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Determinants of actors' involvement in the rattan value chain in Meme Division, Cameroon

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Abstract

This study examined the determinants of actors' involvement in the rattan value chain in the Meme Division, Cameroon. Explanatory sequential design was used. A multistage sampling technique was used to select 332 participants. Primary and secondary data sources were used. Descriptive statistics were used for data analysis. Results suggest that most rattan harvesters/collectors fall in the passive typology (51.1%), processors, activity-specific (70.2%), artisans and designers, active typology (62.1%) and government agencies and institutions, interactive typology (69%) in the value chain. Findings on the determinant of actors' involvement in the rattan value chain reveal that ecologically, rattan availability (36%), economically, income generation (35%), socially, community structure and networks (44%), and culturally, communal traditions (54%) were the most notable determinants. Results on the barriers impacting actors' involvement in the rattan value chain revealed that ecologically, deforestation (56%), economically, insufficient capital and investment opportunities (34%), socially, lack of skilled labour (37%) and gender norms (36%), were the most significant barriers. Government and organizations worldwide are urged to update environmental laws to reduce deforestation's ecological impact, foster investment opportunities, promote skills training, and challenge cultural stereotypes linked to participants in the rattan value chain, thereby improving the sustainability of rattan production.

Keywords: Actors; Cameroon; Determinants; Involvement; Meme Division; Rattan; Value Chain

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1. Introduction

The world's second-largest unbroken dense tropical rainforest, the Congo Basin, encompasses Cameroon (Sinkgraven, 2024), which is home to 1,200 floral varieties and over 7,000 plant species, showcasing a remarkable biodiversity (Yobo et al., 2020). Due to its high level of forest cover, which includes savannah, mountain cloud, and moist lowland forests, Cameroon is often referred to as "Africa in miniature" (Anaka and Edawa, 2019). Despite mounting pressure from the extractive, plantation, agricultural, and population expansion sectors, which accelerate land-use changes, these forests continue to provide significant environmental, economic, and social services and products (Enomah, 2022). Non-Timber Forest Products (NTFPs), including rattan, are a diverse range of biological resources derived from savannas, woods, forests, and managed or altered tree-based landscapes in Africa (Amusa et al., 2024), have long been used to meet subsistence needs by supplying materials, tools, energy, food, medicine, cosmetics, fodder, and cultural artefacts (Hwang, 2017). Additionally, they are exchanged, and the chain from forest to customer is situated in an environment that is challenging for businesses to operate in (Weiss et al., 2020), has a significant degree of corruption, a sizable population residing in rural areas, poor levels of development, and extreme poverty and inequality (Ingram and Tieguhong, 2013).

According to Sunderland (2002), there are roughly eighteen rattan species in Cameroon; however, *Laccosperma secundiflorum, Eremospatha macrocarpa*, and *Eremospatha wendlandiana* are highly commercially valuable species (Nfornkah et al., 2021). Cameroon only produces rattan from wild sources (Nfornkah et al., 2021). State forests are nearly invariably the source of the raw material. Although the government has restricted the commercial gathering and transportation of rattan, it has granted the local community the "*droit d'usage,*" or the ability to gather specific NTFP for personal use (Laird et al., 2010). Taxes must be paid to the government by collectors (Republique du Cameroun, 1994). In certain places, overexploitation results from the frequent disregard for these laws and regulations (Che et al., 2021). In Cameroon, rattan has a relatively straightforward commercial channel, motivating actors' interest in the rattan value chain. The main actors in the production and transformation of rattan are harvesters, buyers or sellers of raw cane, craftspeople, traders or retailers, and consumers of the finished goods (Biyi-Ayetoso and Jimoh, 2024). Each of the several categories of gatherers works for themselves. The harvesters cut, remove the leaves, clean, knot the rattan in bundles, and transport the mature cane stems to the village processing facility after spotting them in the jungle (Defo, 2004).

The involvement of actors in the rattan value chain is determined by a combination of economic, social, cultural, and structural factors (Haryono et al., 2022). These determinants vary based on the specific stage of the value chain and the local context (Endalamaw et al., 2013). Most people agree that rattan is one of the most significant NTFPs in Cameroon (Endamana et al., 2016; Kimengsi et al., 2022; Nfornkah, 2022), with many value chain participants. As food, fibre, and structural material, they are highly valuable in a variety of uses (Arafat, 2024). They represent a wide range of goods, not just a few. Rattan is significant to the underprivileged and impoverished for several reasons (Amoah et al., 2017). Rattan is a vital resource in daily rural life, used for subsistence, as tools, agricultural stakes, and utility items, as well as for houses and handicrafts (Belcher, 1998). Additionally, these resources serve as the foundation for the growing small- and medium-sized business sector in many African countries (Kozak, 2009). They provide high-value goods, foreign exchange profits, and substantial and growing employment and income-generating prospects. Rattan thus offers great opportunities for sustainable development that will help the underprivileged (Arafat, 2024)

Notwithstanding the tremendous contributions made by the rattan production and transformation sector, Cameroon's rattan industry is beset by numerous issues that limit the involvement of actors in the value chain. The primary obstacles include: unsustainable rattan harvesting, inconsistent cane supply, inadequate storage facilities, inadequate working tools, official harassment and pervasive corruption, inadequate rattan preparation techniques, raw material waste, low quality outputs, inadequate design innovation, low demand, inadequate technical skills and management, a lack of appropriate legislative and regulatory framework, and a lack of money or credit facilities (Defo, 2004) and locally endangered as a result of habitat loss and degradation (high economic value, agricultural expansion, etc.) (Nfornkah et al., 2021). This paper uses Agarwal's (2001:1624) typology of participation to address the actors' level of involvement in the rattan value chain in the Meme Division. It includes levels such as nominal (membership), passive (being informed), consultative (being asked for an opinion), activity-specific (performing tasks), active (expressing opinions and taking initiative), and interactive (influencing decisions). This framework is appropriate in this paper because it is used to analyze how people engage in community and group activities, particularly in contexts like natural resource management. To fill this gap, this paper examined the determinants of actors' involvement in the rattan value chain in the Meme Division, Cameroon. Specifically, the research examined (i) the actors' level of involvement in rattan production and transformation, (ii) determinants of actors' involvement in rattan production and transformation, and (iii) barriers to actors' involvement in rattan production and transformation in the Meme Division.

2. Materials and methods

The Southwest region of Cameroon is divided into Six Divisions (Atom, 2023; Ndah et al., 2023), including the Meme Division. East of the Greenwich Meridian, the Division is located between latitudes 4°N and 6°N of the Equator (Kimengsi, 2014), and longitudes 9°E and 10°E (Chenaa et al., 2018). It is bounded to the north and east by the Kupe Manenguba and Littoral Region, respectively (Ndah et al., 2023), and to the west and south by the Ndian and Fako Divisions (Frederick et al., 2023) (Figure 1). The Division was home to an estimated 403,000 inhabitants (Epule & Bryant, 2016). Five Subdivisions comprise this Division: Mbonge and Konye (mostly rural) and Kumba I, II, and III (largely urban) (Mbella & Fonjong, 2018). According to the Meme Divisional Delegation for Agriculture and Rural Development (2006) and Kimengsi et al. (2013), Meme Division is located in the equatorial climate zone, which is hot and humid with two main seasons: the rainy season, which lasts from March to October for approximately 8 months, and the dry season, which lasts from November to February for approximately 4 months. Based on statistics from 1990 to 2010, the annual rainfall is roughly 2,500–2,800 mm, with a mean of 2,586 mm (World Food Programme, 2024). It is concentrated in peaks from July to September that can surpass 500 mm per month, but even drier months have 1–80 mm (World Food Programme, 2024). The Meme Division's temperatures varied from 26ºC in Bairto to 24.4ºC in Kumba, with Konye experiencing somewhat higher temperatures due to its inland location (Ngulle et al. 2007, cited in Frederick Mbufor et al., 2023). The relative humidity is at least 85% in this area (Kimengsi et al., 2013). NTFPs, particularly rattan, which is known to flourish in these rainfall and temperature circumstances, grow throughout these two distinct seasons and make it suitable for actors to be involved in the rattan value chain in the Meme Division.

