and other Belizean visitors, showcasing their way of life. In these demonstrations, the women use jipijapa shoots as an ingredient to prepare the meal (Jordyn, Interview, January 13, 2025). In San Jose, however, during festivities such as Cultural Day, community members prepare various cultural cuisines to sell at the event. On Cultural Day 2024, steamed jipijapa shoots wrapped in corn tortillas were sold for $1, highlighting their prevalence in Mayan culture (Fernando, Interview, January 10, 2025). Despite these efforts to share jipijapa cuisine with the broader public, the jipijapa shoots are not widely known outside the Maya communities.

4.2.3.2 Consumption: Common Jipijapa Dishes (Caldo, Lancha, and Fried)

Figure 10: Caldo jipijapa (Soup) served with a bowl of white rice. Photo taken by the author on January 15, 2025.

In comparison to the other prevalent Mayan foods, such as corn or cacao, the jipijapa is not perceived as a sacred crop, nor is it eaten on special occasions as a celebratory dish. Rather, it is a relatively mundane vegetable. Yet, the people of San Jose delight in it as an exquisite and versatile food source. Although many have been creating various recipes with jipijapa shoots, three common dishes are caldo (soup), lancha (steamed), and fried jipijapa (Fieldnotes, January 10, 2025). *Caldo* is probably one of the earliest dishes that the community members have been preparing with the jipijapa shoots (Daisy, Interview, January 13, 2025). *Caldo* features the boiling of the shoots in a pot of water. Recado (red food coloring harvested from the annatto tree) is added to the water to give it an orange hue and to marinate the shoots. Salt, roasted bird-pepper (ground to a powder), and finely diced cilantro are added to the pot to give it flavor. No oil or any additional ingredients are needed for the shoots (Daisy, Interview, January 13, 2025). *Caldo* is served with corn tortillas or a bowl of white rice, as seen in Figure 10.

In previous decades, when the villagers lacked the financial means to purchase groceries, they ate *caldo* jipijapa. This dish required a few ingredients, all of which were found on their farms. Despite the economic challenges, villagers provided their families with a filling, nutritious meal. Elders in the community today prefer eating caldo jipijapa because it is one of the easiest and healthiest ways to prepare the shoots (Daisy, Interview, January 13, 2025). The elders credit eating caldo jipijapa as one of the reasons for their good health at a mature age, compared to the younger generations, who have multiple health complications, such as diabetes and hypertension, which are common illnesses in the village.

> *Before, they [community members] ate it in caldo, and they ate it in lancha. But, right now, the younger children, they don't want to eat caldo anymore. When you fry the jipijapa, that's how they like it. But, I think that is not good because they are spoiling themselves because of the sickness that is happening right now, diabetes. They always*

want fry things. [Caldo] it's healthy… because the older people before, they liked eating [caldo] jipijapa. – ***Daisy*** (Interview, January 13, 2025)

Despite the change in preferences across the various generational groups, jipijapa remains a prevalent food source in the community. The second way people prepare and eat jipijapa is by *lancha* (Samantha, Interview, January 10, 2025). There are several ways to prepare *lancha* jipijapa, and each person has a special technique; hence, this explanation aims to cover the most common method. Firstly, the shoots are boiled until tender. They are then wrapped in 'cow-foot' leaf (*piper umbellatum*) and steamed on the comal (Samantha, Interview, January 10, 2025). Besides providing an appealing herbal flavor to the dish, the 'cow-foot' leaf serves as a medicinal ingredient to combat pain and inflammation. Incorporating medicinal herbs and plants into meals is one way Maya women ensure their families' health and well-being (Fieldnotes, June 7, 2024). Nevertheless, the boiled shoots are then seasoned with salt and ground bird pepper for taste and served with chicken and corn tortillas.

Like the other recipes, fried jipijapa requires the shoots to be boiled until tender first. Then, they are diced into large chunks. In a hot frying pan with oil, the jipijapa chunks are fried with tomatoes, onions, and cilantro, as seen in Figure 11. They are seasoned with salt and bird pepper for taste. Fried jipijapa is served with a corn tortilla (Samantha, Interview, January 10, 2025).

Figure 11: Fried jipijapa. Photo taken by the author on January 16, 2025.

4.2.3.3 The Significance of a Meal

Mealtime plays a significant role in the Mayan household. Sharing a meal with family is a time to nurture the body, share skills, foster bonds, and create lasting memories.
Maya women take pride in providing their families with healthy, nutritious meals. While the mother works diligently in the kitchen, her daughter assists, observing and learning core skills. Mayan women train their daughters from a young age, nurturing their culinary, domestic, and critical-thinking skills in preparation for the day their daughters leave home and create their own. While working, they discuss the day's events. During these discussions, the mother provides

valuable insights and advice to her daughter, fostering their bond and offering the emotional support her daughter needs. These conversations often spill over to dinner time. These discussions over meals create a positive atmosphere that also contributes to their mental health and well-being (Fieldnotes, January 10, 2025).

Young boys often accompany their fathers to the farm. Working alongside their fathers, they clear bushes and shrubs and care for the crops. Besides imparting knowledge, working on the farm allows the father and son to bond. Often, bonding occurs over a meal during breaks. A participant in this study recounts his fond memories of his father while working on the farm as a boy (Fieldnotes, January 10, 2025).

He and his father worked on the farm early in the morning, often on weekends. For a day's work, his mother packed freshly baked corn tortillas and hot coffee for them. His father sometimes took salt and sugar in a small bag for later use. His father had a small hut on the farm; he planted edible plants such as peppers, cilantro, and tomatoes around it. Depending on the time of month and whether there was a new moon, his father scouted the farm for jipijapa shoots. If he found any, he took the jipijapa shoots, brought them back to the hut, and prepared a meal. He sprinkled salt and pepper on the freshly picked shoots, wrapped them in the corn tortilla, and ate them. Other times, he built a small fire and roasted the jipijapa shoots with tomatoes, peppers, and cilantro from around the hut. Although they were only sharing a meal, as a boy, he learned valuable lessons, such as how to survive on the farm and the importance of having a variety of plants. The farm was their life source, and knowing how to utilize the land to its full potential was pivotal because it taught him how to provide for his family when he became a man. At the time, he never saw those occurrences as lessons but rather cherished moments with his father (Fieldnotes, January 10, 2025).

4.2.4 Economic Value: Usage of the Jipijapa Palm as A Commodity

4.2.4.1 History of Jipijapa Craft Creation in San Jose

Although there is limited information that explores the genesis of the jipijapa palm craft creation in the country of Belize, the history of the jipijapa craft creation in San Jose dates back to the early 1980s when the national primary school curriculum enforced the inclusion of 'Arts and Crafts' within the syllabus (Fieldnotes, June 8, 2024; Justice, Interview, June 8, 2024).

Around this time, a Garifuna woman who had moved to the village as a teacher began teaching her students to make baskets from the cohune leaf. The teacher helped the students curve the leaves to start the baskets. As they went along weaving the baskets, they used the jipijapa palm to tie the cohune leaves together. The baskets' layers were not tightly and closely woven, leaving squared spaces within each layer. Although the students learned to make the crafts first, the women within the community were intrigued by the craft creation (Fieldnotes, June 8, 2024; Justice, Interview, June 8, 2024).

A few years later, around 1985, some women from San Jose village heard about an initiative occurring in the neighboring village, Santa Cruz. There was a woman working alongside the women of Santa Cruz, encouraging them to create crafts from the jipijapa palm and to sell the crafts to tourists in order to generate an income (Fieldnotes, January 15, 2025). In those days, Maya women had limited employment opportunities unless they had a secondary school education. As small-scale farmers, their families did not have the financial means to send them to school past the primary level. Craft creation provided an alternative means of earning an income and circumventing the socioeconomic system, which deemed higher education as the dominant method of obtaining upward social mobility. Thus, the women of San Jose were eager to participate in this initiative.

It started with a few women from San Jose who visited their relatives in Santa Cruz. They watched as the other women created the crafts. Then, they returned home and practiced what they had learned.

> *I hear[d] some of them… they said they [sold] it. Then I joined them. I didn't quite get it [the craft creation process]. We got together. And one of the old lady [taught] us from Santa Cruz. And then, she showed us how to start to make it. And then, we start to make it.* – ***Maria*** (Interview, June 10, 2024)

Those who learned shared their knowledge on how to process the jipijapa leaves into fibers and weave the fibers into beautiful baskets. The earlier baskets, however, were plain and white, with no designs or colors (Fieldnotes, June 8, 2024; Justice, Interview, June 8, 2024). This new initiative, creating baskets from jipijapa palm, became popular in the village. Soon thereafter, the first women's group, Sunshine Women's Group, was formed in San Jose (Rosa, Interview, January 16, 2025).

The women supported and worked together. They began experimenting with the leaves and creating their designs over time. They added darker leaves to the basket to contrast with the white fibers, making the craft more refined (Fieldnotes, June 8, 2024; Justice, Interview, June 8, 2024), as seen in Figure 12. With more to offer the tourism market, they began scoping out potential locations outside the village to sell their crafts. The women in the group gathered all their crafts, and a couple of members were entrusted to sell them on their behalf (Fieldnotes, January 15, 2025). Not all crafts were always sold, as not every day was a good day. The stagnation of selling some crafts began to create conflict as some women believed the sellers were not equally displaying everyone's craft and only emphasizing their own; thus, the reason for their crafts not being sold. With mistrust and conflict at the center of the operation, the group slowly dissipated (Fieldnotes, January 15, 2025).

Figure 12: This is the first jipijapa basket to incorporate dark fibers. Photo taken by the author on January 15, 2025.

Other efforts were undertaken in the village to revitalize the selling of jipijapa crafts. Tourism became a prevalent industry in Belize. Thus, some community members capitalized on the tourism boom, marketing San Jose as a potential eco-tourism destination, building a guesthouse to accommodate potential visitors, and having the women cater food (Fieldnotes, June 10, 2024). The visitation of tourists to the community provided an opportunity for the women to showcase their crafts to potential buyers. A gift shop was built for all the women to display their crafts equally (see Figure 13) (Fieldnotes, January 15, 2025). The guesthouse's owner, who was advancing in age, could no longer operate the business, resulting in a decrease in tourist traffic in the community (Fieldnotes, June 10, 2024). With unresolved mistrust, the gift shop eventually closed and never reopened.

Figure 13: The first jipijapa craft gift shop in the community. Photo taken by the author on January 16, 2025.

Despite the setbacks, the women persisted in creating crafts on their own. In no time, some women had refined their skills in basket making. More ingenuity was incorporated into the craft, creating various basket designs featuring multiple colors and artistic details. If they could imagine it, they could create it. Craft creation was not limited to baskets; they began weaving animal characters, jewelry, household items, and other accessories from the jipijapa fibers. They also began partnering with relatives in other communities to sell the crafts. Thus, the practice grew. Tourism gave the jipijapa palm economic value, transforming a once-mundane resource into a popular commodity for craft production.

In 2016, under a women's developmental initiative conducted by the Julian Cho Society, several women from the San Jose community gathered together. Under this program, the women were taught several techniques to improve their skills and foster entrepreneurship, such as embroidery, sewing cultural clothing, and creating natural dyes for jipijapa fibers (Fieldnotes, June 10, 2024). The women used annatto, purple onions, and moss as dyes for the jipijapa fibers; however, the colors did not take to the fibers vibrantly. This experiment was later abandoned (Fieldnotes, June 10, 2024). Eventually, seven women came together to form the Mayflower Women's Group. Over the past nine years, they have supported each other and participated in several events, such as Maya Day and the Ya'axche Expo, to showcase their talents and display their cultural crafts and textiles (Fieldnotes, June 10, 2024).

4.2.4.2 Craft Creation Process and Value Chain

Value chains encompass the activities undertaken to create a product from start to finish. Within the jipijapa craft value chain, four key nodes were identified: harvesting, transporting, processing, and selling, as depicted in Table 1.

Harvesting

Two types of jipijapa leaves are utilized within the craft creation process: the pods (baretta) and the mature leaves. The pods are approximately 1 meter (3 feet) high from the base of the plant (Fieldnotes, June 7, 2024). The unopened leaves inside the pod have a texture that feels like plastic. When harvesting the pods, the collector ensures the pods meet a specific

criterion. The pod cannot be harvested if it is on the brink of opening into a mature leaf. Only pods that are wholly closed are utilized. The reason for this specification is that the young leaves lack chlorophyll. When the leaves are processed, they will be sun-dried, turning white, which is the artisan's preferred color for the fibers. After examining the pods, the collector uses a sharp machete to separate the pod from the stem, leaving about three to six inches (3 inches to 6 inches) attached (Fieldnotes, June 7, 2024).

Table 1: The jipijapa craft production value chain.

Node	Step	Description
Harvesting	1	Harvesting jipijapa leaves from the farm/ bush: • *Young leaves (pods)* • *Mature green leaves* • *Mature yellow leaves*
Transporting	2	Moving the collected jipijapa leaves from the farm to the home • *Walking* • *Horse carriage*
Processing	3	Cleaning and peeling the jipijapa leaves to remove the 'hard parts'
	4	Boiling the leaves to turn them white
	5	Soaking the leaves in room temperature water overnight.
	6	Setting the leaves (both mature leaves and boiled leaves) in the sun to dry.
	7	Sewing the crafts. Several threads are used to sew the craft: • *Jipijapa straws* • *Cordel thread* • *I'ke (Heineken) Fiber*
Selling	8	Selling crafts to local retailers. • *Some retailers come into the community to buy the crafts, whereas some women send their crafts on the bus to their buyers.*
	9	Retailing crafts in local gift shops

The mature leaves, on the other hand, are examined more critically before harvesting. Sun-scorched or old leaves (gray, black, brown) are not harvested. If there are any spots, cracks, or damage on the leaves, they are not harvested. Healthy, green, unblemished leaves are harvested because they yield the best quality fibers (Fieldnotes, June 7, 2024). Notably, some women would harvest yellow leaves because these leaves turn a vibrant chocolate brown when processed. The span of the mature leaf is not a crucial determining factor; it is only the quality and health of the leaf. Like the pods, mature leaves are cut with three to six (3-6 inches) of stem attached. It takes about fifteen (15) to thirty (30) days for a leaf to mature fully. Collectors take sufficient care not to harvest too many pods and mature leaves from one plant cluster so as not to put the plant under stress (Fieldnotes, June 7, 2024).

Unlike the jipijapa shoots used for food, the pods and mature leaves are not harvested from personal yards. Instead, the pods and mature leaves are collected from locations where

large amounts can be acquired. Hence, collectors must venture to the farm or bush (forest). Within the harvested area, the collector moves from cluster patch to cluster patch, searching for the pods and leaves. The collector cuts the pods and leaves and places them at the base of the cluster. On their way back, they gather them and transport them home (Fieldnotes, June 7, 2024).

Transporting

Walking and horseback riding are two of the most popular ways to transport pods and mature leaves from the farm or forest to home. These methods are employed because San Jose is quite mountainous. Traversing to certain locations may require climbing steep slopes and narrow paths. The only way to make that journey is on horseback or on foot, as vehicles cannot access the location. These methods are utilized depending on the number of pods and leaves collected (Fieldnotes, June 7, 2024). For small quantities (25 pods or less), the collector would place the materials in a sock, secure them with their straps (made from fabric or jipijapa stems), and walk home. If the quantity exceeds 25 pods, the load becomes heavy; hence, the collector must carry the materials on horseback (Fieldnotes, June 7, 2024).

Processing

Processing the pods into fibers requires undertaking several crucial steps. On the pods, several vertical lines are visible (s*ee Figure 14*). These lines are the midrib of the leaves. The midrib is the central vein that supports the leaf and helps to maintain its shape. Two smooth, flat sides alternate on the pod. These smooth, flat strips hold the pod together like a protective shell. There is a stiff, dark green line in the middle of the pod, which is the hardest midrib. Inside the pod, the young leaves are pale yellow and have a thin, smooth texture, like a thin layer of plastic (Fieldnotes, June 7, 2024).

Figure 14: Collage displaying the parts of the jipijapa pod: (a) the dark green line at the middle of the pod; (b) pale yellow leaves; (c) Smooth flat sides. Photos taken by the author on June 07, 2024.

The pods are bent until they crack open, loosening the pale-yellow leaves and freeing the smooth strips that hold them together (Fieldnotes, June 7, 2024). The artist starts peeling the leaves by removing the smooth strips completely from the plant. The leaves are divided into four clumps while still attached to the stem. A three-inch needle is inserted vertically into the corner of the leaves to create a cut at both ends of its borders (midribs). Inserting her fingers in the vertical slits, the artist peels off the midribs, leaving behind the pale-yellow leaves only. This step is repeated on the other three clumps. At this point, the pod feels flimsy. She refers to this process as "removing the hard parts." She takes the needle and vertically separates the leaves into thinner strips (Fieldnotes, June 7, 2024).

A large pot of water is placed on the fire hearth for about 15 to 30 minutes, depending on how much wood fuels the fire. The stripped leaves are submerged in the water and boiled for an extra 30 minutes. The leaves are then removed from the pot and placed in a separate container to cool. After cooling, lukewarm water is poured into the container. The leaves are left to sit overnight (Fieldnotes, June 7, 2024). The next day, the leaves are hung on a line to dry in the sun for about fifteen (15) minutes so that some water can be evaporated from them. After fifteen minutes, the leaves are flopped up and down until straightened so they do not clump together. After the leaves have been straightened out and are flowing freely, they are placed back on the line in the sun to dry. It remains there overnight until it turns white (Fieldnotes, June 7, 2024).

