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Honey extraction for agribusiness and family income in Bamenda Town, Cameroon

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Abstract

This study is aimed at linking Honey Extraction for Agribusiness and Family Income in Bamenda Town. The study employed a snowball sampling technique to identify honey extractors and marketers within the study area. A sample size of 50 respondents was chosen while data was collected using questionnaires. The results show that honey growers in Bamenda make more income while marketing honey and those involved in the business have witness an increase in economic wellbeing. The main challenges observed in honey production and marketing are: lack of bee farming materials and the lack of conservation facilities. The study suggest that the decision makers should encourage more youths to engaged in the production and marketing of honey, this is a wise step towards reducing youth unemployment.

Keywords: Youth engagement, household income, honey extraction, marketing, Bamenda.

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1. Introduction

Young people in Cameroon constitute over 70 percent of the population, yet they are the most economically marginalized. In recent years, the number of young people aged between 15 and 35 has increased dramatically in Cameroon. Even though the number of policies and institutions tasked with fostering and ensuring the implementation of youth programmes has increased, their actual effectiveness in the field remains highly questionable to those outside of Cameroons political elite. Cameroon remains very strategic in terms of institutional arrangement which also covers issues of the younger generation. The lack of adequate technical and professional education for youth remains a major concern and is one of main causes for massive youth unemployment in Cameroon, which is currently above 64 percent. According to the World Bank, the total youth unemployment rate of Cameroon was 5.73% in 2020 higher than the national unemployment rate of 3.62%. The World Bank defines youth unemployment rate as "the share of the labor force ages 15-24 without work but available for and seeking employment". Youth unemployment in the world is blighting a whole generation of youngsters. The International Labor Organization estimates that there are 75million 15-24 year olds looking for work across the globe. An estimated 26 million youth are not in education, employment or training.

Globally, about 85% of the world's young people live in developing countries and an increasing number of these young people are growing up in cities. In many cities on the African continent, more than 70% of the inhabitants are under the age of 30 with about 65% of the total population below the age of 35 years. Making Africa the most youthful continent in the world. It is no doubt that youth unemployment is one of the major challenges Cameroon faces today as thousands of young people find no opportunities after school. The effect of this "cankerworm" is ravaging and dragging the country's economy down. This will go a long way to delay its most talked about emergence come 2035. Some of these youths engage in the search for "greener pastures" abroad-thus migration and brain drain. For those other youths who are not daring enough, the end results is usually high crime waves, street children, teenage pregnancies, sexual harassment, drug abuse, gambling, amongst other ills (Boehlje, 1999).

Nowadays, there is a socio-economic and political urgency of responding to the challenge of youth unemployment as a precondition for poverty reduction, sustainable development and lasting peace. It is believed that an essential approach for addressing the challenges of youth unemployment is the need for a national youth policy, an integrated strategy for rural development, as well as job creation. Honey is a sweet fluid produced by honey bees (Apis Mellifera) from the nectar of flowers (Ayansola, 2012). It is composed

of mainly carbohydrates such as monosaccharides (glucose and fructose) and oligosaccharides like sucrose, maltose, melezitose, raffinose to mention a few. Pure honey also contains proteins, fats, water, vitamins and minerals. It is reputed to have a diverse set of nutritional and medicinal benefits. This and honey's pleasant taste of universal appeal ensure a sustained high demand for the product. The supply of honey is, however, quite constrained and hardly ever matches the demand. Consequently, the product always commands a relatively high price and is exposed to adulteration and imitation. Sugar based products such as fructose; glucose, sucrose, and starch are used by unscrupulous vendors to adulterate honey. Some bee keepers even feed their insects with the aforementioned to enhance the volume of honey produced and, hence, to maximize profit at the expense of the product's quality. Experienced fake honey vendors add honey flavor to caramels to mimic honey. Adulterated or fake honey would not be expected to have the potency of the genuine product as they would contain little or none of the constituents that impart nutritional and medicinal values to the latter. There is, thus, a strong imperative to constantly ascertain the quality of what is sold in the market as honey for public consumption, to hospitals for medicinal applications and to the industry for commercial purposes.

Honey is traditionally collected from the wild and consumed unprocessed, and in the last 20 years' bee-keepers have become more professional, organizing into groups, training with support from mainly conservation and development organizations and slowly diversifying the range of honey and bee products. Honey and bee products have high value to weight value and are growing in importance as cash "crops", providing a secondary, small but significant source of income, particularly for women and for families with no access to agricultural or timber markets. One beehive in Cameroon can generate enough money, from the production and sale of honey and wax, for annual school fees. Wax is used in the food, cosmetics and pharmaceutical industries - and is a potential export product - with specialist markets such as the organic sector in Europe and USA being important (Boehlje, 1999). The UK, Netherlands and Germany are major importers. Competitors include China, Australia, Latin and South American countries. Honey production in Cameroon is estimated in 2001, at 1.2 million tones. In 2007 honey production from the Highlands is estimated at nearly 2 million liters, from 200,000 beehives, 49 hives being the average, with a range from 1 or 2 to hundreds per person or group. The average production honey/beehive/year is 15 Kg, mainly in the Northwest, West, Southwest and Adamoua provinces. Average honey prices wholesale/retail are 1,100 CFA (2€) per liter. Total value of honey market - at producer level - is 2000 million CFA. At least 61 tons of wax produced a year, probably higher but not reported, Average selling price of wax is 2400 CFA per kg. Total value of honey at producer level is 62 million CFA.