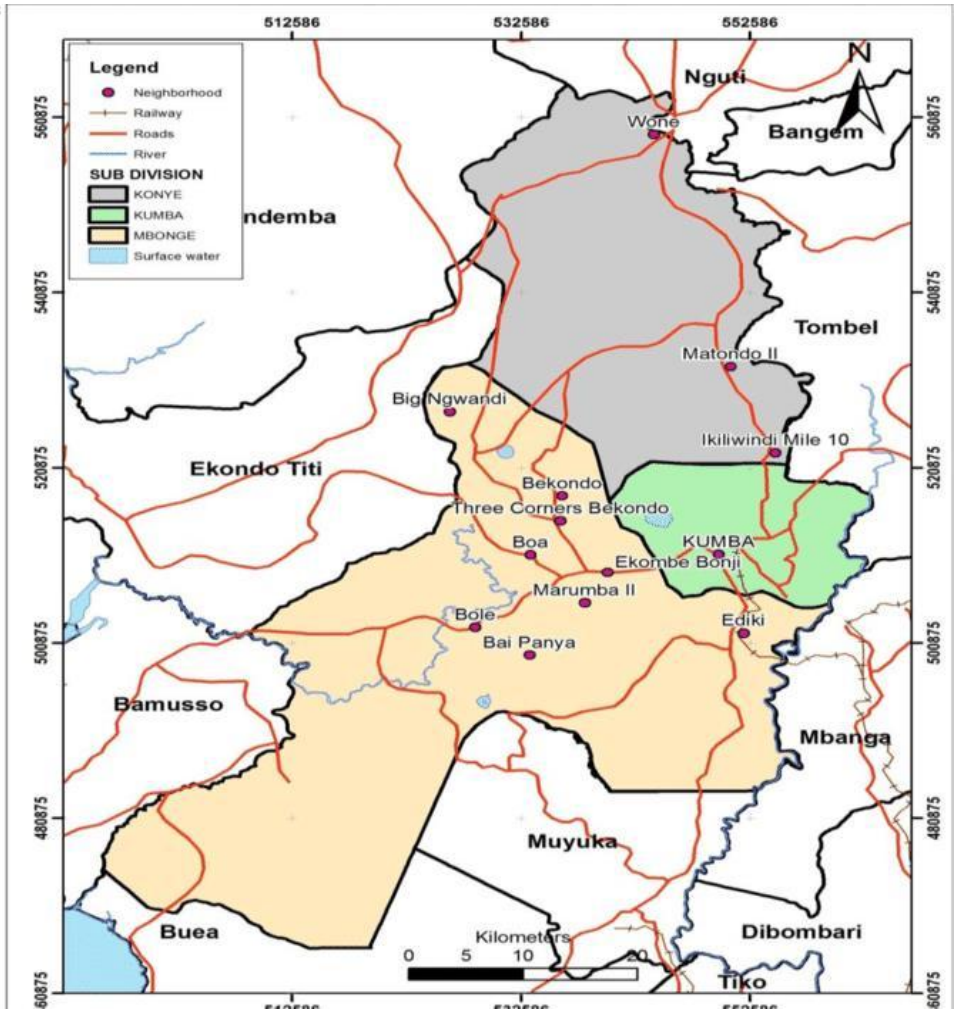


Figure 1: Meme Division showing its five Subdivisions (Source: Adopted from Mbella and Fonjong, 2018).

2.1. Research design

This study employed an explanatory sequential design, combining quantitative and qualitative techniques to examine the determinants of actors' involvement in the rattan value chain in Meme Division, Cameroon. The qualitative data provide a deeper context and understanding of the quantitative findings, helping to explain why the outcomes were as they were (Timans et al., 2019). A survey was conducted among the actors involved in the rattan value chain in the Meme Division of the Southwest Region of Cameroon between January and June 2024. The benefits of using quantitative methods include objectivity, replicability, efficiency in data processing, and generalizability through high sample sizes (Almusaed et al., 2025). This makes it possible to draw conclusions that are statistically valid, foresee trends clearly, and produce consistent results that can be compared over time and between groups. However, to comprehend the actions, motivations, and experiences of the actors involved in the rattan value chain in the Meme Division, the researchers employed qualitative

methods such as focus group discussions, in-depth interviews and observations (Tenny et al., 2017) to investigate non-numerical data. The quantitative data were then triangulated with the qualitative data. Data triangulation reduced bias by cross-referencing data from various methods, times, or samples; improved comprehension by offering a more comprehensive and complex picture of a phenomenon; and increased credibility and validity by using multiple data sources to confirm findings (Bans-Akutey and Tiimub, 2021). By using this tactic, researchers can balance the shortcomings of one approach with the advantages of another, producing more reliable and solid findings.

2.2. Study population

The research population included the estimated 403,000 residents of the five Subdivisions that comprise the Meme Division. The target population include a wide range of actors involved in the rattan value chain in the Meme Division. Rattan has a yearly and seasonal impact on several Subdivisions, including Mbonge, Konye, Kumba I, Kumba II, and Kumba III, as well as the actors responsible for managing the value chain in each Subdivision. There were roughly 11,759 persons living in the sampled communities, including traders, small-scale rattan producers, governmental and non-governmental organizations, and other actorsinvolved in the rattan value chain. This study aimed to shed light on how the rattan value chain affects the appropriateness of actors' involvement in the Meme Division.

2.3. Sample size and sampling procedure

A sample size of 332 participants was used in the study. The multistage sampling method was adopted. Initially, fifteen (15) villages in the Meme Division- Ikiliwindi, Baduma, Mbakwa Supe, Mbu, Mosanja, Fiango, Mofako Butu, Big Butu, Matoh Butu, Mbalangi, Ediki, Banga Bakundu, Bombe Bakundu, Mundame, and Mambanda- were chosen based on the population and the number of households involved in the rattan value chain to receive questionnaires. To facilitate comprehension, these communities were further divided into four categories in the second stage: Meme North, South, East, and West. The researchers also identified every household with actors involved in the rattan value chain in the third stage. In the fourth stage, 83 households with at least one household member involved in the rattan value chain were chosen by simple random sampling without replacement from each of these four categories to create a representative sample of 332 participants for the quantitative data. For the qualitative investigation, 16 participants were chosen via snowball sampling. That means each group in the Meme Division has four participants. Each group also participated in one (1) focus group discussion, making a total of four focus group discussions and the results were triangulated.

2.4. Instruments of data collection

Structured questionnaires were distributed to households in the four groups that represented the Meme Division to collect quantifiable data made up of both closed and open-ended questions. The two portions of the questionnaire were as follows: Section A of the questionnaire focuses on the sociodemographic characteristics of the respondents, while Section B concentrates on the primary concerns of the study. Each item was measured separately, and participants were asked to tick (√) from a range of possibilities to determine the level of actors' involvement and the determinants of participation in the rattan value chain. One focus group

discussion was held in each of the four groups chosen for the study, for a total of four focus group discussions. Four in-depth interviews were arranged in each of the four groups, for a total of sixteen in-depth interviews with both male and female actors involved in the rattan value chain. Information was also gathered from observations made throughout the Meme Division.