Processing the mature leaves follows a similar procedure, with the exception that the leaves are boiled. Primarily, the midribs (hard parts) of each leaf on the mature leaves are removed, as depicted in Figure 15. The leaves are gathered, about ten (10) at a time, and the midribs are peeled away. This step is repeated until all the midribs are removed. This technique is done to ensure the plant becomes flimsy. The leaves are then stripped into thinner sections. The leaves are then placed in the shade to dry, turning chocolate brown, dark brown, or black when the fibers are ready. It takes four to five days for the leaves to completely dry (Fieldnotes, June 7, 2024). Women artisans who do not know how to process the fibers or do not have enough time to make them buy them from other women in the community. Often, jipijapa-fiber vendors are artisans who make enough fibers for themselves to use to create their crafts and a little excess. They then sell the excess fibers at $8 (BZD) a pound (Fieldnotes, June 7, 2024).

Figure 15: Jipijapa fiber creation process: (a) Artisan peeling the mature jipijapa leaf. Photo taken by the author on June 07, 2024. (b) The boiling of the stripped jipijapa leaves. Photo taken by the author on June 07, 2024. (c) Wet jipijapa leaves drying in the sun. Photo taken by the author on June 08, 2024. (d) Jipijapa leaves processed into white fibers. Photo taken by the author on June 08, 2024. (e) Brown jipijapa fibers. Photo taken by the author on June 20, 2024.

Weaving: From Fibers to Craft

Three types of strings are used to weave the crafts: jipijapa fibers, *I'ke* (Heineken fibers), and cordel (nylon) thread. Traditionally, white jipijapa fibers were used to sew crafts; however, when tugged during mid-sewing, they broke, giving the crafts a rough, rugged appearance. Hence, artisans began using alternative strings such as the I'ke (Heineken fibers), which were also handmade (Fieldnotes, June 10, 2024). The process started with the Heineken leaf extraction. The leaf is beaten with a blunt object (rocks or sticks) and then roasted over a fire. After the leaf cools, it is submerged under water in the creek. A heavy rock is placed over it to prevent it from being washed away by the creek's current. After a few days, the leaf is removed from the water and combed out until only the fibers remain. The fibers are left to dry for a period before being used (Fieldnotes, June 10, 2024).

> *I just take out the hardshell. The prickle first. And, then the hard shell on the top and the bottom. Then I fold it. Then I boil it in the water. If I don't want to boil it, I just roast it on [the] fire. Then, I go leave it by the creek for like three days. After three days, then I clean it. I would put a rock on top. I clean it there. Some people use the comb. But, me, I don't*

use the comb because it's kind of rough. I use my own finger to clean it [to turn it into fine thread-like strings]. ***Samantha*** (Interview, June 17, 2024

Sewing with the I'ke (Heineken fibers) gives crafts a dazzling shimmer; however, creating I'ke (Heineken fibers) is tedious and time-consuming. Hence, most artisans prefer to use the nylon thread despite having to pay for it. Nylon thread can be bought in a variety of colors. When combined with the white jipijapa fibers, it creates colorful crafts. The nylon thread costs about seven dollars ($7 BZD), but the roll is large enough for artisans to create numerous crafts. Undertaking a basic cost-benefit analysis, artisans deduced that the nylon thread pays for itself and saves time and labor by eliminating the need to create extra jipijapa and I'ke (Heineken) fibers.

Craft weaving from jipijapa fibers is a complex and delicate process. The fibers must be handled with utmost care as they can easily break when weaving. Often, artisans avoid sewing their crafts in the heat of the day, especially on extremely hot days, as the sun's heat can break the fibers. Despite these preliminary conditions, the artisans sew swiftly, completing each craft easily. The artisan begins by threading a three-inch needle with the desired string, often nylon thread, as shown in Figure 16. She ensures the string is long enough to work with but short enough to avoid tangling while sewing. The longest end of the string is tied. Taking about ten jipijapa fibers, she aligns them and cuts off the frayed ends, evening their lengths. After leveling the fibers, one end is tied in a knot. This knot is used as the base of the craft. While holding the knotted section firmly, the artisan turns the remaining fibers around the knot, creating a circular base. She pushes the needle through the center of the knot and around the bent fibers to secure it (Fieldnotes, June 5, 2024). Now, the sewing begins.

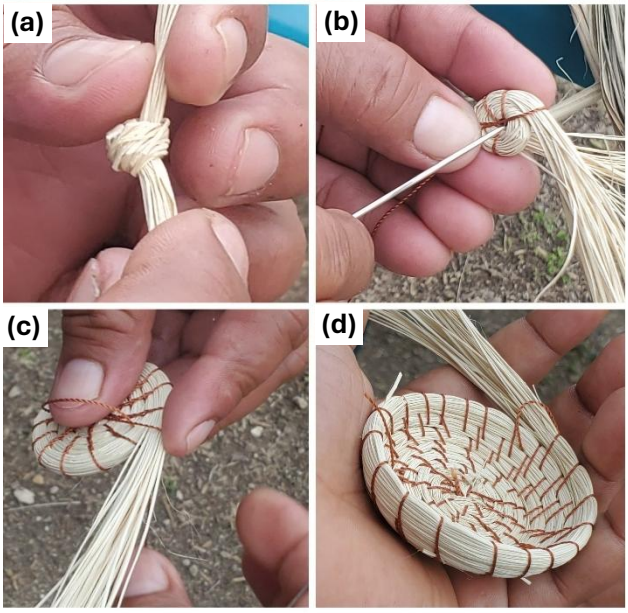

Figure 16: Artisans sewing the base of the basket: (a) creating the knot; (b) forming the circular base; (c) sewing the circular base; (d) shaping out the basket's walls. Photos taken by the author on June 05, 2024.

She curves and sews the fibers as she goes along, creating the basket's base. While

doing this, she slightly squeezes the fibers together, keeping them loose enough for the needle to go through as she sews and adds layers. She secures the newly formed layer by pushing the needle into the base of the previous layer and attaching it to the thread. After a few repetitions, the thread begins to form a vertical line. The artisan uses a double stitch as she sews, ensuring the fibers are tightly attached together. When the jipijapa gets short, she adds more by spreading the excess fibers in two and inserting the additional amount — about six fibers — in the middle. Fewer straws are added each time to maintain symmetry. While weaving, it is important to remain aware of the fiber thickness. As soon as the fibers feel thin, add more. Adding more fibers ensures the craft does not look deformed (Fieldnotes, June 5, 2024).

The next step is to create the basket's wall, which is depicted in Figure 17. The fibers are pushed inward, creating a curve, giving the basket a dome-like shape. As the artisan sews, she continues bending the straws inward, pushing the thread through the base, and aligning it with the vertical outlines. The weaving keeps a constant motion of bending, holding, and pushing (Fieldnotes, June 5, 2024).

Different designs require different amounts of fibers. A single brown fiber is enough for a simple four-petal flower basket. Looping the brown fiber around the white ones, the artisan wraps from the inside outward, then back inside. This process is repeated until she makes five (5) loops, creating a small brown rectangle. She cuts the brown fiber and sews the corners of the rectangles to reinforce them. She creates two adjacent brown rectangles, a few centimeters apart, at the next layer. She then sews until she reaches another layer and creates another brown rectangle, this time aligning parallel to the first square and forming a four-petal flower outline (Fieldnotes, June 5, 2024).

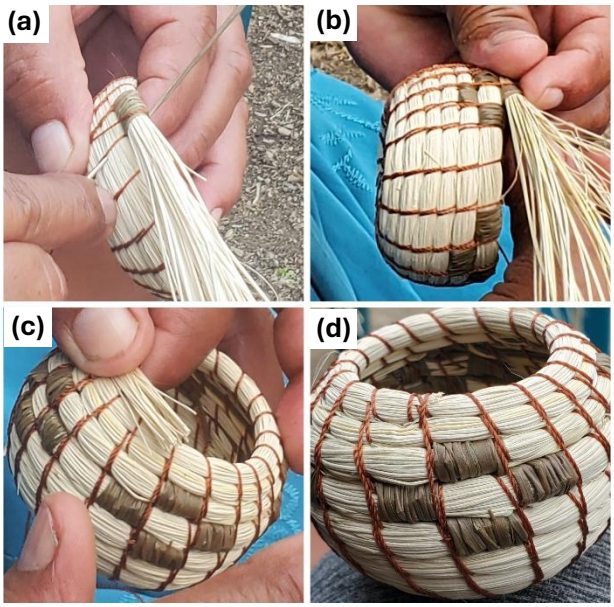

Figure 17: Artisan sewing the basket's wall with a flower pattern: (a) adding dark fibers; (b) aligning flower pattern; (c) leveling fibers at the basket's mouth (d) the basket's completion. Photos taken by the author on June 05, 2024.

Depending on the basket's desired depth, when reaching the top, she bends the jipijapa fibers forward to form the mouth, pushing the fibers forward each time to make the mouth smaller. She cuts the excess fibers off, aligns the remaining fibers with the closest vertical thread line, and sews them together, covering any frayed ends (Fieldnotes, June 5, 2024).

The cover of the basket starts with the formation of the handle, as depicted in Figure 18. Like in the beginning, the artisan holds a few fibers tightly together, ensuring they are the same size and length and removing the frays from both ends. About a few inches from the end (about 3 inches), she wraps the thread around the fibers, moving toward the shorter end and binding the fibers until they become one thick straw. She bends them into an oval, loops the ends, and sews them together. The long end of the jipijapa fiber, not bound together, wraps around the sewn end in a circular pattern. Like the base, she sews as she goes around, using the thread to secure the cover's base. She is cognizant of the basket's mouth size and frequently measures the cover, ensuring it is larger than the mouth. A liner serving as a seal is attached to the base of the cover at the appropriate size (Fieldnotes, June 5, 2024).

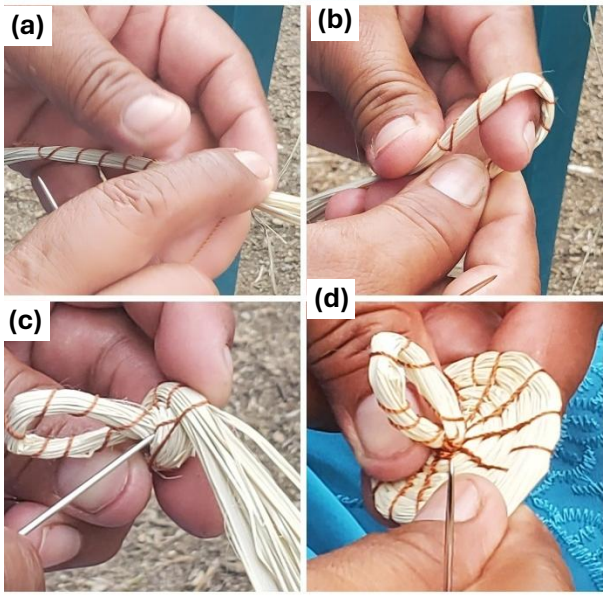

Figure 18: Artisan sewing the basket's cover: (a) wrapping the fibers with thread; (b) forming the handle; (c) creating the cover's base; (d) sewing the cover. Photos taken by author on June 05, 2024.

Notably, each craft has a different base shape. Circular baskets are sewn with circular bases. Oval baskets or placemats begin with a long strip of braid serving as the center, with the fibers sewn around it to create an oval shape.

Selling Craft from the Gate

San Jose is a remote village nestled away in the heart of the forest, about half an hour from the Southern Highway. Because transportation out of the community is limited, most artisans sell their crafts from the gate. The two most popular mediums artisans use to sell their crafts are 'walk-in/ pick-ups' and 'order placements'. Within a walk-in, local retailers from other

communities visit the village in search of artisans with crafts to sell. Often, these locals are also of Mayan descent and reside in communities closer to the highway (such as Big Falls, Santa Cruz, Maya Center, Indian Creek, and Silver Creek) or have easy access to popular tourist destinations (Hopkins, Placencia, San Pedro, Caye Caulker, and Belize City) (Fieldnotes, June 10, 2024). These local retailers intend to purchase crafts in bulk and resell them at retail prices. Sometimes, these retailers have contacts who are artisans in the community. The contact's role is to assist the retailer in acquiring the number of crafts they desire. The contact notifies the other artisans of the retailer's arrival so they can prepare a craft display. Often, the artisans worked together to sell their crafts.

Types of crafts

- Bread Baskets
- Animal Figurines:
  - Monkey
  - Teddy Bear
  - Bird
  - Duck
  - Rabbit
  - Crab
  - Turtle
  - Ladybugs
  - Fish
- Earrings
- Coasters
- Napkin Holders
- Hair Clips
- Tablemats
- Hats
- Clothes Baskets
- Purses
- Envelopes

> *Well, every time I sew my baskets, when I want to sell my baskets, I always sell them with the person. We just wait for the person to come buy and sell. They told us that they [the retailer] want to get it at a cheaper price, when we [the artisans] go [through the] trouble with it. And, sometimes they [say that the tourists] want to buy it, and sometimes not. So that's why they told us that we have to give a lower price for it. That's what we get with our craft. Sometimes, [we are approached by people] in our same village. Sometimes from Maya Centre, Maya Mopan, [some] coming from PG. And I don't know where all of them [the retailers] come from. But, they are travelling to San Pedro, Caye Caulker. I don't know where they go, but they go and sell.* ***Chelina*** (Interview: June 18, 2024)

Retailers also place orders with the artisan over the phone, relaying the types of crafts, sizes, and the amount they desire. Artisans try their best to fulfill orders; however, if they are unable to do so, they seek help from other women to assist in making the crafts, and in return, they share the money equally based on the crafts they made. During order placement, either the retailer picks up the crafts or the artisan sends them on a bus for delivery. Artisans tell the bus conductor where, when, and to whom to deliver the craft.

I have sold a lot this year because someone ordered from me. So, I make it. Sometimes, I just go to deliver it in Santa Cruz village. The lady comes to get it from me. So, I leave it [the craft orders] there. I walk or, sometimes, if it's a Monday or Wednesday [when the bus is running], I travel on the bus. ***Samantha*** (Interview, June 17, 2024)

On very few occasions, artisans leave the community to sell their crafts. However, one artisan, Rosa, sells her craft in San Ignacio. She travels on the local buses, leaving San Jose for Dump village on the 5:30 am bus. By 6:30 am, she transfers to the James Bus, which leaves at 7:00 am. The bus ride from Dump Village to Belmopan City is about four hours. From Belmopan City, she transfers to another bus to San Ignacio, a journey of about forty-five (45) minutes. Rosa's journey from San Jose to San Ignacio takes about six hours one way, arriving around noon to set up her stall at the archaeological site and showcase her crafts. The local buses from San Jose run on Mondays, Wednesdays, Fridays, and Saturdays (Fieldnotes, January 13, 2025), forcing Rosa to stay overnight in San Ignacio and rent a hotel room.

Well, sometimes I will sell my [crafts on] my own because I know some resorts. Sometimes when they give me orders, I just go and deliver them. [I travel] far away, like in Cayo. Like Chaa Creek. I take the bus to go there. From Dump to Belmopan is $25. In all, maybe you can spend $100, if you do the round trip, but if you have to stay there, you have to pay for your hotel. ***Rosa*** (Interview, June 18, 2024)

Artisans who leave the village have the option of selling their crafts in US dollars with prices ranging at the following: small crafts cost $5-$10 (USD) [$10-$20 BZD], medium crafts cost $15-$25 (USD) [$30-$50 BZD]; and large crafts cost $30-$50 (USD) [$60-$100 BZD] (*see Table 2*). Whereas in the village, artisans sell in Belizean dollars. The craft price range is as follows: small crafts are $2-$5 (BZD); medium crafts are $8-$10 (BZD); and large crafts are $15-$25 (BZD). The foreign exchange rate in Belize is $1 USD = $2 BZD. Artisans selling crafts outside the village earn more revenue, whereas their counterparts receive only a fraction of the price when they sell to retailers. Notably,

Table 2: The comparison between the artisan's and retailer's price range.

Basket Size	***Artisan Price Range (BZD)***	***Retailer Price Range (BZD)***
Small	$2 - $5	$10 - $20
Medium	$8 - $10	$30 - $50
Large	$15 - $25	$60 - $100

retailers also sell the crafts in USD currency, buying them at low prices and reselling them at a profit of more than 500 percent. The reason for this low price range is that retailers sometimes negotiate the cost, requesting to buy in bulk and pay wholesale prices instead of paying per craft. Artisans sometimes accept these low prices because they sell to Mayan people like themselves, who do not have much money.

> *Well, [the] local people that come to buy [here] … we know it's a way of surviving for them as well. They come around and buy at a cheaper or lower price. And, we understand […] when we sell our craft to local people, we sell them at a reasonable price. But when we sell to the tourists that come around, we sell them at a good price because we know we are selling directly to them. That's how we do it here. […] if I sell it to the tourists that come here, I will sell them for $10 (USD). Well, we sell [crafts] to the local ones that some come buy here, we sell them at $5 (BZD). So, they may be able to sell it for five U.S. because they usually sell in U.S. dollars. So, that's just the way how we help each other. –* ***Jordyn*** (Interview, June 12, 2024)

When artisans consider the costs of selling crafts outside the village, including transportation, food, and hotel accommodation, it becomes quite expensive; so, they understand why retailers sell the crafts at a large profit. It is also important to mention that some people are in dire need of cash to pay bills or buy groceries. Operating from a place of desperation, they give in to the negotiators' offer. Often, artisans are not paid for the labor and time they put into their craft, but if they can meet an immediate need, the transaction is sufficient for them. Additionally, it is not guaranteed that leaving the community to sell the crafts on their own will enable artisans to obtain any money. Women from other communities travel to Punta Gorda to sell their crafts independently, often walking in the hot Belizean heat in the hope of finding one potential buyer.