2.5. Method of data analysis

The Statistical Package for Social Sciences (SPSS) version 20 was used to manually sort the questionnaire data and perform descriptive analysis, producing statistical tables and charts in the process. Using Microsoft Excel version 13, statistical data were further examined and shown as frequency and percentages. The researchers used Agarwal's (2001: 1624) six categories of participation: nominal, passive, consultative, activity-specific, active, and interactive (empowering), to analyze the first objective, which was to examine the actors' level of involvement in the rattan value chain. Descriptive statistics were used to analyze the second objective, which was to look at the determinants of actors involved in the rattan value chain.

The study employed Braun and Clark's (2006) methodical approach to thematic analysis, which consists of six stages: familiarising oneself with the data, writing the initial code, detecting themes (the third step), reviewing, defining, and writing up. This adaptable and approachable technique helps researchers get deep insights and grasp difficult problems by arranging and assessing data to identify crucial relationships (Braun and Clarke, 2006). To create the report, one must become acquainted with the data, create preliminary codes, look for themes, evaluate those themes, and then define and label them (Naeem et al*.,* 2023). The data from in-depth interviews were quoted verbatim and lightly edited to triangulate the findings.

3. Results

The data gathered for the study are presented and examined in this part. To create representative samples of Meme Division in the Southwest Region of the Republic of Cameroon, 332 questionnaires were distributed to respondents in four community categories: Meme North, South, East, and West. Two hundred and eighty-two (282) questionnaires, or 85% of the total, were completed and returned after the researchers' best efforts were combined. With the insecurity caused by separatist fighters because of the Anglophone crisis affecting the two English-speaking regions of Cameroon, fifty (50) surveys, or 15% of the total, were not returned. So, the analysis of the data was based on the 282 questionnaires that were at the disposal of the researchers.

3.1. Actors' level of involvement in the rattan value chain

This section used Agarwal's (2001:1624) typology of participation to determine each actor's level of involvement in the production and transformation of rattan. It includes levels such as nominal (membership), passive (being informed), consultative (being asked for an opinion), activity-specific (performing tasks), active (expressing opinions and taking initiative), and interactive (influencing decisions). Different results are produced by the roles played by actors in the rattan value chain from harvesting to processing and consumption. This establishes the value chain's viability and the results presented in Table 1.

The data in Table 1 reveal that most harvesters/collectors, with 144 responses, or 51.1%, fall in the passive typology. This suggests that they are typically informed of choices that could impact the forest's condition, which prevents the development of various rattan species. Since they see the forest as an essential component of their life and are therefore viewed as its stewards, they are essentially knowledgeable. Respondents who fall into the activity-specific category had 39 responses, or 13.8% of the total in the rattan value chain. This suggests that their primary responsibility in performing tasks is to gather rattan from the bush or wild and sell it right away to small-scale processors and artisans in neighbouring towns and cities like Kumba. The findings further that harvesters/collectors who fall into the consultative typology had 99 responses or 35.1% in the rattan value chain. This typology of actors is not very important since it suggests that their opinions do not affect the outcome of the ultimate decision. During an in-depth interview session, a male participant who doubles as the Quarter head and works as a rattan collector in Baduma disclosed that:

> "*He and many others were consulted about a portion of the road which was to pass through a community forest during the construction of the Kumba-Mamfe road. Nevertheless, the contractors did not adhere to the decisions reached at the consultative meeting"* (P 4. Baduma, Meme North).

The data in Table 1 shows that most rattan processors, with 198 responses, or 70.2%, fall under the activity-specific typology in the rattan value chain. This is because they are only responsible for performing tasks such as the processing of raw rattan so that artists can utilize it directly. This suggests that their role throughout the value chain is relatively specific. Here, cleaning, sorting, applying pesticides, and sunbathing are the primary processing steps. Processors who fall into the nominal typology had 1 response, or 0.4% of all the responses in the rattan value chain. This implies that this group of actors are just members of the value chain, whereas processors who fall into the passive typology had 65 responses, or 23.0% of the total responses in the rattan value chain. This suggests that this group of actors are never allowed to voice their ideas and are only informed of the final decisions. In an interview session in Mundame, a female participant who doubles as a rattan processor reiterated that:

> "*We were just informed about the decisions, and a part of the forest we have been harvesting cane from was cut and included in the national park area… when the Bakossi National Park was created*" (P 1. Mundame, Meme East).

Another male participant and a rattan processor from Meme West supported that:

> *"We were never part of the meetings held regarding the creation of the park, and after some time, we just saw a notice informing us that from this period to this period work will start in our area, but we never took it seriously. After a while, the work started, and part of our forest was destroyed and even our farms"* (P 5. Mofoka, Meme West).

Succinctly, another male participant and a processor said:

> *"To date, our community has never been compensated for the damage, and we did not know who to hold responsible since we were never part of the planning process. For so many years, they kept telling us that the government would take responsibility, and nothing seems to be happening.*

During that period, life was very difficult following the destruction we endured" (P 2. Mambanda, Meme East).

Rattan processors who fall into the consultative typology were among the lowest, with 18 responses, representing 06.4%, and processors who fall into the nominal typology had 1 response, with 0.4% in the rattan value chain.

According to Table 1, most artisans and designers fit into the active typology with 175 responses, or 62.1% in the rattan value chain. This suggests that this group of performers are responsible for expressing opinions and taking initiative, such as starting the designs on their own, without any input from anybody else. This is because no organization or group oversees operations in this area inside the Division; as a result, actors are free to take any kind of initiative throughout the Division, which is the subject of this study. They also take the initiative on their own since they want to remain current and equally satisfy customers' demands for different styles of rattan products.

A male artisan from Mbalangi, Meme South, explained that:

His nature of work has to do with creativity. That most of the craft work produce are conceived and designed by themselves without support from external sources. If you are not creative in this work, you will not be able to make money because many people are involved in this field. I can say the reason is that raw material is commonly found in the forest with no restrictions, so anyone who has nothing to do just jumps into it. So, I will tell you that all we do is make our personal effort and survive (P 8. Mbalangi, Meme South)

The data shows that artisans/designers who fit into the activity-specific typology had responses, or 34.0% in the rattan value chain. This suggests that their involvement is limited to the crafts they perform. Their role is incredibly limited to transforming rattan into a variety of objects, such as chairs, baskets, and other accessories. A female participant from Meme South during the in-depth interview advanced that:

"I cannot go on producing other things because my work is to clean the rattan cane and polish it well, then hand it over to the artisan, who is now the one to continue producing whatever he wants to produce. I will still tell you that most of the artisans do not even want some of us to know how to produce the craft work they are producing. The reason is best known only by them. And even if you are interested in learning, they are charging plenty of money and if you cannot afford what do you do? It means you must remain where you are" (P 6. Mbombe Bakundo, Meme South)

Artisans and designers who fit into the consultative typology with 8 responses, or 2.8% of the total in the rattan value chain. This suggests that, even though their opinions are periodically asked, they are not included in the decision-making process because they are not involved in the gathering of raw rattan from the jungle and do not have a body that represents them. The data indicate that artisans and designers fit into the passive typology with 3 responses, or 1.1% of the total in the rattan value chain.

Table 1 reveals that government agencies and institutions fall into the interactive typology (empowering) with 195 responses, or 69% of the total responses in the rattan value chain. This suggests that they have a voice in the decision-making process since they are state actors, more precisely, members of the Division's

numerous delegations and councils. Participants of a focus group discussion in Mbakwa Supe, Meme North asserts that:

> *The impact of this group of actors is not particularly felt because they are seldom seen in the field and frequently fail to show up at their offices to address problems raised by other actors involved in the rattan value chain. The value chain's capacity to function effectively is negatively impacted* (FGD 3, Meme North)

Results indicate that government agencies and institutions fit into the active typology with 79 responses, or 28% of all participants. This implies that this group of actors asserts their involvement in decision-making, especially concerning issues pertaining to forest exploitation. In contrast to this viewpoint, local community actors would rather believe that these people are acting in their own best interests rather than those of the entire value chain, as was the case in the earlier example.

According to information from a focus group discussion in Ediki, Meme South, participants stated that:

> *Hierarchies make decisions and want us to respect them without thinking about how these decisions are going to affect us. They are attempting to further their interests rather than the interests of the average person* (FGD 1, Meme South).

The table also revealed government agencies and institutions which fit into the nominal, passive, and consultative categories, which recorded no responses, while government agencies and institutions which fit into the activity-specific category, with 8 responses, or 3% of all responses, are part of the rattan value chain.

Table 1. Actors' level of involvement in the rattan value chain

Actors	**Typologies**						
	Nominal	Passive	Consultative	Activity specific	Active	Interactive (Empowering)	Total
Rattan harvesters /Collectors	00 00%	144 51.1%	99 35.1%	39 13.8%	00 00%	00 00%	282 100%
Rattan processors	01 0.4%	65 23.0%	18 6.4%	198 70.2%	00 00%	00 00%	282 100%
Artisans/designers	00 00%	3 1.1%	8 2.8%	96 34.0%	175 62.1%	00 00%	282 100%
Government agencies /Institutions	00 00%	00 00%	00 00%	8 3%	79 28%	195 69%	282 100%

3.2. Determinants of actors' involvement in the rattan value chain

A diverse range of actors are involved in the rattan value chain in the Meme Division, and they all play vital roles in their efforts to participate in the value chain. Reported factors associated with actors' involvement in the rattan value chain were examined under the following: ecological factors, economic factors, and social and

cultural factors that influence actors' participation in the rattan value chain. Participants were required to choose only one option under each category of factors to determine the most influential variable influencing actors' involvement in the value chain.

3.2.1. Ecological factors influencing actors' involvement in the rattan value chain

Ecological factors influencing actors' involvement in the rattan value chain were examined with the use of variables such as rattan availability, forest accessibility, soil conditions, favourable climate and others, as shown in Figure 2. The figure reveals that 100 respondents identified with the availability of rattan, representing 36% as a factor influencing the actors involved in the value chain. This suggests that rattan availability has a significant impact on actors' involvement in the value chain. This was followed by forest accessibility, with 88 respondents, or 31%, not too far behind rattan availability. This is merely because, in contrast to the Southern and Eastern zones of the Meme Division, the great bulk of the forest, particularly in the Meme West and North, is still in excellent condition and conducive to rattan growth. In Mbakwa Suppe, a neighbourhood in Meme North, for example, a male local harvester/collector who also works as an artisan revealed, *"I weave baskets because there is abundant cane in a section of my farm. I don't have to go far to gather it whenever I want"* (P 10. Mbakwa Suppe, Meme North). He believes that the availability of the resource has a major role in his involvement in the rattan value chain. Results show that soil conditions had 51 respondents, or 18% of all responses, while those who said favourable climate were 40respondents, or 14%, and others were 3, representing 1% of total responses. This suggests that these factors are not very important in determining actors' involvement in the rattan value chain.

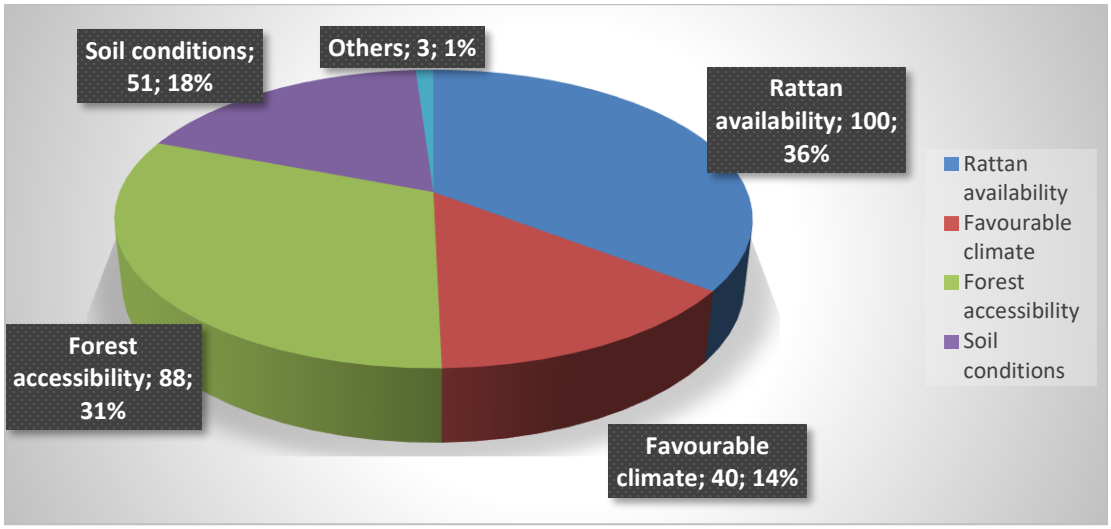


Figure 2. Ecological factors influencing actors' involvement in the rattan value chain

3.2.2. Economic factors influencing the actors involved in the rattan value chain

Economic factors were captured in this study under the following variables: income generation, market demands, market access, transport infrastructure and others. Figure 3's findings showed that the most notable

economic factor influencing actors' involvement in the rattan value chain is income generation, with 98 respondents, or 35% of all responses. This suggests that income generated from rattan-related activities is a significant source of livelihood support, particularly in times of recession. According to information from a focus group discussion in Mosanja, Meme North, participants were of the view that:

> *Income generation is the main reason why actors are involved in the rattan value chain in the Division. Looking at our present economic situation in the country, salaries are very poor, goods are expensive in the market, and the people in this community produce so many children, with the need for other subsidiary means of sustenance to boost their financial situation. Their salaries alone cannot support the family's needs or sales from farm produce. They need money to pay for children's school fees, hospital bills, food, means of transport and other basic family needs. So, we can say that income generation is the main reason why we are involved in the rattan value chain* (FGD 3. Mosanja, Meme North).

This was closely followed by market access, with 71 respondents, or 25%, while market demand had 59 respondents, or 21%, respectively. For example, market access, demand, and prices have a greater impact on actorsinvolvement in the rattan value chain in Meme South. During a focus group session, a processor in Bakundu, Meme South, disclosed that:

> *With just 1000 Franc de la Communauté Financière Africaine or Franc of Central African States (FCFA), he can access the Kumba main market, which is his main sales point. He went further to reveal that he can generate close to 350,000 FCFA annually from the sale of rattan products. This is very important in sustaining his household during off seasons, as he uses these proceeds (income) from this sector to provide necessities for his family* (P 16. Bakundu, Meme South).