Although some have argued that making crafts is not profitable, some artisans have found a loophole.

> *Well, to me, I love making earrings and hair clips. Because those particular crafts are small, but the cost, when you sell it, it's expensive. Let's say if you make a big basket, like for $5, and out of that big basket that you are selling for $5, you can make like maybe 10 earrings out of that. And we sell the earrings $5 for the pair. So, it's very good for me.*

When I make, I use a little amount of jipijapa to make them. – ***Jordyn*** (Interview, June 12, 2024)

4.2.4.3 Selling the Crafts at Retail Locations

After the craft leaves the village, it goes to urban areas such as Punta Gorda, Belmopan City, and Belize City, as well as major tourist destinations such as Hopkins, Placencia, Caye Caulker, and San Pedro (Fieldnotes, June 10, 2024). The closest location for the artisans to sell their craft is Punta Gorda (*see Figure 19*). Some artisans take their crafts to the local market to sell to passersby, while others partner up with local gift shops. One local gift shop in Punta Gorda has operated for almost 30 years, selling various wood carvings, beaded jewelry, and jipijapa crafts (Alicia, Interview, June 25, 2024). Although this is a small shop, the owner tries to purchase crafts from artisans in neighboring communities such as Santa Elena, Santa Cruz, and San Jose. The owner sees the importance of supporting local artisans who put a lot of time and effort into creating and perfecting their craft. The women from whom she purchases the jipijapa craft face numerous challenges, such as trying to find potential buyers and dealing with natural disasters like droughts and wildfires that not only affect the jipijapa plant but also the other plants and crops that they depend on for their livelihoods (Alicia, Interview, June 25, 2024). Hence, the shop owner tries to help the artisans as much as possible within her limited capacity. Despite being cognizant of the artisans' challenges, as a retailer, she faces her own financial challenges and has responsibilities. Hence, these factors impact how she determines the price of the craft: size, quality, design, the craft's initial cost, the need to make a profit, and the need for that profit to help cover other underlying costs.

Figure 19: Map of locations where crafts are sold from San Jose.

> *[The price is based on the size. It's also based on the cost that you paid for it] because you have to make something. You can't just put a little price and then […] you have bills to pay. You have to pay rent. You have to pay your bills: light bill, water bill, your food bill. And, maybe you have a loan that you borrowed that you have to pay back. […] It's not everything that comes in one, so you have to borrow a loan to invest. –* ***Alicia*** (Interview, June 25, 2024)

Although Punta Gorda would be an ideal location for artisans to sell their crafts, as the closest urban area in the Toledo District, tourism has declined. Alicia attributes the decrease in tourist visitation to governmental issues and the lack of proper promotion of the Toledo District (Alicia, Interview, June 25, 2024). 2024 was a record-breaking year for tourist visitation to Belize, yet very few visited Punta Gorda.

Despite the selling location, retailers still need to entice customers to purchase the craft. Some retailers have discovered that customers are more likely to purchase the craft when they understand the craft's creation process and the struggles artisans endure (Tanya, Interview, June 28, 2024).

> *Yes, I explained to them […] because it's a process to make those baskets. It's not easy […] holding it, trying to put [the straws] together, and trying to sew it because I watch how they [the women] do it. [It takes] too much time. If I made this, to be honest with you, I would want at least $50 for it, because it takes a lot of time. And, if you don't look [at what you are doing], you're [going to prick] your finger with that needle. […] So it's a lot of work. Sometimes the tourists don't understand that. [They say that it's so small, how will it cost that?] No, no, no, this takes a lot of time to make. Sometimes […] they would get a little pushy and a little rude to me, and I say, "You know what? Make one. I'll pay you 50 bucks." […] I see my sister-in-law would be breastfeeding, and she would make it, be making little earrings. And, you know, sometimes she slips up and bores her fingers [with the needle]. So, I see, actually, I see it happens. I'll be honest with the tourists when they come. [When they ask], "Did you make that?" I would say, "No, I didn't. My sister-in-law makes it. It's too much work for me." I'll be honest. Some other people [who sell the craft] say, "Yes, I make it", when they don't. But I don't like to lie. I'll be honest, you know.* ***Tanya*** (Interview, June 28, 2024)

Some retailers are artisans. During the high tourist season, when they cannot produce the number of crafts they need, they seek outside help by purchasing crafts from other artisans (Marilyn, interview, June 28, 2024). Unfortunately, these artisan retailers do not always credit the original creator, often taking all the credit for themselves.

In contrast, some retailers perceive craft as more than simply a business. It is an opportunity to showcase Belizean talent, stories, and hard work, and to credit the actual creators (Sandra, Interview, June 27, 2024).

> *So different people can see that Belizean women, Mayan women, for sure, know they have that traditional basket weaving. It tells a lot about how Belize is so diverse with so many things, and a lot of talented people are here […] not only in the basket but in jewelry with the shells and the wood carvings. All of that […] is cool.* – ***Sandra*** (Interview, June 27, 2024)

Notably, the women of San Jose do not use the craft they create to decorate their homes. Rather, the crafts are treated solely as commodities; hence, little to no cultural significance is ascribed to them. Although jipijapa fiber weaving is considered a traditional practice within the community, they tend to revere the knowledge of craft creation itself rather than the product. Hence, there is a clear distinction between the two concepts, as artisans are utilizing their traditional knowledge in innovative ways to create products that sustain their livelihoods. However, retailers, in their pursuit of selling to consumers, advertise it as a cultural craft. There has been a change in the perception of the craft's value after it leaves the gate.

Marketing jipijapa crafts as cultural crafts is one of the major selling points for both local and international tourists. International tourists tend to gravitate towards the smaller crafts because it is easier to store in their suitcases (Indira, Interview, June 26, 2024). One of the most popular crafts is the turtle basket. Tourists are intrigued by the craft, which opens from the bottom, allowing them to hide trinkets inside. The turtle enamors others because it reminds them of other cultural lore, such as the turtle being a sacred creature carrying the world on its back (Fieldnotes, June 26, 2024). Tourists delight in the fact that they can travel to distant countries and find cultural practices and beliefs similar to their own. Having a keepsake that also reminds them of their travels to Belize holds sentimental value. Larger crafts, such as bread baskets, table

mats, and trash bins, are purchased by resorts and businesses for decoration to create a tropical décor and atmosphere.

4.3 Globalized Changes

The dawn of the new decade brought unforeseen global changes —social, political, economic, and environmental—occurring around the world. The COVID-19 Pandemic disrupted everyday life and brought economies to a standstill. With climate change looming as an impending threat in the background, Belize, with an economy heavily dependent on tourism and agriculture, was not spared. Climate change, the COVID-19 pandemic, and tourism are significant globalized changes that have impacted the Maya's relationship with the jipijapa palm in San Jose.

Climate Change

April 14, 2024, was the last day it rained in San Jose, signaling a month-long drought. The sun scorched the trees and dried the creek, causing a wildfire that raged across the Toledo District for two weeks straight, fueled by dry branches and leaves (Journal Notes, June 5, 2024). Villagers lined up with buckets of water, trying to help their friends and family members save their farms. With the creek dried up, finding a water source was difficult. Refilling the buckets required running to distant locations, giving the fire sufficient time to replenish itself. Yet, the villagers fought on (Journal Notes, June 5, 2024).

The fires' remnants were horrific, and the land lay waste, its soil ashy. Acres of burnt trees with dead orange leaves buffered the village (*see Figure 20*). The farmers prayed for a hard shower to quench the dry soil (Journal Notes, June 5, 2024). The villagers were on edge as no one knew when another fire would pick up again, as even the smallest ember was strong enough to relight the flames.

Figure 20: The wildfires' impact on the forest. Photo taken by the author on June 26, 2024.

On June 6, 2024, a few villagers stood outside their home atop a mountain, looking beyond the canopy, far into the distance as the night sky glowed a violent red from the wildfires (Journal Notes, June 6, 2024). The fires burning in their neighboring village, San Antonio, had been raging on since mid-noon with little sign of dying down. Not a single star shone, as smoke obscured the sky. Lightning flashed, foreshadowing what they prayed for: rain. They looked on, watching with hopelessness and concern, knowing that without the rains, it would be a matter of time before they shared a similar fate with San Antonio (Journal Notes, June 6, 2024). Then the rain came, ending their internal turmoil, quenching the soil, and replenishing the dying plants. The month-long drought ended, halting the wildfires' rampage. This was only the beginning, as they had to deal with the aftermath (Journal Notes, June 6, 2024). To that date, about 10 cacao farmers have lost their farms in the village (Journal Notes, June 6, 2024). With the loss of the cacao field, they lost their food source and livelihoods. Most farmers practiced subsistence farming, planting enough crop varieties to feed their families and a little extra to sell. Acres of crops and vegetation were lost. Many jipijapa plants that grew on those farms were destroyed as well. Those who managed to survive the fires were damaged by the sun, depleting the number of jipijapa palms left in the village.

> *In general, the plants, the farms, and everything, even the people, are suffering. Because there's a shortage of water, the creeks are all drying up; then all the plants are drying up. The corn field ...the corn field that is just recently planted is not germinating. So, it's very bad. But we can't help it because this is the impact of climate change. The weather is not improving. It's becoming worse. It's worse than last year. This is very bad. –* ***Justice*** (Interview, June 08, 2024)

As the months progressed, the jipijapa shoots and pods became scarce. The villagers waited for the plants to regrow, but by January 2025, the plants had not fully recovered. Vendors who sold the shoots at the market in Punta Gorda Town struggled (Aster, Interview, January 10, 2025; Lavender, Interview, January 10, 2025).

> *After May, I couldn't get it. Recently I started to get jipijapa again. I got it end of November, early December. I sell here at this market. Whenever people from San Jose sells me the jipijapa, I bring it here to the market to sell. Before the fire, they brought [it] every week. –* ***Aster*** (Interview, January 10, 2025)

> *Like, at this time, it's a bit slow because whenever I go to look for my jipijapa, it's half bad or more than. But, it's the fire that destroyed it. [The price] had to go up because it's scarce. There is no more jipijapa because of the fire destroying the forest. So, last year, we planted some, and probably in the next two or three years, it's time to harvest again. […] Sometimes I [used to] bring 4 to 5 buckets of jipijapa, but, at this time, not as much. I only bring 20 bunches […]. It's less now compared to before. –* ***Lavender*** (Interview, January 10, 2025)

The women who created crafts from the fibers were placed in a predicament. If they were able to find jipijapa, the leaves were damaged from the sun, making them unusable. The plant that once flourished abundantly in the village became scarce over the span of a month.

> *The fires took it. Now, we have to see if [the jipijapa] will come back again. It would be good if it could come back. It's a loss. […] you can't even find it. You have to go farther to find it. Before, you could have [gone] far and found it, but now, the fire destroyed it. So, [we] just have to stay with the amount we have in the cacao [fields]. The drought killed a lot. It wasn't the fire alone. It was the weather as well. –****Fernando*** (Interview, January 10, 2025)

Pandemic

The world was not prepared to handle a battle against an unseen enemy. World news reports about hundreds of thousands of people dying from respiratory illnesses in a matter of moments spread fear among billions as the COVID-19 Pandemic swept through countries. Many Belizean citizens lost hope, knowing the healthcare system would not be able to accommodate the storm to come (Bulwer, 2020). Only 10 rooms were prepared to accommodate life-threatening COVID-19 cases at the local public hospital. Those with only flu-like symptoms were advised to quarantine at home. When the virus arrived in Belize in late March 2020, the government decided to put the country under lockdown (Government of Belize Press Office, n.d.; Amandala, 2020). International travel was banned. All nightclubs, bars, restaurants, and entertainment facilities were temporarily shut down. The only institutions allowed to continue operations were essential services such as grocery stores, governmental agencies, schools, hospitals, and some private enterprises (Amandala, 2020). These institutions had to enforce social distancing —maintaining a distance of 6 feet — and require face masks in public spaces (Amandala, 2020). These new regulations meant that industries such as the tourism sector could

no longer be in operation. Thousands of individuals who depended on the tourism industry lost their jobs, and all businesses, whether directly or indirectly linked to the industry, were forced to shut down. The jipijapa craft creation production exists only within the sphere of tourism. Hence, it too was placed at a standstill.

> *COVID-19 has made us understand that nature plays an important role in the livelihood of the people of San Jose. Coming onto jipijapa. People never realized until after COVID-19 hit that without the selling of crafts that derived from jipijapa, they had seen the plunge of their economy due to tourism. And as we can see, that now we understand that the country, 60% of the country's economic backbone is from tourism. And that tourism lends itself all the way to the household in the deepest, remotest area of San Jose. That is with jipijapa.*– ***Jipijapa Cal*** (Interview, June 17, 2024)

With no tourists entering the country, the artisans gave up creating the jipijapa crafts. They saw no need to create more because no one would buy them. Some artisans who had already made crafts with the intention of selling were stuck with them when the country was placed under lockdown. Some women stored their crafts in buckets to keep them dry and protected (Maria, Interview, June 10, 2024). Others were not as lucky as the humidity affected the craft, causing it to contract mold. Those crafts were burnt. The country was placed under lockdown for two years, so artisans were unable to earn an income from selling crafts. This stagnation affected other areas of their lives, as parents struggled to pay their children's school fees, among other expenses.

> *But jipijapa in itself, you know, when that decline happens during COVID-19, we have seen the effects in school children who come less with their snack money. Hard pay in the registration. Donations are not forthcoming because parents are laid off from the tourism industry. Parents who are doing basketry can't sell. So, the ripple effect is serious.*
> ***Jipijapa Cal*** (Interview, June 17, 2024)

After the lockdown was lifted, tourists began returning to the country. However, they flocked to exclusive resorts and coastal destinations, leaving small-scale enterprises in the south feeling the disparity as visits to the village decreased drastically. Despite slow traffic in the village, the artisans returned to making crafts, working with retailers to sell them from the gate. However, they were selling fewer crafts compared to before. Most artisans in San Jose now make

crafts only upon order from retailers, while others have given up the practice. The stagnation made them realize they needed to find alternative sources of income.

> *The pandemic, the COVID-19… it affected us a lot. Because even the resorts [were] closed. And then the… the tourists… the amount of tourists that come to Belize, it's not a lot again; we don't sell our crafts again. And so, we are locked in our house; we can't go around like we used to before. I stopped making crafts that time. So, what I did is that I sewed masks [laughs]. I sell out mask that time. And that's the way how I help myself again with my income.* – ***Jordyn*** (Interview, June 12, 2024)

Tourism's Demands

Situated along the Southern Highway is Santa Cruz village, about a thirty-minute drive from San Jose. Due to its ease of access, Santa Cruz is an ideal location for accommodating visitors (Fieldnotes, June 10, 2024). For this reason, it has blossomed into an eco-tourism destination over the years, building a visitors' museum to display their cultural crafts. With this growth and development came an increase in demand that pressured existing resources. As a finite resource in Santa Cruz, the jipijapa population could not keep up with the extraction rate. As such, the jipijapa population decreased significantly (Fieldnotes, June 10, 2024). The artisans in Santa Cruz had to find an alternative; therefore, they began to look to their neighbors, San Jose. Villagers in Santa Cruz have family members in San Jose, so they reach out to them to request jipijapa (both for food and craft-making) (Fieldnotes, June 10, 2024). Having an abundance, San Jose members were willing to share. Others who did not have family members bought from villagers who sold the shoots or fibers. Some women from Santa Cruz would even hire the women in San Jose to make the crafts. Then, some would outright steal the jipijapa from off the farms (Jordyn, Interview, June 12, 2024). Despite how Santa Cruz got their jipijapa, it now meant that two communities were sharing the amount in San Jose.

The pod is one of the most important materials for creating the jipijapa craft. Due to tourism's demand, artisans harvest pods by the hundreds. Community members often sacrificed not harvesting the jipijapa shoots for food to allow the pods to grow (Jipijapa Cal, Interview, June 17, 2024). The pods are harvested and processed into fibers to weave the crafts. Since the pods are unopened leaves, when they are removed from the cluster, the plants do not receive their replenishment. Constant consumption of the pods stresses the plant cluster (Fernando, Interview, January 10, 2025). Placed within a stressful environment without replenishment, the

plants will eventually die. Overharvesting is a factor affecting jipijapa clusters near residential areas, forcing individuals to venture farther from the village, which may not always be safe, especially for women who go alone (Mark, Interview, June 07, 2024).

The amount of jipijapa within San Jose was never an issue, as the plant grew abundantly. However, following the 2024 drought and wildfire, the jipijapa population decreased significantly. The ground moles' consumption of the jipijapa roots is depleting the number of remaining jipijapa palms not scorched by the sun, burned by the wildfires, or harvested for craft creation. Little to no jipijapa palm in Santa Cruz is a plausible cause of the increase in ground moles' presence in San Jose. Perhaps the ground moles migrated to find a more suitable habitat with abundant food (James, Interview, June 18, 2024). Moreover, the wildfires highlighted San Jose's imminent threat; as circumstances remain with a depleted jipijapa population post-2024, without proper management, the once-beloved jipijapa palm will gradually disappear within the community.

This change in relationship made community members realize that if they wanted to continue to have an abundance of the jipijapa palm within the village, they had to find ways to conserve and utilize the plants sustainably, as well as ensure the adaptation methods they created were in alignment with their way of life, preserved their cultural heritage, and enabled them to create developmental initiatives.

4.4 Chapter Summary

The jipijapa palm is a prevalent plant in the community of San Jose, providing ecological services for native fauna. As a versatile plant, it serves as a tool to help men and women complete their everyday tasks, a nutritional food source, and a key material for craftwork, allowing women to carve out a space for themselves in the tourism industry. Craft production provides alternative methods for Mayan women to generate income outside the dominant socioeconomic system. Yet this production is being affected by global changes. Climate change, increased tourism demand, and the pandemic are affecting the plant population within the community. This shift meant that, as a community, members of San Jose would have to start thinking differently about their future with the jipijapa palm if they wanted to remain resilient in the face of contemporary challenges.

CHAPTER 5: DISCUSSION

5.1 Introduction

To highlight the resilience of the Maya in San Jose, this chapter addresses three central topics. Firstly, the significance of the jipijapa palm to the community's livelihoods. Secondly, the gendered relations with the palm are examined in order to understand the impacts of globalized change. Lastly, the reimagining of their futures as a response to globalized changes, specifically exploring the application of future-making initiatives.

5.2 The Significance of the Jipijapa Palm on Livelihoods

The previous chapter highlighted the intricate relationship the Maya had with the jipijapa palm, describing *how* important the palm was to the community and the ecological, cultural, and economic values related to it. This section, however, seeks to provide an explanation as to *why* it holds such significance within the community. Answering the question *why* is quite complex; however, for this paper, the question will consider one central dimension; the jipijapa palm is important to the Maya in San Jose as it is a part of their cultural heritage and provides economic stability for women.

5.2.1 Jipijapa: A Cultural Heritage

Intangible cultural heritage (ICH) encompasses the traditions, knowledge, skills, expressions, and representations that communities, groups, or individuals acknowledge as a part of their cultural identity (Brancoveanu, 2018; Bouchenaki, 2003). These practices are legacies that constantly evolve, passing on from generation to generation, and are reshaped, strengthened, and celebrated (Brancoveanu, 2018; Bouchenaki, 2003). ICH features a plethora of practices such as “customs and oral traditions, music, language, poetry, dance, festivities, religious ceremonies, as well as systems of healing, traditional knowledge systems, and skills connected with the material aspects of culture” (Bouchenaki, 2003, p.1). The Maya’s knowledge of utilizing the jipijapa palm for work, food, and craft creation, as well as maintaining this practice

over generations, falls under the category of traditional knowledge and skill, making it a part of their intangible cultural heritage.

As previously discussed, within the community of San Jose, the men utilize the jipijapa palm to assist with their work on the farm. Using the palm as straps to carry firewood and other heavy objects, wrapping material and pouches to carry fruits and vegetables, string for tying, and thatch material for patching leaks in roofs or building the roofs of chicken coops (Fieldnotes, June 8, 2024). On the other hand, women weave the jipijapa leaves into a hand fan to fan the flames of the fire hearth when cooking, as well as for a string to tie tamales when preparing a meal for the family (Fieldnotes, June 8, 2024). Community members also use the young jipijapa shoots for food. Caldo, lancha, and fried jipijapa are the three main dishes people have been consuming for generations (Fieldnotes, January 10, 2025). The Maya people are well-versed in utilizing the jipijapa palm. Notably, outside Indigenous communities in Southern Belize, the versatility of the jipijapa palm's use is not widely known in the country. As such, having this knowledge and skill is pivotal to the communities that rely on it.

As previously mentioned, the Maya people in San Jose do not utilize the craft in their households, nor do they use it as a form of decoration. Rather, the craft is perceived as a purely commercial commodity with little cultural significance attributed to it. The reason for the popular preconceived notion of the jipijapa craft as a Maya cultural craft is that retailers advertise and market it as such in their pursuit to sell the product. Nevertheless, the Maya value the knowledge of how to create the craft rather than the craft itself. Hence, there is a clear distinction between the two concepts: artisans use their traditional knowledge in creative and innovative ways to sustain their livelihoods, which is a textbook example of biocultural design.

However, one begs the question: can weaving jipijapa fibers into craft be considered a traditional Mayan knowledge when the practice began in San Jose in the 1980s? The answer is yes. There is no known literature on the introduction of jipijapa craft weaving to Belize; however, in San Jose, artisans have been creating crafts using this technique for over 40 years and have been using the palm itself for much longer. There are no standard guidelines for determining when a practice becomes a tradition; however, a practice can evolve into a tradition when it is consistently passed down across multiple generations and ingrained in the community's cultural identity (Wenger, 2000). Such is the case in San Jose.

Additionally, throughout history, cultural groups have shared their skills and knowledge with one another, adapting practices and integrating them into their own, thereby making the practice a tradition over time. A popular example of this cultural adaptation and traditional evolution is the *Tea Culture* in England. Although drinking afternoon tea is widely regarded as a quintessential British cultural practice, the tradition of drinking tea was introduced to England from China in the 17th century (Awasom, 2011). Yet, this practice became a British cultural tradition that influenced their social customs (Awasom, 2011).

Similarly, Indigenous groups' cultural utilization of the jipijapa palm to sustain their livelihoods predates European arrival in the Americas, with Ecuador holding the longest historical record (Bennett et al., 1992). Jipijapa fiber weaving can be traced back to the 18th century in Ecuador (Fadiman, 2001; Black, n.d.), with Indigenous communities using the fibers to create lightweight, durable hats that withstand the tropical sun (Bennett et al., 1992). By the 19th century, jipijapa hats had become popular when Ecuadorian merchants began exporting them through Panama. Miners who passed through on their way to California's gold rush would purchase them (Bennett et al., 1992; Black, n.d.). Other countries, such as Mexico, eventually adopted the practice, creating their own versions of the jipijapa hats and handicrafts (Fadiman, 2001; Black, n.d.).

Similarly, in Belize, the Maya have a long-standing relationship with the jipijapa palm. Drawing from this relationship, they are adapting their ICH to a new environment and context: tourism. The Maya are utilizing their knowledge of jipijapa weaving to expand the practice beyond creating hats, reshaping it to fit their cultural context, and producing figurines, baskets, jewelry, and other crafts to diversify jipijapa weaving, creating a new dimension that fosters continuity. The art of weaving jipijapa crafts is deeply embedded in the Maya's cultural identity and emerges from the relationship they have with the palm adapted for their contemporary lives.

5.2.2 Jipijapa: Economic Stability

On the surface, one may assume that women sold crafts solely to gain an income. However, the underlying reason for achieving financial stability runs deeper. For some women, generating an income empowers them, but not in the way one might assume. It allows them to escape abusive relationships and environments, plan for unforeseen events, and fight for a better

future for their children. These are the hidden stories that underline the need to generate an income.

Escape Domestic Abuse

In a humble thatched house lives an old woman and her daughters. She holds a warm and welcoming countenance, graciously greeting others with genuine kindness. Her home is humble, but it is filled with love and peace. Her house, however, did not always have such a warm ambience, as it was once filled with great sorrow and pain. She once had a husband who kept getting drunk, and during his intoxicated episodes, he would hit her. One day, she had had enough and decided to leave the relationship. She did not have a job, but she knew how to create jipijapa baskets. The old woman decided to continue pursuing craftwork to generate the income she needed to sustain her freedom and give her daughters a safe, secure home (Fieldnotes, June 12, 2024).

Preparation for Unforeseen Expenses

Another woman faced a chilling encounter when she received disheartening news in the middle of the night. Her husband was caught in an accident. His injuries were so severe that he had to be rushed to the hospital in Belize City, almost five hours away. With several sessions of physiotherapy and doctor checkups, her husband was nursed back to health, making a good recovery. But the hospital bills hung over their shoulders. They also had several children in secondary and tertiary school. With her husband temporarily out of work, the woman had to find a way to provide for her family financially. At this moment, she relied on the jipijapa craft production to generate the funds that she needed. Gaining an income, although small, was a way for her to provide for her family when they needed her most. Having her own income gave her the stability she needed to stand strong for her family when everything else seemed uncertain (Fieldnotes, June 12, 2024).

Better Education for Children

On her veranda, a mother sits, looking longingly into the distance, pondering over the future of her children. As a mother of three, she is doing everything in her power to ensure her children have a chance at higher education. A chance she never had. Her father was a small-scale farmer and did not earn enough income to support her studies. She was never given the opportunity to pursue her education after high school. Now, she sews traditional cultural

clothing, which accounts for the bulk of her income, and creates crafts on the side. Craft making does not generate much money, but it is enough to help her family, as every penny counts (Fieldnotes, June 12, 2024).

> *I was young. I joined the [first] women's group. We grind corn, and then they teach us how to make baskets. Maybe 30 years by now. Because my sons… [I had to send] all of them to school. I start[ed] to learn how to do the baskets. And, every time I do the baskets, I sell them. Because [for a] long time, nobody helped us with our children when they went to school, just like now. Yes, that's why we try our best. My husband likes to plant vegetables like tomatoes and cabbage. Everything he plants. Then we sell it. That's how we find our money to send our children to school. -**Margarita*** (Interview, June 11, 2024).

The finances these women generate from craft-making are invested directly in their families (Margarita, Interview, June 11, 2024). Hence, they pursue this path to achieve financial stability, even on a small scale.

5.3 Maya People's Gendered Relations with the Jipijapa Palm

Socioeconomically, the jipijapa palm is a food source and economic commodity within the community of San Jose. As such, a value chain analysis is employed to explore the dual characteristics of the jipijapa palm as a shoot and a craft, and to determine the gendered involvement along the shoot and craft value chains. To understand the impacts of globalized changes on the Maya's relationship with the jipijapa palm, it is necessary to first examine the gendered relations with the plant.

5.3.1 Gender Involvement along the Jipijapa Shoots Value Chain

As a delicacy within the Mayan communities, small-scale farmers take the jipijapa shoots to the local farmers' market in Punta Gorda Town to sell. There are no known restaurants or food establishments that serve jipijapa on their menu. Instead, jipijapa shoots are consumed mostly at home. This food is mostly exclusive to Mayan communities and lacks a large-scale value chain.

The jipijapa shoots are harvested mainly for two reasons: home consumption and selling, as shown in Table 3.

Table 3: Gender Involvement along the Jipijapa Shoots Value Chain.

Nodes	Explanation	Gender Involvement	Percentage (Participants)
Harvesting	Harvest the jipijapa shoots from the farm/bush/or yard:		
	• *Home consumption*	Men and Women	M- 50% F- 50%
	• *To be sold*	Men and Women	M- 91.67% F- 8.33%
Transporting	Moving the collected jipijapa shoots from the farm/ bush/or yard • *Walking* • *Horse carriage*		
	Home consumption	Men and Women	M- 50% F- 50%
	To be sold	Men and Women	M-91.67% F-8.33%
Processing	Cooking the jipijapa shoots:		
	At home	Women	M- 0% F- 100%
	On the Farm	Men	M- 100% F- 0%
Selling	At the market in Punta Gorda	Men and Women	M- 33.33% F- 66.67%
	Within the Village	Men and Women	M-80% F-20%

Individuals who harvest jipijapa shoots for sale fall into two categories: village vendors and market vendors. Village vendors harvest jipijapa shoots and sell them in the village, whereas market vendors sell them at the market in Punta Gorda. Notably, village vendors are primarily men. These men sometimes have an immediate need to meet; hence, they harvest and sell the shoots to obtain quick cash, as a pound of jipijapa shoots sells for about $3 (BZD) (Sharla and Jorge, Interview, January 15, 2025). On the other hand, a few individuals sell jipijapa shoots from their farms to earn a modest income. Sharla and Jorge are a married couple who work together and sell produce from their farm. Although other women might work alongside their husbands to sell jipijapa shoots, Sharla is the only woman interviewed who identified herself as a village seller.

> *I sell it there in my village. When people come here, when they come to get cacao here… just like how the big truck was passing around just now…plenty of men who are working in the cacao fields, they send one of the men to say they want 3 or 4 bundles. Sometimes they want 5 or 6 and then my husband go look for it. He brings a lot. At one time, he got 6 or 7 bundles.* - ***Sharla*** **(**Interview, January 15, 2025)

Although Sharla sometimes harvests the shoots, her husband harvests them most. The harvesting node for the jipijapa sold is dominated by men. A plausible reason for this high involvement is that men are frequently working on the farms. Since he is already at the location, he harvests the shoots. Whoever harvests the shoots brings them home. Hence, the transportation node reflects similar percentages of gender involvement as the harvest node.

The processing node involves cooking jipijapa shoots to prepare a meal. Mealtime plays a significant role within the community; hence, people prepare meals at home and on the farm. At home, women are the primary providers of domestic labor, often taking on cooking and meal preparation (Fieldnotes, January 10, 2025). Although men know how to cook the shoots, they are less likely to do so at home, as their wives would be the ones to cook at home. Instead, when working on the farm, they prepare the jipijapa shoots as a meal (Fieldnotes, January 11, 2025). In the jipijapa shoots processing node, there is a distinct division between the locations and gender involvement. Perhaps a simplistic explanation for this division is that both genders tend to spend considerable time in their respective domains. Women work in the home, and men work on the farms; hence, they eat their meals at their work sites.

In general, men have a higher involvement rate in the jipijapa shoots value chain within the village than women do. Location is a key factor that influences the involvement rate of men and women. Although jipijapa shoots can be harvested in yards, on farms, and in the bush, villagers tend to acquire the shoots mostly from farms. The farm is the domain where mostly men work, offering them the perfect opportunity to act as harvesters, transporters, and sellers.

In Punta Gorda, two jipijapa shoots vendors were interviewed. Both of them were women. However, they mentioned that there was a third vendor, a man, who usually sells at the market. However, on the day when the interviews were conducted, he did not go to the market to sell the shoots. Women, however, have a higher involvement rate selling the jipijapa shoots at the market in Punta Gorda Town than in the village.

5.3.2 Gender Involvement along the Craft Value Chain

The figures in Table 4 below are based on the number of participants in the study and reflect the information gathered from them. Participants who processed the fibers were asked who collected the jipijapa leaves for basket making. Some artisans responded that their husbands or fathers mostly collected it, but when the husbands/fathers were unable, they would collect it. Other artisans who did not have a spouse collected it themselves. Although the table shows that the harvesting and transportation nodes are dominated by men, in retrospect, the tasks are completed by whoever is available.

> *Sometimes my dad [goes to the farm to get the jipijapa we need], and sometimes we go along to the farm together like teamwork. –* ***Selia*** (Interview, June 18, 2024)

Therefore, the men have a prominent involvement in the harvesting node. Some men prefer to be the ones who go looking for the pods and mature leaves because of the potential risks their wives or daughters may face (Interview, June 7, 2024). Women who harvest are sometimes required to venture farther into the forest if they cannot acquire their materials on the farm. This distance may be between thirty minutes and two hours' walk away from the village. Traveling long distances alone in the forest is not always safe. Under these circumstances, the male of the family prefers to take up this task as he can go on horseback to cover long distances within a shorter time; and, in the event a large quantity of pods is needed, he can also carry it on horseback (Interview, June 7, 2024). Additionally, snakes sometimes dwell within the root clusters of the jipijapa plant. One can be bitten if one does not detect the snake. The men would rather take on that risk than have their wives or daughters do it.

> *Well, I got involved when I helped my wife go and get it [jipijapa] at the farm because sometimes she's busy, then she sends me to the farm to get her jipijapa. Let's say every two weeks, depending on how often she needs the materials. And sometimes both of us go, and sometimes I do the labor for her to bring those materials home. Worse when it's raining, or when the materials are far because she is busy working at home, then she does not have much time to go to the farm. And, anything harmful could happen to her when they look for the materials. –* ***Mark*** (Interview, June 7, 2024)

Table 4: Gender Involvement along the Jipijapa Craft Production Value Chain.

Node	Step No.	Description	Gender Involvement	Percentage
Harvesting	1	Harvesting jipijapa leaves from the farm/ bush: • *Young leaves (pods)* • *Mature green leaves* • *Mature yellow leaves*	Men & Women	M- 82% F- 18%
Transporting	2	Moving the collected jipijapa leaves from the farm to the home • *Walking* • *Horse carriage*	Men & Women	M- 82% F- 18%
Processing	3	Cleaning and peeling the jipijapa leaves to remove the 'hard parts.'	Men & Women	M-14% F- 86%
	4	Boiling the leaves to turn them white	Women	M- 0% F- 100%
	5	Soaking the leaves in room temperature water overnight.	Women	M- 0% F-100%
	6	Setting the leaves (both mature leaves and boiled leaves) in the sun to dry.	Women	M- 0% F- 100%
	7	Sewing the crafts. Several threads are used to sew the craft: • *Jipijapa straws* • *Cordel thread* • *I'ke (Heineken) Fiber*	Women & Men	M-4% F-96%
Selling	8	Selling crafts to local retailers. • *Some retailers come into the community to buy the crafts, whereas some women send their crafts on the bus to their buyers.*	Women	M- 0% F- 100%
	9	Retailing crafts in local gift shops	Women & Men	M- 4% F- 96%

Women dominate the processing node. Men, however, do render their assistance with specific tasks. The pods and mature leaves must be stripped of the 'hard parts' during processing. When there are many pods and leaves to process, the husband and children would assist in stripping the pods and leaves, as many hands help to make the load lighter.

> *Right now, I help her. I have lately started to help her with the cleaning of the materials, the jipijapa materials. I saw how she does it. It's like with the needle is faster. I use the knife, but need to have a thin knife that would work right to take off the hard part from both sides.* – ***Mark*** (Interview, June 7, 2024)

After the leaves are stripped, the woman takes over boiling and sun-drying the leaves. Although craft creation is perceived as a woman's job in the community, some men secretly sew baskets (Maria, Interview, June 10, 2024). They have learned the basics to assist their wives with large orders. Young adult males are more open to creating crafts than older adults. They would ask their wives or their mothers-in-law to teach them. Despite having little interest from their male counterparts, the craft sewing is done mainly by women and girls.