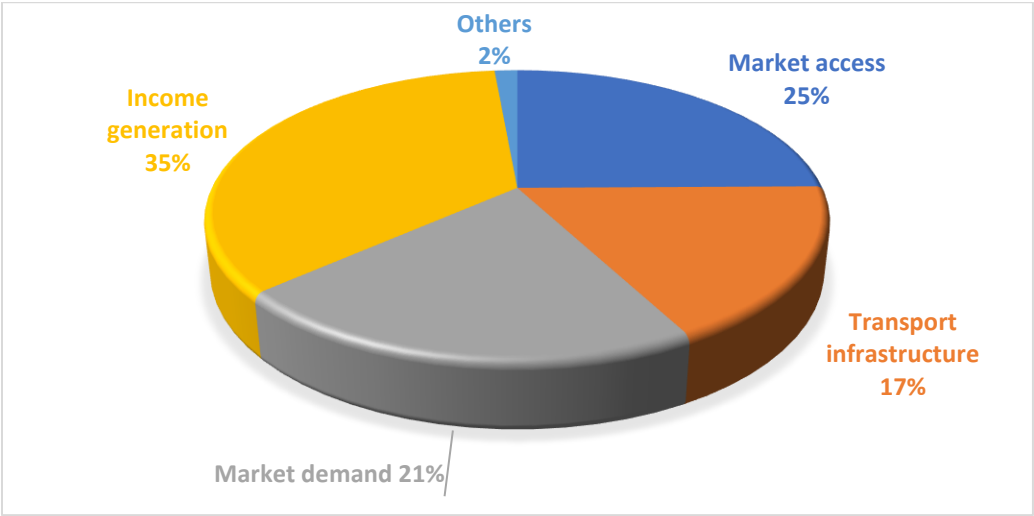


Figure 3. Economic factors influencing actors involved in the rattan value chain

3.2.3. Social factors influencing actors involved in the rattan value chain

Social factors influencing actors' involvement in the rattan value chain were captured in the study using the following variables: access to resources and market, cultural values and tradition, community structures and networks, gender roles and expectations and others as shown in Figure 4. The findings revealed that the most significant social factor influencing actors' involvement in the rattan value chain in the Meme Division is access to resources and markets, with 124 respondents, or 44% of all responses. This suggests the availability of rattan raw material in the forest of the Meme Division and a ready market for rattan products. In a focus group discussion in Matoh Butu in Meme West, participants confirm that:

> *Rattan raw material is abundant in our forest, which we could easily collect, process and take to the market. Though people do buy rattan products, we will tell you that our main challenge is the market prices. Those who make money from our produce are the big buyers who come to our villages and buy our products at very low prices and take them to the big cities of Douala and Yaounde and make big money* (FGD 4, Mambanda, Meme East).

The figure further suggests that cultural values and tradition were the second determinant of actors' involvement in the value chain, with 87 responses, or 31% of responses. This suggests the high attachment the people of the Meme Division have with their culture and uses rattan materials to symbolize some of their cultural artefacts for conservation and prevention. It was noted during a Matoh Butu focus group session that:

> *The cultural significance attributed to rattan, including traditional practices and beliefs surrounding its use, has motivated individuals to be involved in the rattan value chain in the Meme Division, thereby reinforcing community identity and heritage* (FGD 4, Meme East).

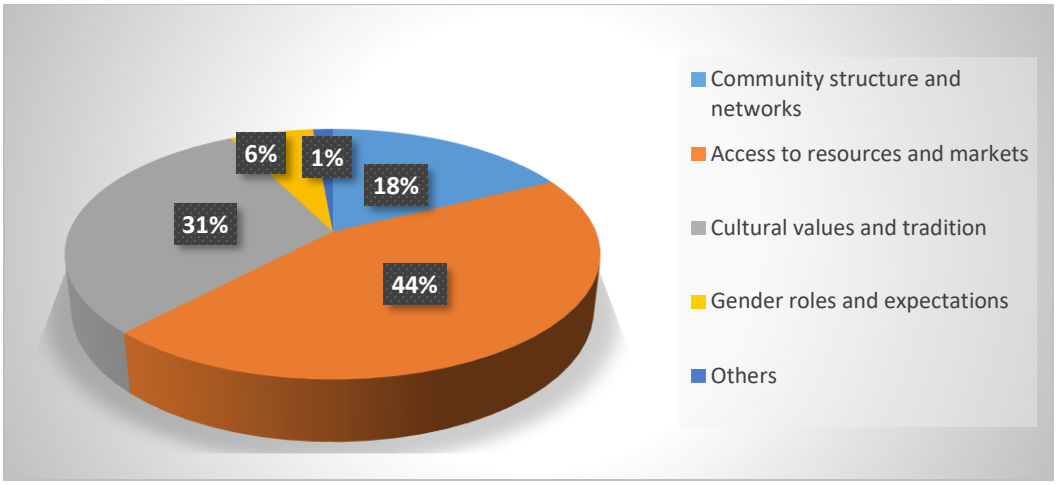


Figure 4. Social factors influencing actors involved in rattan production and transformation

Community structures and networks had 51 respondents, or 18% of responses. This suggests that the rate at which actors collaborate makes this quite likely. Because rattan raw supplies are scarce in the Meme South and East, actors emphasized the importance of cooperation in these areas. In an interview, for example, a male

artisan said that *"cane is very scarce here in Banga because the forest has been cut down completely, so I usually order cane from Douala and other neighbouring areas"* (P 9. Banga, Meme South). It became clear that cooperation between the many actors, regardless of where they are located, is what makes this feasible. Another Matoh actor, who is still working with us, revealed that *"because there is no virgin forest nearby, it is hard to get cane around our bushes. Therefore, I travelled up to the forest near the Big Butu area to harvest cane"* (P 11. Matoh Butu, Meme West). Apart from this, other variables such as gender roles and expectations had little impact on 17 respondents, or 6% of all responses. This is because gender-based cultural norms do not determine who is allowed to participate in the rattan value chain in the Meme Division. For example, the Meme Division presents a distinct picture, even if men may concentrate on harvesting and women may be more interested in crafting, which shapes the overall dynamics of involvement in the value chain. Many women believe that the creation and alteration of rattan is a male-only activity, while participants said others were 3, with 1% of all responses.

3.2.4. Cultural factors influencing the actors involved in the rattan value chain

Cultural factors were examined under the following variables: communal traditions, spiritual beliefs, social hierarchies and others as indicated in Figure 5. The data reveal that the most significant cultural variables are communal traditions, with 151 respondents, or 54% of all responses. This suggests that encouraging participation through the generational transmission of traditional knowledge fosters cultural legacy and community identity. Another significant cultural factor that was found was spiritual beliefs, with 83 responses, or 29% of total responses. Interestingly, this suggests that actors recognized rattan's cultural relevance, particularly in terms of maintaining and signifying traditional characteristics.

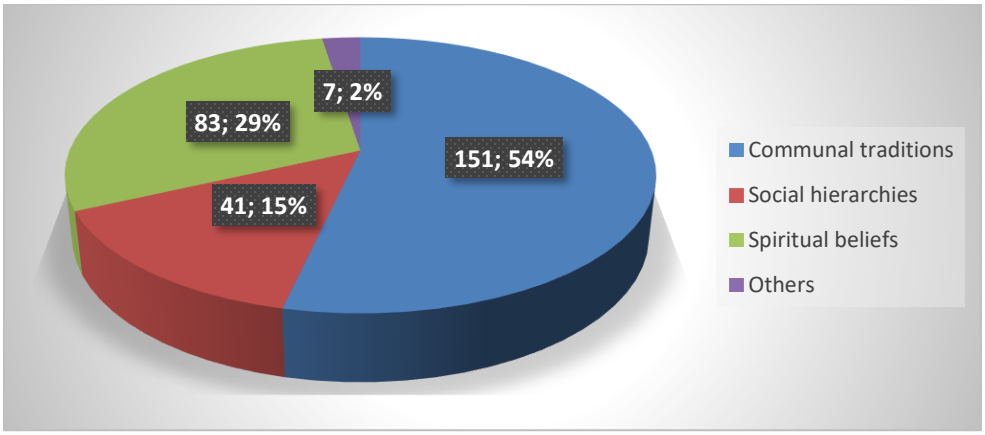


Figure 5. Cultural factors influencing actors involved in the rattan value chain

During a focus group discussion in Fiango, Meme West, a participant, advanced the view that:

> *Ratan resources are used during community ritual performances. This is because they are traditionally produced, and there are some rituals we perform in our community using traditional cups made from rattan to symbolize power and authority. Western materials are not being used during rituals in our community because our ancestors would frown on it or see it as sacrilege.*

> *Once it happens, the chief, who is the chief priest, will have to perform another ritual for cleansing, which is very expensive just to appease the gods of our land* (FGD 2, Meme West).