> *Like how we're in a family, sometimes we set dates when we will be making it [the crafts], and that's how we work together as a team. It's a teamwork. This is how I do it: My mom sews the jipijapa base. Because I also have the skills to crochet, I make the flowers. I put the leaves and everything for it.* – ***Selia*** (Interview, June 18, 2024)

The selling node also has a high women's involvement. After the crafts are created and ready for delivery, the woman contacts the retailer and arranges the shipment. Often, the retailers are women, including the buyers who come into the village. Twelve retail locations were visited during this study. From these locations, only one had a male tending to the gift shop. Notably, the gift shop was owned by his mother. Women have carved out a space in the tourism industry where they dominate a large share of the value chain.

Essentially, both genders engage in the craft creation value chain. Men, however, play more of a supportive role to their wives and daughters rather than being the primary artisans.

5.3.3 Outcomes of Participating in the Jipijapa Palm Value Chain

The Jipijapa shoots value chain consists of a few people exchanging goods and cash within a small-scale sphere. Hence, the available data for the jipijapa shoots value chain is limited. Therefore, this study is limited to discussing only the jipijapa craft production value chain. The jipijapa craft production business module is designed to benefit women. As dominant stakeholders in the craft value chain, this section will explore the outcomes of women's engagement in craft production, highlighting the benefits and challenges they encounter. As previously mentioned, men play a supportive role in the value chain; hence, it is assumed that any costs or benefits obtained from the value chain are experienced indirectly through their wives and daughters.

5.3.3.1 Benefits of Engaging in the jipijapa Craft Value Chain

Income Generation

It is of utmost importance to explicitly state that jipijapa craft artisans in San Jose do not generate large sums of revenue from their crafts. Whatever revenue they generate is only enough to meet basic necessities. Often, women must engage in other activities, such as sewing cultural clothing, to cover higher costs. Nevertheless, jipijapa craft production provides some income. These earnings go towards supporting the household, such as buying basic grocery items (sugar, rice, flour), giving her children money to buy snacks at school, or going towards her savings to cover the cost of more expensive expenditures such as medical bills, school tuition, and school equipment (uniforms, books, shoes, etc). Women hardly use the income they earn for themselves. Their primary concern is their children. If their children's needs are met, they are satisfied.

> *People will continue to use jipijapa in the future, especially since Belize is a tourist destination. The tourist loves to buy those [crafts] as souvenirs. Such people will continue, and I think people will continue to improve on how best to use it. […] Before, the women were solely household. They cook the food, they wash the dishes, they wash the shirts, the laundry of the family, and they breastfeed the children at home. That's how they do it. While the men are out farming, whether they're producing rice to generate an income, to sell to the market, and generate an income for the family, etc. But now, the women, because they have developed the use of jipijapa for crafts, they are now generating incomes for the family.* – ***Jipijapa Cal*** (Interview, June 17, 2024)

Social Support

In general, San Jose is a close-knit community where everyone looks out for one another. This practice is translated into the jipijapa craft production. Although most women are knowledgeable about how to turn jipijapa leaves into fibers, they do not always have the time to make them, or they cannot acquire enough leaves to make the fibers (Fieldnotes, June 5, 2024). When artisans have a shortage of fibers, they borrow from other women within the community, often a close relative. In return, when the relative needs fibers, the original borrower reciprocates (Fieldnotes, June 5, 2024).

Women not only support each other by sharing craft materials but also help each other sell their crafts. If one of them receives a large order for jipijapa crafts and cannot supply them on their own, they would seek help from other women. Whatever revenue is made from each particular craft goes to the respective artisan (Jordyn, Interview, June 12, 2024). By doing this, they ensure that everyone has the materials to create crafts and the opportunity to sell them. The motivation behind this ideology is that Mayan women need to look out for and support one another so that all of them can succeed together.

This support extends beyond helping one another to create and sell crafts. Some women use the jipijapa craft creation process as a form of therapy (Donicia, Interview, June 15, 2024). Donicia, a participant in the study, is a schoolteacher in another community in the Toledo District. At her school, she teaches her students how to create the jipijapa craft. On one occasion, she invited her students' parents to make crafts. In this instance, she had the opportunity to help one of her students' parent overcome a stressful situation through craft-making (Donicia, Interview, June 15, 2024).

> *And, I would teach my students to do patterns, and that helps them to think more. Even a pregnant lady was with me at that time. And sometimes she goes through a stressful life with her husband. When I bring her into my group, I think she… she… she releases that stress. I told her, you know, you concentrate, you focus on this, and I know it will help you. And, indeed, the baby came out beautiful… healthy. I see it. I see it. I helped that lady a lot because she would come and cry to me and tell me that, you know what, 'this is how my husband is treating me'. [And I would say], this is something you need… and she was pregnant. She stayed here for the whole time.* - ***Donicia*** (Interview, June 15, 2024)

Development of Self-Confidence in Their Work

The women in San Jose take pride in the craft they create. They spend hours ensuring the crafts are woven tightly and neatly. “We sell quality baskets”, exclaimed Samantha as she described the craft creation process (Samantha, Interview, June 17, 2024). Many Mayan women in the Toledo District sell jipijapa crafts; however, the crafts from San Jose have a certain je ne sais quoi. It stands out from the rest, reflecting the great care and dedication the women put into it.

Establishment of Networks

The artisans in San Jose have an informal but extensive network with other craft creators and retailers outside the community. This network helps them to sell their crafts. For the Mayflower Women’s Group, however, their network extends beyond the usual craft value chain (artisan-retailer exchange). In January 2025, the Mayflower Women’s Group submitted a few art pieces to the Institute of Creative Arts. Their art pieces were selected for inclusion in the groundbreaking Museum of Belizean Art (MOBA). MOBA is a collection of Belizean cultural handicrafts. The artisanal pieces the women submitted will be showcased at the various Houses of Culture across six districts. Not only are the chosen art pieces purchased by the museum, allowing the women to earn some income, but the women are also invited to teach the general public how to create the crafts. Fostering networks such as this is important for the future-making of the craft production as well as the preservation of the cultural practice of weaving jipijapa crafts.

5.3.3.2 Challenges of Engaging in the Jipijapa Palm Value Chain

Although the jipijapa craft production was designed to benefit women, they still encounter a few challenges. Within the home, women perform a plethora of tasks that consume the bulk of their day (Fieldnotes, June 8, 2024). These responsibilities are necessary to ensure the household operates smoothly on a daily basis. On average, a woman’s free time consists of a 2 to 3-hour break after lunch, and whatever time she can muster after dinner in the evening (Fieldnotes, June 8, 2024). This free time is dedicated to craft creation. As previously described, the process from field to craft is time-consuming and labor-intensive. Some women find it

challenging to balance their home responsibilities and craft creation. Often, they find themselves neglecting one or the other.

> *Yes,* [it is challenging], because sometimes I have to do my food and everything in my house. I have to clean my house. That's difficult for me. **Samantha** (Interview, June 17, 2024)
>
> *To me, I have a hard time to make it [jipijapa crafts]. This time now, I am too busy sewing with the machine so, I don't have time again [to create the crafts].* ***Rosa*** (Interview, June 18, 2024)

In situations where the artisan has larger orders, for example, a retailer wants ten small round baskets, the order takes priority over her home responsibilities. Each basket takes about 2 to 3 hours to sew (Fieldnotes, June 5, 2024). For ten baskets, she needs to dedicate 20 to 30 hours to complete the order. Bear in mind that the hours required to process the jipijapa leaves into fibers have not been included in this estimation. Nevertheless, if she has adolescent children, she relies on their assistance with household chores. Women who are mothers of infants or toddlers face a different predicament. Nonetheless, from dawn until dusk, she sews the baskets to complete the order. Since the baskets are small, the retailer might negotiate to purchase them at a cost of $2-$5 (BZD) per basket. The most she will make from this order is $20-$50 (BZD). She completes a week's worth of labor and earns at most $50 (BZD). This struggle is what the women artisans of San Jose are facing. They dedicate long hours to their craft, taking time away from their families, yet they are not reaping the full value of their labor. The minimum wage in Belize is $5 (BZD) per hour or $2.50 (USD). If artisans were minimum wage laborers, working for 20 to 30 hours a week would equate to a salary of $100 (BZD) to $150 (BZD). As entrepreneurs, these artisans earn less than the minimum wage. This is why some artisans are discouraged from engaging in craft creation.

5.3.4 Impact of Commoditizing the Jipijapa Palm: A Change in Relationships

Before the advent of tourism, community members' interaction with the jipijapa palm was ordinary. They sought it when they wanted to eat the shoots or needed the stems and leaves for work. In some instances, when the men were preparing the farm to plant new crops, if the jipijapa palm was an obstruction, they would remove it by chopping the upper clusters and

spearing the root systems, allowing the plant to regrow (Fernando, Interview, January 10, 2025). After the advent of tourism, the ways people interacted with the jipijapa palm and with one another shifted. As the palm gained monetary value, minor conflicts began surfacing among community members and the neighboring village.

Due to proximity and easy access, community members mainly harvested jipijapa palms from their farms for food, work, or fibers. This proximity, however, meant that others who were not the cultivators could also access and harvest jipijapa palms, even without permission. As a result, community members began seeing an increase in their jipijapa shoots and leaves going missing. As a community where everyone looked out for one another, petty theft was unwarranted and became an annoyance, upsetting community members.

> *Sometimes, if people are going, just taking… let's say, like, thief then, because they don't ask permission to go and get jipijapa plant from someone's farm or someone's yard. That's the only way they complain with each other. Sometimes people who are here in the village.* ***Jordyn*** (Interview, January 13, 2025).

Navigating these internal disputes was quite delicate for community members (Jordyn, Interview, January 13, 2025). Victims reported the issue to the Alcalde, making him aware of the incident in the hope that he would investigate and hold the culprit(s) accountable. Some others, however, saw this method as futile. They knew the culprit(s) would not listen to or adhere to any scolding or laws. These community members believed the culprit(s) were the local alcohol addicts who stole the jipijapa shoots and pods and sold them to make quick cash. The culprit(s) then used the money to buy alcohol.

> *We can't do anything to help that person because of their cravings. They need money because they want to buy "bad man" [alcohol] to drink to get drunk. You can't do anything for them.* ***Sharla*** (Interview, January 15, 2025)

Rules and regulations would not stop addicts from chasing a high and finding any means necessary to find the funds to do so. Until those individuals got the help and rehabilitation they needed, petty theft would continue to be an issue in the community.

> *And sometimes, people who are from other villages. Let's say, for example, our neighboring village, Santa Cruz, they have some people who come to get jipijapa leaf from this place. We, as the San Jose ladies, we like complain because it is not their*

property. Because if we go and do that to them, they won't like it as well. ***Jordyn*** (Interview, January 13, 2025)

Petty theft involving individuals from other communities was another matter. As with internal disputes, community members would report the issue to the Alcalde so that he could intercede on their behalf with the other village's Alcalde.

They would go to the Alcalde because you can't go and complain to anyone about that. The Alcalde is the one who can go to the other village and speak to the other village's Alcalde. You can't go personally and tell them. ***Jordyn*** (Interview, January 13, 2025)

Spatial distance is a key factor impacting the occurrence of petty theft. San Jose is a growing community, causing households to establish their farms near residential areas. As a result, areas considered 'bush', which are communal lands for others to harvest from, are being pushed further away. Not wanting to traverse far into the forest for the jipijapa palm, some settle for stealing.

Because it is getting far […], you have to go deeper in the bush for it, where nobody owns it. ***Rosa*** (Interview, January 16, 2025)

Not only is jipijapa palm theft an issue in the community, but there is a developing division between community members who want to consume the jipijapa for food and artisans who need it for craft creation.

In my own farm. I have my cacao orchard. With or without permission, the people would go and harvest the jipijapa palm. I would use that for my vegetable use to eat with my hot tortilla. But sometimes I couldn't find it because they were chopped, the new shoots, for basketry. **Jipijapa Cal** (Interview, June 17, 2024)

Individuals who want to consume jipijapa shoots cannot always obtain them when they want. Households that consist of an artisan struggle with the choice: consume the jipijapa shoots, or leave them to grow into pods, as the pods are necessary to create the fibers. For the artisan, the choice is simple: the craft comes first. But those who do not rely on craft production for their livelihoods perceive craft production as a takeover of the jipijapa palm. Community members understand that artisans need the jipijapa palm, but as a cultural food, they should also have

access to the shoots when they desire them. This division is simply a matter of giving up the jipijapa as a food source to have it as a commodity.

5.3.5 Impact of Globalized Changes on Gendered Relationships

These changes within the community are a reaction to the globalized changes they are encountering. The COVID-19 pandemic left a lingering scar on the Belizean society. This unforeseen occurrence had a socio-economic impact on thousands, leaving a lingering fear of the unknown, especially among those who have yet to recover. Many were left economically stranded, and with the rising cost of living, even more have still not found their footing. Many are concerned about being caught off guard and unprepared once again. The fear of being stranded looms over them. After the pandemic, the cost of living also increased. People are fighting to restore some sense of economic balance within their lives. Hence, tourism is seen as a short-term solution to help restore some sense of stability. Although there is a desire to produce more crafts for the tourism industry, the current environmental context within the community makes this approach infeasible. The 2024 summer drought and wildfires damaged and depleted the jipijapa population. Increasing production for the tourism market would strain the remaining jipijapa palm within the community. If the community's engagement with the jipijapa continues on this path, it would be a matter of time before the jipijapa palm becomes scarce.

To fully grasp the impact of globalized changes on the community, the notion must be approached and examined at the micro-level, specifically focusing on gendered relations. Ecologically, the entire community would be affected by the disappearance of the jipijapa palm. The jipijapa palm is a food source for multiple species in the forest, which are all interconnected within the terrestrial ecosystem. The destruction of the jipijapa palm indicates the depletion of these species' habitats and food sources. As a result, these species would be forced to seek food and habitat elsewhere, evidently affecting the ecosystem's biodiversity, which can have trickle-down effects on the community. Culturally, the entire community would be affected once again as the jipijapa palm is a culturally rooted resource, serving as a food source and work tool. Economically, women engaged in jipijapa craft production would be directly affected, as it serves as an income source. Men whose wives engage in craft creation would also be indirectly

affected, as their household economy depends on contributions from various income-generating activities.

Clearly, globalized changes affect all aspects of the community, including their livelihoods and ways of life. Hence, community members must critically consider how they wish to engage with the jipijapa palm and the future they envision in the context of globalized changes.

5.4 Future-Making within the Context of Globalized Changes

Future-making practices are influential tools for creating new orders and transforming or preserving fundamental values that shape people's perception of what constitutes a ‘good life’ or a desirable future (Thompson & Byrne, 2021). There are two modes of future-making: practices that enable and transform, and practices that preserve and sustain (Knappe et al., 2019). These practices were evident within the community of San Jose. Participants within the study were asked to envision the future that they wanted to build with the jipijapa palm. Many reflected on the year’s perils and sought to build a more resilient future that protects their lands, ensures the longevity of their natural resources, preserves their culture, and generates developmental initiatives.

Climate change, tourism, and the COVID-19 pandemic’s impacts on the community brought a stark realization—environmentally and socio-economically, the global sphere was changing, and the community had to learn to change with the tides. This change, however, meant incorporating adaptation methods that aligned with their way of life, ensured cultural continuity, and brought economic development. When asked about their future aspirations for the jipijapa palm and the betterment of the community, three major recurring themes surfaced among the community members: cultural preservation, sustainable farming practices, and community development (Fieldnotes, June 28, 2024). Figure 21 outlines the major themes and sub-themes that the community aspires to achieve in order to build a more resilient future.

Figure 21: Diagram of San Jose villagers' aspirations for the future.

Cultural Preservation

The resounding cry for current and future generations to understand the importance of the jipijapa palm within their culture resonated among the community members. Although it may appear as a simple plant on the farm or in the forest, the jipijapa palm played a prevalent role within the community, acting as a tool when working on the farm, providing food for those who did not always have the means to purchase groceries, and creating alternative employment for women to work from home. Understanding the plant's importance would enable them to value it. However, valuing the plant in itself is not enough. Future generations must maintain the skills and knowledge to utilize the plant with versatility, such as learning how to cook jipijapa dishes, experimenting with the palm to discover ways to make work easier, and continuing the craft creations.

The jipijapa craft creation has been a prevalent practice within the community for generations, passing down from mother to daughter. This knowledge enabled women and girls to pave their own paths forward, finding alternatives to the status quo imposed by society. Thus, there is a need to keep the knowledge alive to give future generations a choice and a hope. Some elders, however, argued that both females and males should keep this practice. As keepers of the knowledge, the elders must pass it down to the children regardless of gender (Daisy, Interview, June 15).

> *I know all the processes, and I teach them. I teach both boys and girls. And, I tell them [the boys] that what the females can do, you can do it, too.* - ***Donicia*** (Interview, June 15, 2024)

To ensure the children in the community understand the significance of their cultural knowledge and the value of the jipijapa palm, the local primary school has embarked on a mission to incorporate basket-making, among other cultural creations, into the curriculum.

> *We are having what we call the CCLA in the classroom. Because the country is having a new curriculum, called the competency-based curriculum. And everything has to be a hands-on activity; we are moving on to what we call skill-based. Therefore, the school is implementing the program called CCLA, which is a cross-curricular learning activity, whereby each teacher is given the mandate to have a session during the week to teach children about their cultural awareness with embroidery, craft, pottery making, and folklore. So that is what we are going to venture into come next year. –* ***Jipijapa Cal*** (Interview, June 17, 2024)

Sustainable Farming Practices

Understanding the importance of the palm may spark a paradigm shift in how the community perceives the jipijapa palm. For a long time, the jipijapa palm grew abundantly in the community, giving members the impression that the number of palms was endless; hence, they would always have access to it. And, indeed, the plant did flourish in San Jose. However, after drought and wildfire, the number of jipijapa in the community decreased significantly, leading some to realize that the preconceived notion of an endless supply of jipijapa was false. If they wanted to have jipijapa in the future, they had to replant the destroyed plants on the farms.