The figure shows that social hierarchies had 41respondents, or 15% of all responses. This suggests that actors involved in the rattan value chain enjoy a certain rank of honour within the social milieu in these communities. This also makes them different from ordinary community members in the Meme Division. Those who said others had 7 responses, or 2% of total responses in the value chain.

3.2.5. Spatial variations in determinants of actors' involvement in the rattan value chain

The level of actors' involvement in the rattan value chain in the Meme Division varies greatly across the various communities of the Meme Division. The scenario paints a different picture in Meme North, with more actors than in other areas, followed by Meme West. This variation is backed by a wide range of determinants as discussed above. Figure 6 illustrates which determinant is more influential and in which area of Meme Division, and why it is so.

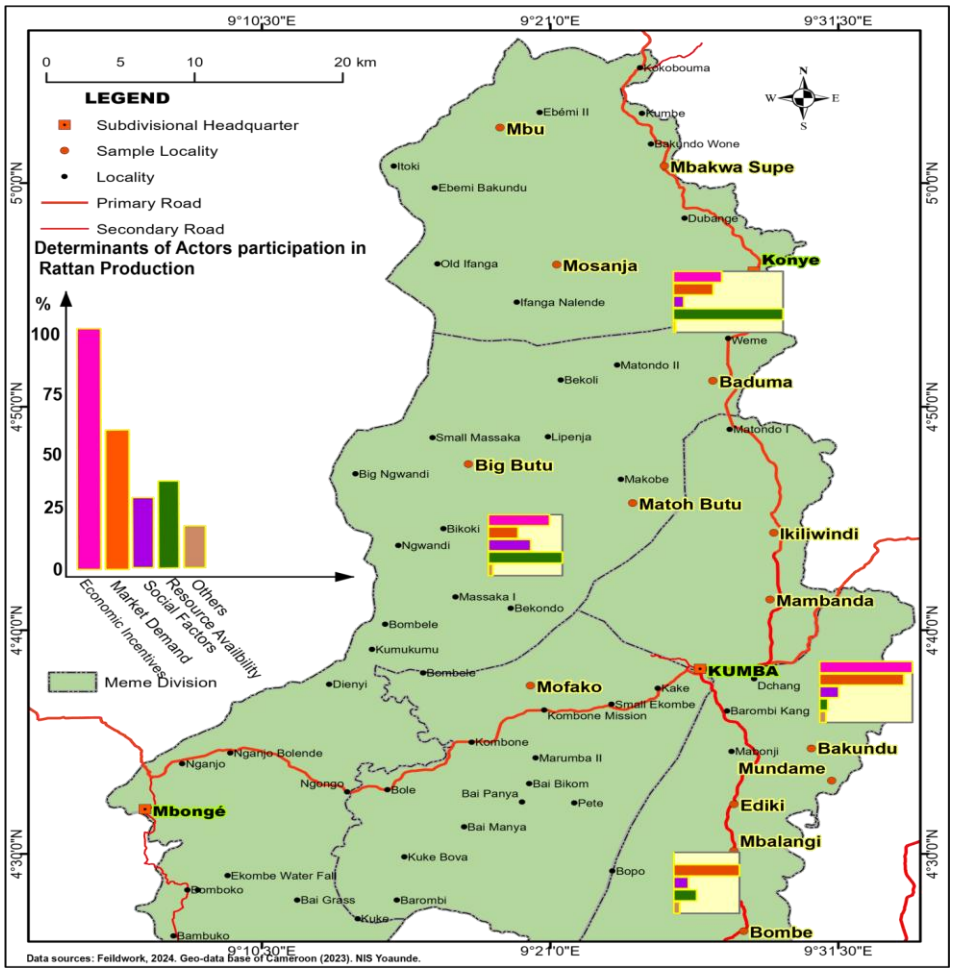


Figure 6. Spatial variations in determinants of participation in production and transformation

From Figure 6, the determinants of actors' involvement in the rattan value chain are quite intriguing and diverse, as the intensity of influence varies greatly for the different localities sampled for this study. In Meme North, *resource* availability stands out as the most prominent shaping factor of actors' involvement in the rattan value chain. This is practical because of the abundant forest cover in this zone. This makes it easier for actors (principally harvesters/artisans) to access these resources freely with little or no hindrance. The case is different in Meme South and Meme East, where large hectares of formerly forested land have been cleared to establish agricultural farmlands, notably cash crops such as cocoa and rubber, among others. This has seriously depleted the availability of rattan in these areas.

3.3. Barriers affecting actors' involvement in the rattan value chain

Despite being a significant NTFP, rattan performers faced some challenges in their path. These barriers have been categorized into ecological, economic, social and cultural barriers for easier comprehension. Participants were required to choose only one option under each category of barrier affecting actors' involvement in the value chain, to determine the most influential variable affecting actors' involvement in the value chain.

3.3.1. Ecological barriers to actors' involvement in the rattan value chain

Figure 7 revealed that the most significant ecological barrier to actors' involvement in the rattan value chain is deforestation, with 158 respondents, or 56% of all responses. This suggests the impact of urbanization and population pressure leading to the cutting down of forests for construction purposes. This view was supported according to findings from a focus group discussion in Mambanda, Meme East, that:

> *Large hectares of formerly forested land have been cleared to establish agricultural farmlands, notably cash crops such as cocoa and rubber, among others. This is a common scenario in Meme South and Meme East, where the natural forest cover has been replaced almost entirely. This has seriously depleted the quantity of rattan available for use, as it reduces the natural habitat where rattan grows* (FGD 4. Mambanda, Meme East).

To put on this point, participants in a focus group discussion in Meme South reiterate that:

> *The indiscriminate felling of trees by community members for firewood has contributed to the destruction of young rattan plants, affecting their growth and maturity period and to bush fire situations, especially in the dry season, ignited by hunters, with devastating negative consequences on the quantity of raw rattan. The expansion of agricultural land into forest areas for the cultivation of cash crops like cocoa, rubber and oil palms has also destroyed the forest, leading to a reduction in the quantity of raw rattan* (FGD 1. Meme South)

Due to the reduction of the natural habitat where rattan grows, this has significantly reduced the amount of rattan that is accessible for usage. The figure further suggests that climate variability, with 69 responses, or 24.5%, was another barrier identified by the study participants. Respondent in an interview said, *"because they*

depend on solar energy to dry their processed rattan cane, it is challenging for them to estimate the ideal processing times due to changes in temperature and rainfall patterns" (P 11. Mundame, Meme East). Soil degradation was also identified as a barrier with 35 responses, or 12.4%. This suggests that soil degradation from erosion and excessive nutrient loss reduces rattan's productivity, which lowers its economic viability. However, those who said others had 20 responses, with 7.1% of the total responses. This suggests the presence of other constraints, such as biodiversity loss, community knowledge and customs, etc., that prevented actors from being involved in the rattan value chain.

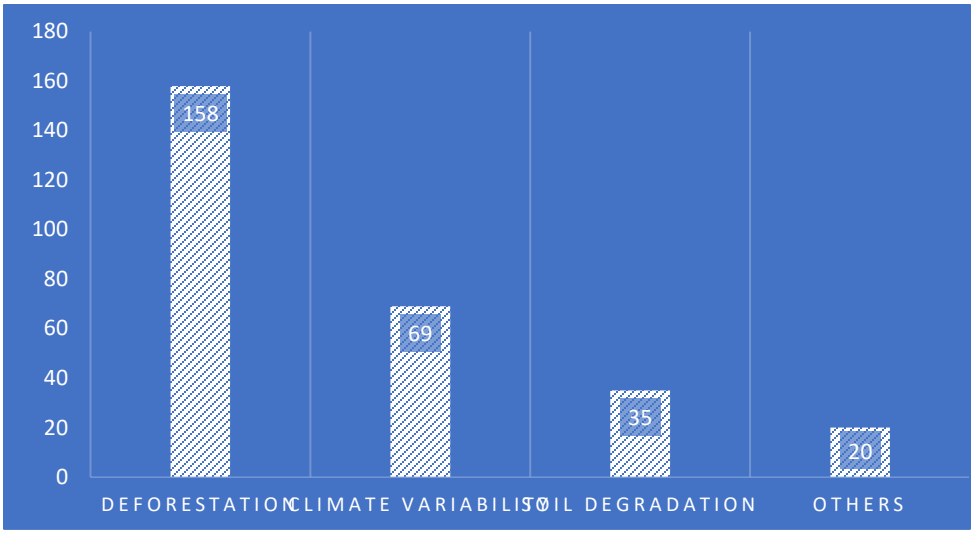


Figure 7. Ecological barriers affecting actors involved in the Rattan Value Chain

3.3.2. Economic barriers affecting actors' involvement in the rattan value chain

Economic barriers were examined in this study using the following variables: insufficient capital and investment opportunities, limited access to market, poor infrastructure and others as indicated in Table 2. The table revealed that 96 respondents, or 34%, stated that insufficient capital and investment opportunities were the major economic barrier. This suggests that insufficient capital, as well as a lack of investment opportunities in processing technology, limit both the quantity and quality of rattan products produced. In an interview session with a male artisan in Fiango Kumba, stated that *"despite working here for more than 15 years and counting, I have never received any form of financial assistance from anyone"* (P 13. Fiango, Meme West). Limited access to markets, with 79 responses, or 28%, was another barrier to actors' involvement in the rattan value chain. A female rattan processor during an in-depth interview in Mofaka, Meme West attests that:

> *"Over 95% of what is produced is consumed locally, while the remaining 5% ends in urban markets of Kumba central and Buea, especially those from Meme South. Rattan products from this zone hardly go beyond the region or to other countries. This reduces the chances for these products to compete at the national and international levels. The remaining 5% is consumed in Kumba*

Central and Buea's urban markets, particularly those in Meme South. As a result, these items have fewer opportunities to compete both domestically and globally" (P 5, Mafoka, Meme West).

Findings indicate that poor infrastructure, with 60 responses, or 21.3%, was a barrier to actors' involvement in the rattan value chain. This suggests the renowned poor road network, with a significant portion of it becoming nearly impassable during the wet seasons. The free flow of people and goods, particularly rattan products, to the markets is severely hampered. The actors also disclosed these views during a focus group discussion session held in Mundame (Meme East) and Mbalangi (Meme South) supported the point of poor infrastructure and said that:

One of their biggest challenges is the lack of processing infrastructure, such as machinery, that might be used to produce rattan products. We clean these canes with our hands with the help of a knife. It takes a lot of time and is stressful. A machine would have made this task easier.

Results revealed that price volatility had 42 responses, or 15% among all participants. This suggests that the cost of rattan products is not constant but rather changes with the seasons and other activities.

Participants in a focus group discussion session in Meme North asserts that:

For example, a female basket now sells for 5000 FCFA during the wet season and for roughly 3000 FCFA during the dry season. The present price of a truck basket is approximately 30,000 FCFA, and it typically decreases to nearly half of that amount during the dry season (15,000 FCFA). The general price increase of commodities in the market is consistent with this price fluctuation; many actors have raised the price of their goods in proportion. For most actors, this price volatility creates uncertainty, which deters investment in the industry (FGD 3, Mosanja, Meme North).

Results in Table 2 indicate that other barriers, with 5 responses, or 1.7%, including transportation, agriculture, and other revenue-generating activities, were identified as critical barriers for actors' involvement in the rattan value chain. This suggests that although most of the people are involved in the rattan value chain, agriculture remains the most economically important activity in the area. For this reason, agriculture has a profound impact on the livelihood of most of the inhabitants in Meme Division and turns to view the rattan value chain as a side business for "rainy days" (dry season).

Table 2. Economic barriers affecting actors involved in the rattan value chain

Items	Frequency	Percentage	Total
Insufficient capital and investment	96	34%	100
Limited access to the market	79	28%	100
Poor infrastructure	60	21.3%	100
Price volatility	42	15%	100
Others	5	1.7%	100

3.3.3. Social barriers affecting actors' involvement in the rattan value chain

As shown in Table 3, social barriers were examined under the following variables: lack of skilled labour, limited awareness, cultural attitudes and practices, land tenure issues and others. The table further shows that there was a lack of skilled labour, with 104 responses, or 37%. This suggests an existing deficiency in the quality and quantity of products due to the inability to employ the appropriate skills and techniques required along the rattan value chain. This has brought stagnation and no innovation as actors rely solely on outdated methods. Results revealed that limited awareness had 76 responses, or 27%. This suggests that participants are unaware of market trends, training programs, and the necessity for effective communication among themselves, which could be used as a tool to propel collaboration, share knowledge, and thus increase the participation of actors in the value chain. This information could be utilized as a tool to encourage cooperation, share knowledge, and thereby enhance actors' involvement in the value chain. Cultural attitude and practices, with 51 responses, or 18%, were also reported as a social barrier. This suggests that the rattan value chain is perceived to be low-status jobs, and for most young people, it is an activity reserved for the old. This justifies why most actors involved in the value chain are old people. Land tenure issues were also identified as a social barrier with 42 responses, or 15%. This suggests that most actors do not own land (mainly forest areas) where they can readily harvest rattan materials. The Meme Division's land tenure system is characterized by ambiguous land ownership, suggesting fewer opportunities for value chain investors. Other social barriers accounted for 9 responses, or 3%, in the rattan value chain in the Meme Division.

Table 3. Social barriers affecting actors involved in the rattan value chain

Items	Frequency	Percentage	Total
Lack of skilled labour	104	37%	100
Limited awareness	76	27%	100
Cultural attitudes and practices	51	18%	100
Land tenure issues	42	15%	100
Others	9	3%	100

3.3.4. Cultural barriers affecting actors' involvement in the rattan value chain

Cultural barriers were captured in this study under the following variables: gender norms, resistance to change, cultural perceptions and others, as seen in Table 4. The table indicates that gender norms, having 102 responses, or 36% of all participants, are a major cultural barrier. This suggests the belief that the rattan value chain is a male-dominated activity. The small number of women actively involved in activities along the value chain serves as a justification for this. Results show that resistance to change, with 85 responses, or 30%, was also identified as a barrier. This suggests the lack of innovation, making this sector not appealing to most individuals, which explains the low level of actors involved, as seen at various stages in the value chain. Another barrier for actors' involvement in the value chain is cultural perspective, with 76 responses, or 27%. This suggests that rattan is typically viewed as a low-value material, and individuals who use it are typically seen as lazy and impoverished. Additionally, it is regarded as low class and uncivilized for someone to still live in a

thatch house made primarily of raffia, bamboo, and rattan. Actors' involvement in the industry is severely hampered by these beliefs. Other barriers had 19 responses, or 7%. This suggests the complete lack of interest in the rattan value chain in the Meme Division.