> *I want to pinpoint, though, with the demand in the jipijapa use, we need to come to an understanding that we need to have, what you call, sustainability. And, therefore, unless the people in the community of San Jose understand sustainability, they need to begin to plant their own jipijapa palms, or else they are going to face the dilemma of extinction.* ***Jipijapa Cal*** (Interview, June 17, 2024)

The reforestation of the jipijapa palm is a relatively straightforward process, as people in the village have been doing it for decades. To grow jipijapa palms in a designated location, farmers transplant the seedlings they come across in the bush on their farms, as the jipijapa palm germinates quickly (Mark, Interview, June 07, 2024). Transplanting was best done during the wet season because the soil was sufficiently moist to sustain the seedlings (Fernando, Interview, January 10, 2025). Reforestation on the farms partially resolved the issue, as competition for the jipijapa palm persisted between those who wanted to use it for food and craft production. Hence, the palms also needed to be planted in individuals' yards. This method allowed those who wanted to use the shoots for food to have quick, easy access to them.

> *We will continue to [use it] because that's our source of food. […] We would have to use it in a sustainable way. We have to educate our younger generation, our community, how to use these palms in a sustainable way. If we don't do this sustainably, then we will run out. We need to plant our own. We need to continue to plant. We can't just depend on the widespread. –* ***Mark*** (Interview, June 07, 2024)

Adapting a sustainable perspective also entails proper management of the palm's utilization. One of the issues that the community faces is consistent consumption with little restoration or replenishment of the palm. To combat this predicament, some community

members have suggested implementing crop rotation, whereby they divide their farms into several sections, for example, four sections (Jipijapa Cal, Interview, June 17, 2024). Within a specific timeframe, they would harvest from region one, leaving the other three regions to rest. When that period comes to an end, they would move to Region Two, leaving Region One to replenish itself, and so on. Alternating regions not only benefit the palm but also help to replenish the soil content (Jipijapa Cal, Interview, June 17, 2024).

Adapting crop rotation as a farming technique brought up the idea that perhaps the current farming practices within the community may also need to change. Currently, to clear the fields, some farmers burn the shrubs and debris. “Slash and Burn” is a traditional practice that is not inherently harmful to the environment. However, climate change has altered the conditions and factors under which this practice can be effectively utilized. Climate change has intensified the heat in Belize, leading to prolonged droughts lasting several months. These droughts dry up the trees and plants, preparing the perfect environment for wildfires to occur or making planned farm fires uncontrollable, which can spread into wildfires. Hence, some villagers have been considering the idea of adopting agroforestry as an alternative farming technique. The jipijapa palm already grows wild and free on many farms, alongside other crops such as cacao, corn, and sugar cane. Hence, transitioning to agroforestry would not be a difficult task.

> *I want to see San Jose continue to produce good organic crop. Because in other villages, especially in the Stann Creek District, they don’t have jipijapa, and people do come and buy jipijapa here. [A sustainable San Jose] that is what we should continue to work towards. Maybe in the future, we will build and stop burning those bushes. By burning those bushes, it changes [the land]. It doesn’t bring the same amount of plants. It brings grass. Grass. Grass. We don’t have much use for grass. Especially the bad type. There’s that one that go high and is hard to control, and spreads across the whole field—the wild cutting grass. When you burn the farm and burn the bushes, that’s where the grass start to grow. It's more dangerous because when it gets dry, like in the dry season, it’s easy to catch fire. The better solution is that in the future, we have to stop burning our farms and change the way how we do farming. Let’s say, for example, if we have a jipijapa farm, we can still plant our crops in between. You can plant your cacao; you can plant your plantain trees. You can have your jipijapa trees underneath. You can have short-term and long-term crops. That’s agroforestry. –* ***Mark*** (Interview, June 07, 2024)

Community Development

Although farming has been the backbone of San Jose, respondents aspire to diversify their revenue streams to create more opportunities for community development. Hence, the Mayflower Women's Group and other artisans aspire to expand production of jipijapa craft. Furthering this venture, however, requires the establishment of some organizational measures, which are as follows:

Village cohesion and standardizing the crafts' size and selling prices: To overcome past perils, the community members must learn to work together. Some members suggested setting a standard selling price for the craft and standardizing the sizes (Selia, Interview, June 18, 2024). As a community, they can determine a fair price for the various crafts. When buyers come into the village to purchase the crafts, they try to get the most for their money, moving from artisan to artisan to get the lowest selling price, which sometimes indirectly pits artisans against each other. Each artisan wants to sell their craft, so they negotiate with the buyer on the selling price, often selling it at a rate below its worth. However, with a standard selling price, the playing field becomes leveled, eliminating unfair negotiation tactics. The buyer then has a choice to either purchase the craft as is or leave it. This method ensures artisans get a fair price for their work. This enforcement, however, requires complete cohesion.

Technological connection and online marketing: Social media has proven to be a powerful tool for entrepreneurs to market their goods and services on a large platform and at no cost. The artisans of San Jose desire to promote their cultural creations online. Being nestled in the forest, however, means being isolated from communication towers, limiting telephone and internet access (Fieldnotes, June 10, 2024). Community members are not always easily reachable via telephone. Only a few individuals in the community have access to the internet. But they can only get a signal at night, which limits the hours they can do business with the outside world. Consumers who view the artworks online and wish to contact the artisans to purchase the craft may experience delayed interactions, which can sometimes discourage patronage. Hence, community members desire a telecommunication tower to be built nearby. Notably, a few villagers are concerned about the impacts and effects of introducing technological changes to the community, as they can alter their way of life (Interview: SJA09, June 15, 2024). Like most inventions, there are both costs and benefits. The outcome, however, depends on the utilization.

> *I want my people to be technologically connected. […] But with that, come it's fear. Can the parents sustain the connection? Can the parents be able to help their children understand the importance and the danger of connection? So that is one thing the school is doing its part. But when the children get home, what is the rule at home? –* ***Jipijapa Cal*** (Interview, June 17, 2024)

Building infrastructure and increasing tourist visitation: One of the major goals of the community is to transform San Jose into a tourist destination, whereby the women's group could offer visitors an authentic cultural experience of the Maya people's way of life. They would offer services such as art and crafts creation sessions and cultural cuisine cooking classes, with visitors coming in. The women's group, however, would need to have the proper facilities to accommodate the visitors (Fieldnotes, June 10, 2024). Hence, they aspire to build a guest house that has portable water and indoor plumbing. With tourists arriving, this allows the women to showcase their artwork. To ensure everyone in the community has an equal opportunity to sell their craft, a craft shop can be established (Fieldnotes, June 10, 2024).

International Exportation: The Mayflower Women's Group is also interested in breaking into an international market to sell their craft. This branch-off will allow them to be less dependent on the local market and scale up operations outside the tourism industry (Fieldnotes, June 10, 2024). In the event of another occurrence like the COVID-19 pandemic that stagnated the country's tourism sector, the women's group would be less likely to feel the direct effects. Besides the traditional baskets, figurines, and jewellery, the women desire to make a variety of other crafts for this international market, such as mats and lamps that can be utilized for household decor. International exportation allows them to be in direct contact with consumers, eliminating the 'middleman' from the equation (Fieldnotes, June 10, 2024).

Although developing an international business would be ideal for the community, artisans must first understand the implications of taking this path. Currently, these artisans are engaged in a subsistence economy, where they produce enough for their basic sustenance and a little extra to sell and earn cash, maintaining a balance with nature through "partnership, mutuality, and reciprocity" (Shiva, 2015, p.15). Creating an international business means that artisans will be engaging in a market economy, which is a different domain. In a subsistence economy, "satisfying basic needs and ensuring long-term sustainability are the organizing principles for

natural resource use, whereas the exploitation of resources for profit and capital accumulation are the organizing principles for the market [economy]" (Shiva, 2015, p.15). In this context, where the jipijapa palm population has been damaged and diminished, engaging in a market economy will cause more harm than good in the long run. International exportation would put pressure on a resource that is already under duress. If there is no continuous supply of jipijapa leaves for the craft, market failure will inevitably occur.

Additionally, there is an unresolved issue between community members who want to consume jipijapa for food and other cultural purposes and those who use it for craft creation. Without proper planning and management strategies, different sectors (cultural and ecological) that rely on the palm will be put at risk. The jipijapa palm is not a keystone species within the community, but it does contribute significantly to the ecosystem's biodiversity, which in turn sustains the community.

Nevertheless, the future that the community of San Jose seeks to build is not a destination but rather a process that needs to be worked towards continuously. This process, however, must be adjusted and amended as factors change, creating a never-ending cycle that sustains people and the environment.

> *...If things don't change, then I don't know how we're going to survive, but we'll just see how best we can…fight over it.* ***Justice*** (Interview, June 8, 2024)

5.6 Chapter Summary

As part of their intangible cultural heritage, the jipijapa palm contributes significantly to the livelihoods of the Maya people in San Jose Village. Findings revealed the utilization of the palm within two value chains: the jipijapa shoots value chain and the jipijapa craft value chain. Admittedly, the jipijapa shoots value chain is operated on a small-scale basis, existing primarily among Mayan communities. Within this value chain, men are predominantly involved at the community level, acting as the harvesters and village vendors. Whereas outside the community, particularly at the Punta Gorda market, a larger percentage of women are involved as vendors. Nevertheless, both men and women are equally engaged in the processing of the shoots for consumption. The craft value chain, in contrast, operates on a larger scale and is predominantly led by women. Although women benefit from craft production, such as earning an income,

forming social support systems, developing self-confidence, and building networks, they also face multiple challenges. The craft-making process, from start to finish, is time-consuming and often requires women to set aside time from other responsibilities. This dedication, however, is not rewarded as women do not always yield the true value for their craft.

The impacts of globalized changes also led to changes in relationships, affecting how the community engaged with the jipijapa palm and with one another. In response to the stagnation caused by the COVID-19 pandemic, artisans sought ways to restore their financial stability, leading them to invest more in the tourism industry as a short-term solution. Climate change, however, has limited the resources available to the community for engaging in the tourism industry. Due to the drought and wildfires, the jipijapa population within San Jose has been reduced, leaving the plant under duress. With limited availability, community members must decide whether to consume the palm for food or leave it for craft creation. Despite these challenges, the artisans and community members aspire to create a future with the jipijapa palm that ensures cultural continuity, transitions to sustainable agricultural practices, and incorporates economic development, in hopes of finding solutions to their current predicament.

CHAPTER 6: CONCLUSION

6.1 Introduction

This research began with an inquiry to investigate the Maya people's gendered relations with the jipijapa palm along the craft value chain, as well as to explore the implications of gendered relations with the jipijapa for future-making in the context of globalized change within San Jose Village, Belize. In order to accomplish this goal, the following objectives were achieved:

1. To understand the significance of the jipijapa plant for the livelihoods of the community members.
2. To document the jipijapa craft value chain production process from extraction to market.
3. To examine the Maya people's gendered relations with the jipijapa plant along the craft value chain.
4. To explore the impact of globalized changes on the jipijapa craft production and San Jose's future-making.

This chapter summarizes how those objectives were met, provides recommendations for the community's future-making, discusses the limitations of the research, and highlights areas for further study.

6.2 Achievement of the Objectives

Objective 1*: To understand the significance of the jipijapa plant for the livelihoods of the community members.*

The jipijapa palm is important to the Maya because it is a part of their cultural heritage and provides economic stability for women and their households.

Firstly, for its ecological value, the jipijapa produces fruits at the base of its cluster, which are sought after by animals that reside in the vicinity. Birds, turkeys, hunting dogs, and other species consume the fruits and seeds. In return, they contribute to seed dispersal, increasing the plant's population and, inevitably, the biodiversity within the community and the buffering

forest. Having multiple modes of seed dispersal allows the plant to grow abundantly in San Jose, giving the community access to the palm for cultural use.

Secondly, the jipijapa is culturally valued because it is used as a food source and as a tool for getting work done. Looking at how various genders engaged with the palm, findings revealed that men used it to assist with their farm work, such as utilizing the stems as straps to carry heavy items or the mature leaves as wrapping material for leafy vegetables to carry home. Men also weave pouches from the mature leaves to carry fruits and vegetables. At home, men use mature jipijapa leaves as string for tying and as thatch for patching leaks in the roof or for building the roofs of chicken coops. Women also use the jipijapa palm in household work, though to a lesser degree. Women weave mature jipijapa leaves into hand fans. These fans are utilized to fan the flames of the fire hearth when cooking. Additionally, women would strip the mature leaves into strings, which they used to fasten tamales while they boiled, which were then served as a meal.

Besides acting as a tool, the jipijapa palm also serves as a food source. Specifically, jipijapa shoots are a main ingredient in several cultural cuisines. Caldo, lancha, and fried jipijapa are the most popular dishes. Mealtime holds great significance within the Mayan community as it is vital for socialization among family members. During mealtimes, parents informally impart key knowledge and skills to their children, thereby passing on their cultural heritage.

Lastly, the jipijapa shoots and leaves serve as a commodity, giving the palm economic value, and shifting how community members engage with the plant. The jipijapa shoots are not always easily accessible for consumption, as new shoots grow during a new moon. Hence, community members who have excess shoots on their farms sell them. Additionally, women process jipijapa leaves into fibers, which they then weave into crafts, drawing on their traditional knowledge of the jipijapa palm to carve out a space for themselves within the tourism industry. Through craft creation, women earn an income. Having their own source of income is important because it provides a sense of financial stability for women to escape domestic abuse, plan for unforeseen expenses, and fund higher education for their children.

Objective 2*: To document the jipijapa craft value chain production process from extraction to market.*

Turning jipijapa leaves into fibers is a long and strenuous process. Firstly, the jipijapa pods are collected from farms or the bush (forest). After extraction, the pods are transported via

horseback or on foot to the household. After acquiring the desired number of pods, the artisans begin the 'cleaning' process, cracking the pods, removing the midribs, and separating the leaves into thin strips. After being 'cleaned', the leaves are then transferred to a pot of hot water and brought to a complete boil for about 30 minutes. The leaves are then removed from the hot water and placed in a separate container filled with lukewarm water to sit overnight. The next day, the leaves are placed in the sun to dry for about 15 minutes, then straightened to remove any clumps. The straws are then placed in the sun to hang once again. They remain in the sun until they turn white. To create the darker fibers (dark green or brown), after extraction, the mature jipijapa leaves are 'cleaned' and then left in the shade to dry.

After processing the leaves into fibers, the artisan begins weaving. Although some artisans weave whatever craft they desire, others create specific craft types upon orders from retailers. These retailers are either Mayan from other villages or business owners (gift shops, hotels, and resorts) from major tourist destinations. The retailers instruct the artisans about the type and number of crafts they want, and the artisans strive to complete the order. These craft designs include bread baskets, earrings, clips, coasters, and animal figurines, to name a few.

Upon completion of the craft, artisans deliver the order to the retailer using local buses. After leaving the community, the crafts are sold around the country in locations such as Punta Gorda, Placencia, Hopkins, San Ignacio, Caye Caulker, San Pedro, Belmopan City, and Belize City. At these locations, tourists purchase crafts as souvenirs to take home. The craft then travels internationally.

Objective 3: *To examine the Maya people's gendered relations with the jipijapa plant along the craft value chain.*

There are four core nodes within the jipijapa craft production: harvesting, transporting, processing, and selling. The first node, harvesting, involves inspecting, cutting, and collecting the jipijapa leaves and pods. Most women rely on their fathers and husbands to collect their jipijapa from the farm/ bush; hence, men are the primary jipijapa collectors. Notably, there are instances of women joining their male counterparts in harvesting the leaves and pods and collecting them on their own. The second node, transporting, involves moving the harvested leaves and pods from the farm/ bush to the household. Whoever collects the pods and leaves transports them to the household; hence, this node shows equal involvement from both men and

women. The third node, processing, features ‘cleaning’ the leaves and pods, turning them into fibers, and weaving them into crafts. Although some men assist their wives and daughters in ‘cleaning’ the jipijapa leaves and pods, women perform the majority of the other processing activities, such as boiling, soaking, sun-drying, and weaving. Hence, women dominate the processing node. The last node, selling, features the transfer of the crafts from artisan to retailer/consumer in exchange for cash. All the artisans in this study are women, and 96% of the interviewed retailers are also women; hence, findings revealed that mostly women were engaged in the selling node. Clearly, there is greater women’s involvement along the value chain in comparison to men’s.

One plausible explanation for higher women's involvement in the craft value chain is that jipijapa craft production is a business model designed to give women the option to earn an income from the comfort of their homes. This business venture needed no formal educational background, eliminating barriers and creating an inclusive space for all. Moreover, the value chain analysis revealed that men play a supportive role within the craft value chain; hence, any costs or benefits they obtain from the value chain are presumably experienced indirectly through their wives and daughters. Therefore, women receive the most benefits from engaging in the jipijapa craft value chain.

Engaging in the craft value chain yields several benefits for women, which include (1) earning an income, (2) creating social support among themselves, (3) developing confidence in their work, and (4) establishing networks with organizations outside the tourism industry, such as the Museum of Belizean Art (MOBA). Despite these benefits, women faced two major challenges: (1) craft time conflicting with household obligations, and (2) the lack of receiving fair compensation for their crafts. The craft creation process is quite time-consuming, often clashing with the time women need to complete their daily household tasks. Women struggle to manage their time to accomplish both their craft creations and household chores. Often, one task takes priority over the other. Despite the time women invest in creating their crafts, they do not receive fair payment for their work. Often, retailers offer to pay less than the craft’s worth, leaving the women to collect wages below the national minimum wage. Retailers, however, resell the crafts at a large profit over the original cost. Women artisans, the main contributors in the value chain, are working hard but are not earning fair wages for their crafts.

Objective 4*: To explore the impact of globalized changes on the jipijapa craft production and San Jose's future-making.*

The Maya have a long-standing relationship with the jipijapa palm, utilizing it to sustain their culture and livelihoods. Global changes, however, have shifted how the Maya use and interact with the palm. It is pivotal to highlight that the jipijapa craft itself emerged from these global changes, as people needed cash in response to market economy shifts. As such, the Maya began commodifying the palm. Thus, the jipijapa craft emerged, a result of globalized changes. Globalized changes have been impacting and continue to impact the Maya's relationship with the jipijapa palm. Climate change, COVID-19, and tourism are three significant occurrences that have impacted the Maya people's relationship with the jipijapa palm in San Jose.

Firstly, climate change is a global threat, but communities such as San Jose, which depend on agriculture and their natural resources to sustain their livelihoods, are most vulnerable. In April 2024, a month-long drought scorched the plants and trees in the southern district, drying up the creek and small water bodies. High temperatures combined with the dry wood, leaves, and debris created the perfect environment for wildfires to spark. And such was the case in May 2024 as a rampant wildfire raged through the Toledo District, decimating many farms and, with them, the jipijapa palm. The drought and wildfires, caused by climate change, depleted the jipijapa palm's population within the community and limited access to it.

Secondly, the COVID-19 pandemic stagnated Belize's economy, directly affecting stakeholders and operators in the tourism industry. The jipijapa craft production is highly dependent on tourism; as a result, none of the artisans were able to sell their crafts for the two years the country was under lockdown during the COVID-19 pandemic. This stagnation affected other areas of their lives, as parents struggled to pay their children's school fees and other expenses. After the restrictions were lifted, artisans began engaging more vigorously in the tourism sector to recover and improve their finances. This pursuit meant that more jipijapa palms were consumed at a higher rate to meet tourism's demands.

Lastly, tourism's demands, within the context of a depleted jipijapa palm population, are putting the remaining palms under duress. Tourism's demands required artisans to harvest the pods by the hundreds. Constant high consumption could result in the plant's scarcity and, eventually, its complete loss.

These globalized changes have not only impacted the community's interaction with the plant, but also with each other. After engaging in the tourism industry in the 1980s, the ways in which community members interacted with the jipijapa palm and with each other shifted. As the palm gained monetary value, minor conflicts began to surface, such as petty theft and a developing division between community members who want to consume the jipijapa for food and artisans who need them for craft production.

Despite these conflicts, community members envisioned a future amid globalized changes in which they would build a more resilient future that protects their lands, ensures the longevity of their natural resources, preserves their culture, and drives developmental initiatives. Firstly, to preserve their cultural practices, the community aspires to pass on its craft-making knowledge to the next generation. The local primary school began working towards this initiative by implementing CCLA with the syllabus, ensuring the children learn about their culture through creative arts. Secondly, to ensure the community continues to have access to jipijapa palm in the future, they seek to restore the jipijapa population and implement sustainable farming practices, such as agroforestry and crop rotation. Lastly, to create developmental initiatives, the community desires to become more technologically connected, build infrastructures to accommodate and encourage tourist visitation, and gift shops to display their craft creations. The community also aspires to enter the international market to export its crafts. These future-making goals are grounded in their cultural heritage and values.

6.3 Biocultural Design: Solution for Future-Making in San Jose

Consider the Maya people's relationship with the jipijapa palm like a tripod, as depicted in Figure 22. At the top of the tripod sits the jipijapa palm. Each foot of the tripod represents a valuable attribute of the palm: ecological, economic, and cultural. Each value is rooted in a significant role or service the jipijapa palm provides for the community. Ecologically, the jipijapa palm helps to increase biodiversity within the community and the Columbia River

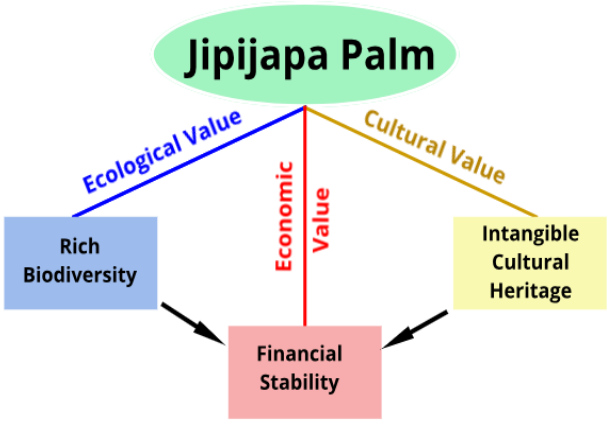

Figure 22: Diagram summarizing the significance of the jipijapa palm on the Maya people's livelihoods

Forest Reserve. Economically, through craft production and the sale of shoots, the jipijapa palm provides a means of earning income. Culturally, the Maya people employ their traditional knowledge to use the palm for food, work, and craft-making.

The tripod is specifically designed with ecological and cultural values at each end and economic value in the center. If the ecological or cultural values were removed, the tripod would topple over because it is unable to support itself. Similarly, when implementing future-making initiatives that omit either the ecological or cultural aspects of the jipijapa palm, they may result in more costs than benefits for the community. In contrast, if the economic value were omitted, leaving only the ecological and cultural values, the tripod would be faulty but would still be able to stand. Future-making initiatives need not always yield economic benefits. Sometimes, ensuring that communities' essential needs are met and their relationship with nature and their resources remain reciprocal is sufficient. It is important to note that ecological and cultural values contribute to economic value, but the economic value does not contribute back. Nevertheless, the best module is one that incorporates all three values. Such is the case of the future-making goals the San Jose community aspires to achieve: cultural continuity (cultural value), sustainable farming practices (ecological value), and community development (economic value). As such, employing a biocultural design framework is most appropriate for the community to achieve its goals.

The goal of biocultural design is to "provide an approach to innovation that is rooted in biocultural heritage and to support local peoples as they face livelihood challenges" (Davidson-Hunt et al., 2012, p.41). This framework entails the collaborative efforts of the local people and key stakeholders who cohesively utilize their knowledge, skills, and experiences to co-create a product or service (Davidson-Hunt et al., 2012; Rodríguez Valencia, 2020). The co-production of these products or services is rooted in the community's traditional knowledge and values, with the aim of responding to contemporary challenges (Davidson-Hunt et al., 2012; Rodríguez Valencia, 2020). Biocultural design is a multi-faceted process, and its application entails three key phases: inspiration, ideation, and implementation (Davidson-Hunt et al., 2012; Rodríguez Valencia, 2020).

The inspiration phase entails identifying the contemporary issue (Davidson-Hunt et al., 2012; Rodríguez Valencia, 2020). Key stakeholders and community members discuss current challenges and develop specific economic, cultural, political, ecological, and social objectives to

address them. In the ideation phase, the biocultural design team members begin brainstorming potential ideas (products or services) to address the issues and achieve the objectives (Rodríguez Valencia, 2020). These solutions are based on the community's biocultural heritage and their adaptive capacity (Davidson-Hunt et al., 2012). This phase also involves developing prototypes of products or services that meet the defined need. The implementation phase entails developing the final product or service and marketing and selling it. Hence, this phase entails developing economic opportunities and initiatives aligned with the community's values.

Biocultural Design Application:

Phase 1: Inspiration

Phase 2: Ideation

Phase 3: Implementation

Phase 4: Adaptive Capacity Building and Long-term Resilience

Employing a biocultural design framework in jipijapa craft production requires careful consideration, as the community of San Jose already has a product: the jipijapa craft. Despite having a product, the community possesses a prominent challenge: adding value to the craft. Notably, adding value to the craft coincides with one of the community's core goals, community development. To address this issue, a biocultural design framework can still be employed. Given the impacts of globalized changes on the jipijapa palm —specifically climate change and tourism's demands —an additional phase must be incorporated to ensure the endeavor is sustainable: adaptive capacity building and long-term resilience. The adaptive capacity building and long-term resilience phase entails enhancing adaptive potential and strengthening the community's ability to adapt to globalized changes by establishing long-term stewardship, ensuring continued benefits, and integration into the community's way of life. As such, the recommendations further explore the application of the four phases of biocultural design within the jipijapa craft production.

6.3.1 Application of Biocultural Design in Jipijapa Craft Production

Below is a potential explanation of how biocultural design can be adapted within Jipijapa craft production to help artisans increase the monetary value of their crafts. Notably, the biocultural design framework is not a one-size-fits-all and must be tailored to suit the context. Notably, this biocultural design initiative would feature a team comprising key stakeholders and the community.

Phase 1 Inspiration: *Identifying the issue*. As previously stated, the primary issue the community faces is that artisans in San Jose are not being paid the true value of their craft and are not compensated for the time and labor they invest in creating it. In response to this problem, community members aspire to create developmental initiatives to earn more revenue from their crafts. The community has articulated its economic objectives within the future-making aspirations:

> ***Goal:*** *To foster community development*
> ***Sub-objective 1****: To become more technologically connected by getting better internet access and phone signal*
> ***Sub-objective 2:*** *To build infrastructures such as a guest house and a gift shop*
> ***Sub-objective 3****: To increase tourist visitation within the community.*
> ***Sub-objective 4****: To standardize the craft selling price within the community*
> ***Sub-objective 5****: To export craft internationally*

Admittedly, some of these objectives require a large-scale project plan with a long-term timeframe to achieve them. This phase, however, involves assessing the objectives, eliminating those that are not yet feasible, and choosing the ones that directly resolve the issue. For this reason, sub-objective 4 is most feasible and directly addresses the issue.

Phase 2 Ideation: *Developing an idea to solve the issue.* Ideally, this phase is co-created and discussed with the community. For the purpose of this paper, it will entail the author's recommendations. Sub-objective 4 aims to standardize the craft selling price within the community. To achieve this objective, two elements must be considered: (1) craft size and (2) price determination. The community must brainstorm a way to standardize the craft's size and calculate its cost. As a recommendation, community members can create a size chart that assists them in determining the size of the craft (see Figure 23). The size chart can feature sizes 1 through 12. Each number represents an inch. When creating the crafts, artisans can place the base of the craft on the chart to measure and determine the size. A size-one basket, for example, would have a one-inch base; a size two basket would have a two-inch base, and so on. Two size charts can be made, one circular and the other oval. Oval bases are used to create figurines such as

turtles, crabs, and ducks. By utilizing the size chart, artisans will be able to standardize the size of their crafts.

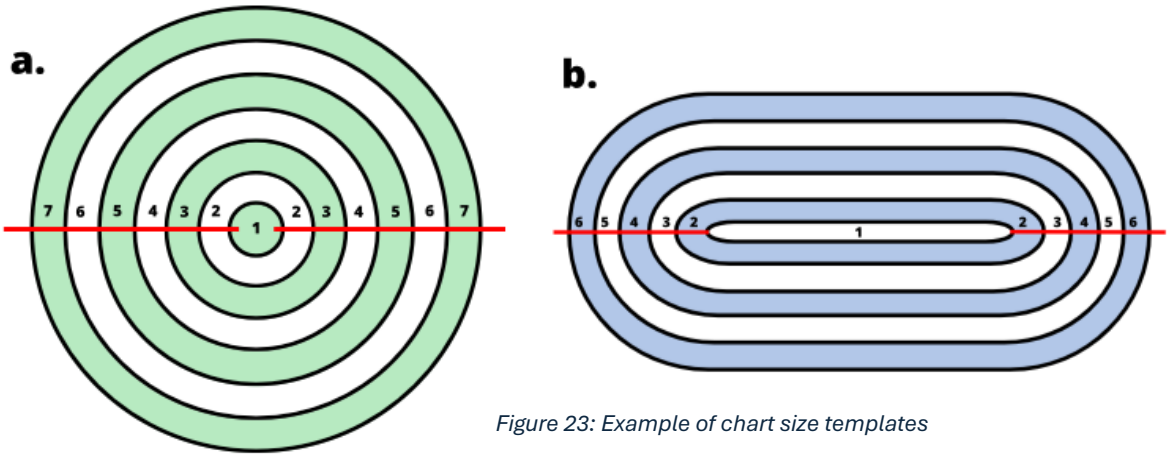

Figure 23: Example of chart size templates

Currently, artisans in San Jose determine the price of their crafts based on size and quality, while others base it on how others in the community sell their crafts. Although this method of price determination is understandable, it does not reflect the time and materials invested in the craft. Artisans can use a calculation template to determine the price of their craft. The template should feature key elements such as (1) the craft's size, (2) pattern detail, (3) materials used, and (4) hours spent weaving (see Table 5). Ideally, artisans should determine the cost they want to assign to each element, but for the purpose of this paper, an estimate is used.

Based on the size chart, each size corresponds to a dollar amount. A size-one basket is one dollar, a size-two basket is two dollars, etc. The details of the craft may vary. Common designs on the craft include flowers and checkerboard patterns, spiral patterns, "Belize" embroidery, and 3D embroidery. Each design contains its own level of difficulty, and as such, each should have a different cost. The flower and checker patterns can cost $1 (BZD) because they are the easiest to create. As the level of difficulty increases, so should the cost. Hence, a spiral pattern should cost $2 (BZD), a "Belize" embroidery should cost $3 (BZD), and the 3D embroidery should cost $4 (BZD). The materials refer to the white and dark jipijapa fibers and thread used to weave the craft. In the village, a pound of jipijapa fibers costs about $8 (BZD). The size of the baskets determines the amount of fibers used. Often, artisans do not utilize the entire pound of fibers nor an entire roll of thread (which costs $7). Additionally, some artisans process their own fibers. For this reason, determining the cost of material is complicated. Perhaps artisans who purchase their fiber ready-made can charge a set rate of $5 (BZD) per type

of fiber (white or dark) used in the craft. Whereas, artisans who process the fibers themselves can charge a labor fee of $5 per hour for the time they spend processing the leaves. Artisans who process the leaves must perform five tasks: harvesting, transporting, cleaning, boiling, and drying. When calculating the cost of processed fibers, the time spent performing these tasks should be included. Additionally, a $1 (BZD) fee can be charged for the thread. Traditional threads such as the *I'ke* and jipijapa can carry a fee of $5 (BZD) as they are more labor-intensive to make. Nevertheless, the minimum wage in Belize is $5; artisans can use this rate for the hours they spend weaving the crafts.

Using this template can help artisans determine a fair price for their craft. Consider the following example in Table 5. A small (size 1) four-petal white and brown basket that takes two hours to weave, and 5 hours to process the fibers, could cost the following:

Table 5: An example of the calculation template

Key Factors	Notes	Price (BZD)
Size	*1*	$1.00
Detail	*Four-Petal Pattern*	$1.00
Ready-Made Materials:		
White Fibers	*N/A*	$0.00
Dark Fibers	*N/A*	$0.00
Thread	*Brown Nylon*	$1.00
Time Processing Fibers		
Harvesting	*1 hour @ $5 per hour*	$5.00
Transporting	*1 hour @ $5 per hour*	$5.00
Cleaning	*1 hour @ $5 per hour*	$5.00
boiling	*1 hour @ $5 per hour*	$5.00
drying	*1 hour @ $5 per hour*	$5.00
Time Sewing	*2 hours @ $5 per hour*	$10.00
Total:		
BZD	-	$38.00
• **USD**	1USD= 2BZD	**$19.00**
• **CAD**	1CAD= 1.47 BZD	**$27.93**

With this calculation template, a small size-one basket could cost $38 (BZD), compared to its current price range of $2 to $5 (BZD). This method accounts for the time spent processing the fibers and sewing the craft, allowing artisans to earn a fair wage for their work and offering tourists and consumers an affordable price when they buy directly from the artisans. This template is intended to be a price starting point for artisans. Other costs must be considered, such as the value added for the utilization of the community's ICH and transportation expenses for delivering the crafts to the desired destinations, factoring that the further the destination, the higher the fee.

Phase 3 Implementation: *Developing the final product, marketing, and selling.* Usually, within this phase, the final product is developed. However, in San Jose's context, a product has been created; hence, artisans need only focus on standardizing the size of the crafts using the size chart.

After this task is completed, the next step is marketing the products. Marketing products and services within the Belizean market can be difficult for those unfamiliar with the process. The most secure option would be to ensure that community members receive the necessary training to market and operate as an entrepreneurial enterprise. The community would need to rely on its partners for assistance.

Several organizations offer services that support small businesses in Belize. The Ministry of Agriculture, Food Security, and Enterprise, for example, assists interested individuals in becoming a cooperative. Becoming a cooperative involves a six-month training process that includes enterprise development and capacity-building programs such as accounting (Ministry of Agriculture, Food Security, and Enterprise, 2021). They also assist with logo design, organizing, and participating in marketing and promotional events (Ministry of Agriculture, Food Security, and Enterprise, 2021). At the end of the training, the group is officially registered as a cooperative.

If community members are not interested in becoming a cooperative, BELTRAIDE offers an alternative. In 2025, BELTRAIDE launched the Digital Innovation to Boost Economic Development (DIBED program), which aimed to support 460 micro and small enterprises in Belize over three years (BELTRAIDE, n.d.). Recipients received a $4,000 grant, provided in services, that featured a "comprehensive digital business training tailored to their needs" (BELTRAIDE, n.d.). These services included the following: digital marketing, offline marketing

materials, development of a Google Business Profile, digital payments, HR payroll systems, accounting tools, cybersecurity tools and training, to name a few (BELTRAIDE, n.d.).