Table 4. Cultural barriers affecting actors involved in the rattan value chain

Items	Frequency	Percentage	Total
Gender norms	102	36%	100
Resistance to change	85	30%	100
Cultural perceptions	76	27%	100
Others	19	7%	100

4. Discussion

Using Agarwal's typology of levels of participation to understand actors' involvement in the rattan value chain in the Meme Division, the results show that 51% of the Meme Division's rattan harvesters/collectors fall into the passive typology of participation. To meet the demands of the rattan value chain, the level of involvement of various actors is essential. When there is inclusivity, this becomes more attainable. The findings of Smith et al. (2017), on multi-stakeholder platforms for sustainable forest and landscape management: lessons from Indonesia, are not the same as those of this study. According to their results, a more sustainable and inclusive rattan value chain can be accomplished by involving residents, governmental bodies, non-governmental organisations, and business sector actors in decision-making processes (Smith et al., 2017). Agarwal claims that there are several levels of participation, from interactive participation, where actors actively participate in decision-making processes, to nominal participation, where actors are only told about decisions (Syukri, 2021). It is implied that most actors (about 75%) are involved in the Meme Division's rattan value chain at the consultative and passive levels. Therefore, this suggests that actors are not effectively active in the rattan value chain at both levels of participation, particularly when it comes to issues that affect their welfare and directly cause differences in their levels of involvement.

Furthermore, it was shown that many determinants, which were roughly classified as ecological, economic, social, and cultural, are either intrinsic or indirectly influenced by the various levels of involvement. These determinants have a significant impact on how involved the actors are. The findings reveal that rattan availability, 36%, was a significant ecological determinant that was appropriate for actors' involvement in the rattan value chain in the Meme Division. These results run counter to those of Defo and Trefon (2000), who discovered that shortages are a possibility in some areas of Cameroon due to the strain that the natural population of rattan palms faces. The most notable economic determinant influencing actors' involvement in the rattan value chain in the Meme Division is income-generating, with 35%. These results support those of Effah et al. (2014), who examined the viewpoints of producers about small and medium-sized bamboo and rattan businesses in Kumasi's economic empowerment. By providing direct work for the artisans, their findings demonstrated the enormous potential of bamboo/rattan SMEs to raise household livelihood earnings. The results show that the strongest social determinant of actors' involvement in the rattan value chain in the

Meme Division are community structure and networks, with 44%, promoting community identity and cultural heritage in the Meme Division. Findings reveal that communal traditions, 54%, are a cultural determinant that is expressed through the generational transmission of traditional knowledge, which promotes involvement and, in turn, strengthens the Meme Division's cultural heritage and sense of community.

The study also discovered that a variety of ecological, economic, social, and cultural barriers influence the involvement of actors in the rattan value chain in the Meme Division. In terms of ecology, the results show that the main ecological barrier limiting actors' involvement in the rattan value chain in the Meme Division is deforestation, with 56% of all responses. The results are like those of Biyi-Ayetoso and Jimoh's (2024) study on the selling and processing of rattan cane in the city of Ibadan. The survey results reveal that 36% of respondents acknowledge that deforestation and overexploitation are to blame for the fall in cane availability (Biyi-Ayetoso and Jimoh, 2024). This study's results are consistent with those of Medrilzam et al. (2014), who examined the socio-ecological factors contributing to forest degradation in a portion of Indonesia's Central Kalimantan's tropical peatlands. The primary endogenous drivers of land- and forest- cover change in the study area are the ongoing livelihood activities carried out by the community to preserve food supply and enhance welfare (Medrilzam et al., 2014). The primary mechanism of forest- cover change is unintentional fire brought on by local people's unregulated slash- and- burn practices (Medrilzam et al., 2014).

According to the findings, over 34% of those surveyed stated that their major economic barrier hindering actors' involvement in the rattan value chain are insufficient capital and investment opportunities in the Meme Division. The results differ from Sunderland et al. (2008)'s findings on the management and use of African rattans: barriers to a sustainable supply through cultivation. Their findings indicate that despite the economic and ecological potential of cultivating these resources, especially in multi-strata agroforestry systems, farmer adoptability has been low thus far due to a variety of socioeconomic factors, including concerns about land and resource tenure and farmers' reluctance to try new, untested crops (Sunderland et al., 2008). The long-term prospects for a sustainable harvest of the rattan resource itself are still dubious, even though it remains a valuable source of money for rural communities due to ongoing exploitation (Sunderland et al., 2008). Lack of skilled labour, with 37% of all responses, was the major social barrier limiting actors' involvement in the rattan value chain in the Meme Division. These results contrast with those of Schreer (2023), who discovered that actors in the rattan value chain are significantly impacted by social factors such as livelihood dependency, social status/prejudice, land tenure systems, education levels, and social cooperation. These factors affect everything from the marketing of final products to the acquisition of raw materials and the overall well-being of participants. The results show that the major cultural barrier of actors involved in the rattan value chain is gender norms, with 36% of all responses. Most people thought that rattan production and transformation were a man's domain. This suggests that women in the Meme Division should be aggressively encouraged to participate in the rattan value chain. These findings are like those of Amoah et al. (2017), who found that women's participation in some phases of the value chain is frequently restricted by traditional gender norms. In other areas, women have significant but less lucrative roles in basic processing, cooking for collectors, and obtaining food from the forest, while men predominate in the harvesting and trading of raw rattan (Amoah et al., 2017). Their self-efficacy and economic empowerment may be impacted by this restricted role, which is occasionally the consequence of gender stereotypes (Amoah et al. 2017).

5. Conclusion

The rattan value chain, specifically the determinants of actors' involvement in the Meme Division, Cameroon, is examined in this study. The results show that most rattan harvester/collectors fall in the passive typology with 51.1%, processors fall under activity-specific with 70.2%, most artisans and designers fall in the active typology with 62.1%, and government agencies and institutions fall in the interactive typology with 69% in the Meme Division's rattan value chain. Ecological, economic, social, and cultural determinants were used to categorize the various determinants influencing actors' involvement in the rattan value chain in the Meme Division. Ecologically, rattan availability with 36% was the most important ecological determinant. The most notable economic determinant was income generation, with 35%. The most significant social determinant of actors' involvement in the rattan value chain in the Meme Division was access to resources and markets, with 44% of all responses. The most significant cultural variable is communal traditions, with 54% of all responses. Findings on the barriers to actors' involvement in the rattan value chain were also examined under the ecological, economic, social, and cultural barriers influencing actors' involvement in the rattan value chain. Deforestation, with 56%, was the most significant ecological barrier, insufficient capital and investment opportunities, with 34% was the most observable economic barrier, lack of skilled labour, with 37% was the most notable social barrier and gender norms, with 36% was the most significant cultural barrier limiting actors' involvement in the rattan value chain in the Meme Division. The study found that most harvesters and collectors fit into the passive typology in the rattan value chain in the Meme Division. For the rattan value chain to be more sustainable, to improve livelihoods, to increase efficiency, and to preserve cultural heritage, local networks and community platforms must be established. These platforms support robust supply chains and empower local people, especially women craftsmen. Government, non-governmental organizations, and legislators should revise the nation's environmental laws to mitigate the negative ecological effects of deforestation, create an enabling environment for investment opportunities, training for skills acquisition and dismantling of cultural stereotypes attached to actors' involvement in the rattan value chain, to enhance the sustainability of rattan production.

6. Limitation

It is crucial to remember that such a study could not be carried out without some limitations. The study's cross-sectional methodology limited the findings' applicability outside of Cameroon's Southwest Region's Meme Division. The main disadvantages of a cross-sectional study are the inability to establish causation, the difficulty of analyzing behaviour over time, and the susceptibility to selection and confounding biases. Because data is gathered at a particular point in time, and non-random sampling or other factors may cause the results to not accurately represent the population, it is hard to determine whether one variable caused another.

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