Both organizations offer services that help applicants create and market their products, a service that community members would greatly benefit from. Partaking in these initiatives is ideal; however, there is a foreseeable obstacle. San Jose community members are cash poor; hence, travelling to and from these trainings would be a financial challenge that would dissuade them from participating. Therefore, ensuring community members had free transportation would be ideal.

Marketing and displaying the craft are important, but how do community members encourage consumers to purchase it? This is where biocultural design is essential. The crafts are not simply products of someone's imagination, but rather rooted in the Maya people's cultural heritage. Rather than selling a product, they are sharing their cultural heritage. As Tanya mentioned in her interview, consumers are more likely to purchase crafts when they understand the cultural heritage they embody and the hard work artisans put into creating them. This aspect is where this study becomes essential: detailed documentation of the craft-creation process. The data from this study can be used to create audiovisual materials that tell the story of the craft-making process and of how the Maya use their ICH to sustain their livelihoods, way of life, and future. Adding this cultural heritage aspect gives the craft more than monetary value. Consumers who resonate with that fact will want to support.

Phase 4: Building Adaptive Capacity: *Strengthening the community's ability to adapt to change*. The jipijapa craft production is dependent on having access to the jipijapa palm. However, the jipijapa palm population in San Jose was depleted during the 2024 wildfire and drought. The community intends to restore the jipijapa source; however. Restoring the population is one aspect, as the palms remain vulnerable. As climate change worsens wildfire occurrences, fire management within Indigenous communities is urgent. Building fire breaks within farms is an initiative that seeks to strengthen Indigenous people's contribution as stewards and assist the community in adapting to globalized changes. Building a fire break (see Figure 24) on traditional farmlands in Belize requires a combination of traditional ecological knowledge and practical fire management. As a customary practice on communal lands, the community must collectively agree to participate in this initiative. Working cohesively with community members is essential as it creates a solid foundation for co-management, and community leaders and elders can

provide valuable information in developing a sound plan, such as identifying high-risk zones based on wind patterns, vegetation, and proximity to crops and homes. Creating a fire break entails clearing a zone approximately 3m to 10m wide by removing leaves, dried branches, and other material that could fuel a fire (Spring, 2025). For the fire break to be successful, it must be constantly monitored and maintained, regularly cleared, especially during the dry season. Creating fire breaks on the farm is one way the community can protect their produce and jipijapa palms. Restoring the jipijapa palm population is great, but ensuring it is maintained is even better.

Figure 24: Depiction of a fire break on a traditional Indigenous farm. Image generated by AI, July 01, 2025.

Employing biocultural ideals in their future-making initiatives can provide a solid foundation for the people of San Jose to respond to globalized changes and foster ecological stewardship, cultural resilience, and community development.

6.4 Study Limitations

Time was a major constraint within this study. For the duration of this study's data collection, I resided in the community of San Jose. Right off the bat, the women from the Mayflower Women's Group welcomed me warmly. However, as an outsider, I knew I had to build a good rapport with the other village members to gain their trust. When I was not conducting interviews, I engulfed myself in the community's daily activities. This entailed hanging out on the football (soccer) field to socialize or going with the women to the creek to wash my dirty laundry. It took a lot of time to build these relationships. I noticed that before the community members became comfortable with me, the data that I was yielding was sparse. But afterwards, members of the community were super supportive of the work I was doing. Those I encountered tried to assist in whatever capacity they could. My only wish was to have more time. Perhaps more time to learn the language. If I had learned the language, I would have been able to

connect with community members on a deeper level, which could have enabled me to collect more data.

As an ethnographic study, a considerable period of time in the field is required, about two to three months. However, due to immigration issues, I had to return to Canada before July 31, 2024. Additionally, in the first week of July 2024, Belize was threatened by a hurricane. Therefore, all data collection for that week had to be postponed. As such, the research was treated as a rapid ethnography study.

As previously mentioned, another limitation faced was the language barrier between English and Mopan Maya. Notably, I am fluent in both English and Creole; however, some elders in the community only spoke Mopan Maya. They understood Creole, but they did not know how to respond in it. Hence, they had difficulty conveying their thoughts. This language barrier may have hindered the collection of valuable information.

Lastly, information on the jipijapa palm within the Belizean context was limited. Gathering data on the jipijapa shoot value chain proved challenging; hence, this study focused primarily on the jipijapa craft value chain. Tracking the history of the craft creation in the community was also a challenge, as many of the women who were a part of the first women's group had passed away. One potential elder who could have been interviewed was ill when data collection was underway; therefore, she was unable to participate in the study. I had to rely on partial information and fragmented recollection from relatives and community members.

Despite time constraints, unforeseen weather changes, and limited existing data, I was able to interview more participants than initially estimated. Hence, the data collection session was successful.

6.5 Recommendations and Suggestions for Further Study

The Maya have a long-standing relationship with the jipijapa palm, and they are drawing from this relationship to respond to the pressures of globalized change and to reimagine the future they aspire to build. Jipijapa grows wild and abundantly in San Jose, and the plant does not need to be destroyed in order to use it for food, work, or craft. The jipijapa craft production is a fully sustainable enterprise grounded in cultural heritage. Despite this incredible foundation, artisans are not yielding the true monetary value for their product. As a recommendation, a community-led

‘value adding’ project can be developed. This project can take the form of a practicum for an NRI student. This project can focus on applying biocultural design to craft production as outlined in section 6.3.1 of this paper. The NRI could operate as a facilitator to assist the community. The goal is to help artisans earn more income from their crafts. If successful, this project can open doors for the community to achieve other objectives, such as exporting the crafts internationally.

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APPENDICES

APPENDIX A: Draft Interview Schedule

Several interview questions have been tailored to yield sufficient information to answer the research question. These questions will be asked to three different participant groups. As these questions are a draft, they are subject to change. Some questions may be amended or omitted after the pilot of the actual interview.

Artisans:

1. What value does the jipijapa plant have to you? How do you use it?
2. How did you learn to make the crafts? How long have you been creating the crafts? Why did you decide to create crafts?
3. Can you describe step-by-step how you make the craft?
4. Who helps you in making the craft?
5. Is it only the women who make the craft? What role, if any, do the men play in helping to make the craft?
6. Where do you get your jipijapa from?
7. How do you choose which type of craft (baskets, duck souvenirs, etc.) to make? What other styles would you like to try if given complete freedom? How do you price your craft?
8. Where do you sell your product? Do you work along with other communities?
9. How have making and selling crafts impacted you and your family?
10. What are some challenges that you have encountered throughout your time making crafts?
11. How has the pandemic impacted craft production? Are there any other events that have impacted craft production or the community? What are they, and how are these events affecting craft production?
12. Do you think people will continue to use the jipijapa palm in the future? How do you think people will use the jipijapa palm in the future?
13. How would you like to see the usage of the jipijapa plant be developed in the future?
14. What role do you think you play in shaping the future of the community?

Secondary Contributors:

1. What value does the jipijapa plant have to you? How do you use it?
2. How did you get involved in helping with the jipijapa craft creation? How long have you been helping? How often do you help?
3. How has the jipijapa craft production impacted you? How has the jipijapa craft contributed to the community?
4. How has the pandemic impacted the craft production? Are there any other events that have impacted the craft production or community? What are they, and how are these events affecting the craft production?
5. Do you think people will continue to use the jipijapa palm in the future? How do you think people will use the jipijapa palm in the future?
6. How would you like to see the usage of the jipijapa plant be developed in the future?
7. What role do you think you play in shaping the future of the community?

Retailers:

1. What is it about the crafts that attract you?
2. What non-monetary value does the craft have to you?
3. If you were the artist, how much would you price the crafts for?
4. How much are you willing to pay for the craft?
5. What other types of crafts would you like to see on display?
6. What would you like to see be done to improve the crafts so that more people would want to buy them?
7. How would you like to see the usage of the jipijapa plant be developed in the future?

Interview guide Fieldwork 2

Villagers

1. Have the jipijapa that were destroyed in May form the wildfires been restored?
2. Can you easily get jipijapa when you want to eat it? How far do you have to go to get the jipijapa? If the jipijapa you want is far away, how likely are you to go get it?
3. What is your favourite way to prepare a meal with jipijapa? Why?
4. Do you eat jipijapa for special occasions, or do you simply eat it for any normal day?
5. Has the way in which people prepare and eat the jipijapa changed over time?
6. Are there any food rituals or superstitions associated with the jipijapa as food (Example: you can't eat it after a certain time because you won't be able to digest it. Or you shouldn't go picking jipijapa in the afternoon because spirits live around it)?
7. After harvesting the shoots, how long does it last before it goes bad? How do you preserve it?
8. Do people sell jipijapa shoots for food? Where do they sell it? How much does it cost?
9. Do you know any restaurants or places that sell jipijapa on their menu?
10. How did people use the jipijapa before they started to use it for basket?
11. How did people treat the jipijapa plant before they started to use it for basket?
12. Do people in the village argue over the jipijapa plant?
13. Do you know how basket making began in the village? If so, how?

Artisans

14. Do you know how people learned to make fibers from the jipijapa plant? (program/ project?)
15. Was there any use for the fibers before people began to use it for the baskets?
16. How did the natural dyes program start? Why did it end? Do you think it will start again?

17. Is the money you earn from the jipijapa basket the main source of your income? What do you use the income you get from the baskets for?

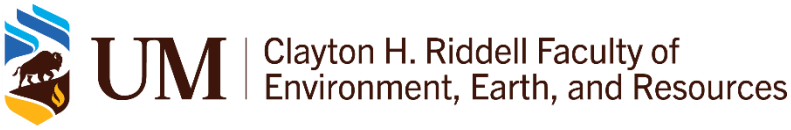
Market Vendors

1. Do you sell jipijapa shoots for food?
2. Which village or area do you get the jipijapa from?
3. After harvesting the shoots, how long does it last before it goes bad? How do you preserve it?
4. How much does it cost?
5. Have the fires that occurred in May affected how you price the jipijapa?
6. Who buys it most, men or women? Which cultural group?
7. How do customers know you sell jipijapa shoots?
8. How often do you sell jipijapa at the market? Do you sell jipijapa all year round or only in certain seasons?

APPENDIX B: Consent Forms

Interviews Only Consent Form

Natural Resource Institute
220-70 Dysart Road
University of Manitoba (Fort Garry Campus)
Winnipeg, MB R3T 2M6 Canada
T: 204-474-8373
F: 204-261-0038
nriinfo@umanitoba.ca



Research Project Title: Maya People's Gendered Relations with the Jipijapa Palm in San Jose Village, Belize

Principal Investigator, academic rank, and contact information: Julia Arzu, Second-Year Graduate Student, Phone: (xxx) xxx-xxxx, Email: arzuj@myumanitoba.ca

Research Supervisor, academic rank, and contact information:

Iain Davison-Hunt, PhD, Phone: +1-204-474–8680, Email: Iain.Davidson-Hunt@umanitoba.ca

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This consent form, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more details about something mentioned here or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

Dear participant,

My name is Julia Arzu, and I am a second-year graduate student attending the University of Manitoba, conducting qualitative research on the Maya People's gendered relations with the jipijapa palm along its craft value chain and examining the relationship that the Maya people have with the jipijapa palm and how they are using it to build the future they desire in San Jose Village. I ask that you read this form carefully and ask any questions that you may have before agreeing to be in the study. The purpose of the study is to investigate the Maya People's gendered relations with the jipijapa palm along the jipijapa craft value chain and explore the implications of gendered relations with jipijapa for future-making in the context of globalized change within San Jose Village, Belize. Ultimately, this research will be presented as a "detailed descriptive thesis report" report to my research committee, in partial fulfilment of the requirements for my master's degree in Natural Resource Management.

This is neither a paid nor profit research. Therefore, neither the interviewer of this study nor the University of Manitoba will receive any monetary benefits from this research, nor will any monetary funds be rewarded to you for your participation in this research. If you agree to be in this study, a session will be scheduled for an interview with you. The interview will last between 10 to 25 minutes. Interviewees will be audio-recorded with a digital voice recorder solely for the purpose of note-taking. After the data have been processed, the audio recordings will be immediately and permanently deleted. Notably, this study is confidential. At the beginning of the interview, you will be given a code in order to later code and identify your data. You may also choose a pseudonym to conceal your identity, or one can be assigned to you (for example, Artie Craft, Sabrina Weaver, Jewel Palm, etc). The interview will be transcribed verbatim using a software. The recordings will be securely sent to a UM-approved transcription service. The company will store your data securely and keep your identity confidential. The recordings and transcripts will be destroyed by the company once the transcripts have been sent to the research team. A short meeting will later be scheduled with you, during which a hard copy of your interview transcript will be printed and given to you to review. This is to ensure the accuracy of what was recorded. After you have confirmed the transcription's accuracy, the hard copy of the transcript will be recollected and destroyed. This review session will take about thirty (30) minutes. The principal researcher's copy of the transcript will be kept for two years past the submission of the thesis (August 2025- August 2027) in case of need of referral during any publication processes. After two years, the transcript will be permanently deleted in September 2027. This study will yield little to no risks to the participants. Notably, the primary risk you may encounter is revealing secret techniques or proprietary information outside of the standard jipijapa weaving practice.

A summary of the research findings (1-2 pages) will be composed and presented to you to ensure that you agree with the interpretation of the data. You will receive a hard copy of the summary 1-2 weeks after the completion of the data collection period (July 2024). You will be invited to attend a participants' meeting whereby you will be given a few minutes (about 30 minutes) to review the summary thoroughly. Another 30 minutes will be provided to discuss your feedback and queries. Your feedback will be taken into consideration, and amendments will be made. This process is essential to ensure the study's validity and reliability. You are asked not to share any information discussed in the session with others not present in the meeting. At the end of this research, the information gathered will be securely stored away on the principal investigator's University of Manitoba's OneDrive. As per the Faculty of Graduate Studies regulations, the research supervisor will be the only person, besides the principal investigator, who will have access to the data collected. In the event of publication in a research journal, the Maya Leaders Alliance (MLA), Toledo Alcalde Association (TAA), and participants (artisans and secondary contributors) will be contacted to discuss ownership and authorship to give credit and acknowledgment to those involved in the study.

The decision to participate in this study is entirely up to you. You may refuse to take part in the study at any time without affecting your relationship with the investigator of this study or the University of Manitoba. You have the right not to answer any single question, as well as to withdraw completely from the interview at any time without penalty. Your request to withdraw will be upheld and implemented immediately after your verbal desire to do so. Additionally, you have the right to request that the interviewer not use any of your interview material. You have the right to ask questions about this research study and to have those questions answered by me before, during, or after the research. **You can retract your participation after giving consent from now until**

September 30, 2024. If you have any further questions about the study at any time, feel free to contact me, Julia Arzu, at **arzuj@myumanitoba.ca** or by telephone at (xxx) xxx-xxxx. You can contact my advisor, Dr. Iain Davidson-Hunt, at **iain.davidson-hunt@umanitoba.ca** or **+1-204-474-8680**. If you like, a summary of the results of the study will be sent to you.

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and /or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

The University of Manitoba may look at your research records to see that the research is being done in a safe and proper way.

This research has been approved by the Research Ethics Board at the University of Manitoba, Fort Garry campus. If you have any concerns or complaints about this project, you may contact any of the above-named persons or the Human Ethics Officer at 204-474-7122 or HumanEthics@umanitoba.ca. **A copy of this consent form has been given to you to keep for your records and reference.**

---------- **Provide for Signatures as Required:** ----------

Participant's Signature: _____ Date: _____

Researcher and/or Delegate's Signature: _____ Date: _____

Retailers Interviews Consent Form

Natural Resource Institute
220-70 Dysart Road
University of Manitoba (Fort Garry Campus)
Winnipeg, MB R3T 2M6 Canada
T: 204-474-8373
F: 204-261-0038
nriinfo@umanitoba.ca

UM | Clayton H. Riddell Faculty of Environment, Earth, and Resources

Research Project Title: Maya People's Gendered Relations with the Jipijapa Palm in San Jose Village, Belize

Principal Investigator, academic rank, and contact information: Julia Arzu, Second-Year Graduate Student, Phone: (xxx) xxx-xxxx, Email: arzuj@myumanitoba.ca

Research Supervisor, academic rank, and contact information:

Iain Davison-Hunt, PhD, Phone: +1-204-474–8680, Email: Iain.Davidson-Hunt@umanitoba.ca

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Dear participant,

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Participant Observation and Interviews Consent Form

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Winnipeg, MB R3T 2M6 Canada
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nriinfo@umanitoba.ca

UM | Clayton H. Riddell Faculty of Environment, Earth, and Resources

Research Project Title: Maya People's Gendered Relations with the Jipijapa Palm in San Jose Village, Belize

Principal Investigator, academic rank, and contact information: Julia Arzu, Second-Year Graduate Student, Phone: (xxx) xxx-xxxx, Email: arzuj@myumanitoba.ca

Research Supervisor, academic rank, and contact information:

Iain Davison-Hunt, PhD, Phone: +1-204-474–8680, Email: Iain.Davidson-Hunt@umanitoba.ca

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This is neither a paid nor profit research. Therefore, neither the interviewer of this study nor the University of Manitoba will receive any monetary benefits from this research, nor will any monetary funds be rewarded to you for your participation in this research. If you agree to be in this study, the researcher will request to work alongside you and observe your interaction with the jipijapa plant over a period (1- 3 days for about 2-3 hours per day). Subsequently, another session will be scheduled for an interview with you. The interview will last between 10 to 25 minutes. Interviewees will be audio-recorded with a digital voice recorder solely for the purpose of note-taking. After the

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