Despite the agricultural sector's ample potential to provide income-generating opportunities for rural youth, challenges related specifically to youth participation in this sector and, more importantly, options for overcoming them have been sparingly reported. Cameroon honey is produced in regions like the north-west region where the vegetation is covered with varieties of flower-producing trees of the forest as well as the grass from all its mountainous environments. So, these bees get well fed with nourished raw material from all these plants and grasslands to produce good-quality, natural honey.

This is to emphasize the ability of honey and its multitude in medicinal aspects. Traditionally, honey is used in the treatment of eye diseases, bronchial asthma, throat infections, tuberculosis, thirst, hiccups, fatigue, dizziness, hepatitis, constipation, worm infestation, piles, eczema, healing of ulcers, and wounds and used as a nutritious supplement. The ingredients of honey have been reported to exert antioxidant, antimicrobial, anti-inflammatory, ant proliferative, anticancer, and anti-metastatic effects. Many evidences suggest the use of honey in the control and treatment of wounds, diabetes mellitus, cancer, asthma, and also cardiovascular, neurological, and gastrointestinal diseases. Honey has a potential therapeutic role in the treatment of disease by phytochemical, anti-inflammatory, antimicrobial, and antioxidant properties. Flavonoids and polyphenols, which act as antioxidants, are two main bioactive molecules present in honey. According to modern scientific literature, honey may be useful and has protective effects for the treatment of various disease conditions such as diabetes mellitus, respiratory, gastrointestinal, cardiovascular, and nervous systems, even it is useful in cancer treatment because many types of antioxidant are present in honey. In conclusion, honey could be considered as a natural therapeutic agent for various medicinal purposes.

Sufficient evidence exists recommending the use of honey in the management of disease conditions. Based on these facts, the use of honey in clinical wards is highly recommended. Data from 2006 indicate that Cameroon had 12,000 beekeepers with 63,000 beehives and an average production honey/beehive/year of 15 Kg. This amounts to approximate production of 945,000 kg honey with a value of 1,134,000,000 CFA in 2000. Most of this honey is exported to neighboring countries. In the Highlands in 20067 there were at least 7,800 beekeepers, accounting therefore for perhaps 65% of Cameroons beekeepers. With a production of over 2,000,000 liters and average selling price of 1780 CFA per liter, the total production volume is worth over 2,000,000,000 CFA per year. Additional bee products such as wax, creams, candles etc. increase the market value up to 2,130,227,600 CFA in 2006. In 20088 , the results of focus groups and market tracking revealed that around 67 associations and small enterprises, covering about 200,000 beekeepers, were active in the same region, selling about 2.7 million liters of

honey largely in the Cameroon market (retailing at approximately equivalent 3 million Euro), some 150 tons of wax worth about 500,000 Euro and a small range of other products such as bee products based creams, ointments, candles, wines, soaps and propolis valuing over 1000 Euro.

Annual average bees wax yields per hive 0.5 kg to 90 kg (forest hives) and average of 11kg /hive (non-forest hives). Annual average propolis yields per hive 6.3 kg in forest hives). Yields are seasonal and smoking of hives to obtain honey is mainly conducted in the end of the dry season. The taste and colour characteristics of honey vary widely depending on both the season and local flora, for example Oku is known for a white, very granular honey, the SW around Limbe for a very dark brown smoky honey, Fundong for a light brown liquid honey, while in the Bamenda Highlands a pale gold colored honey can be found. Trade statistics from the FAO indicate that Cameroon imports honey worth 700,000 US$. Assurances of honey quality have become increasingly popular in the last 5 years, with premium pricing and marketing focusing on the quality, zone of origin and honey type. Evidence from Stone Age paintings shows treatment of disease with bee product such as honey originated from 8000 years ago. Ancient scrolls, tablets and Books-Sumerian clay tablets (6200 BC), Egyptian papyri (1900–1250 BC), Veda (Hindu scripture) 5000 years, Holy Koran, Bible, and Hippocrates (460–357 BC) illustrated that honey had been widely used as a drug. Qur'an vividly indicated the activity of therapeutic value of honey.

It is a dynamic process and involves a number of ownership changes and economic activities such as harvesting, processing, storage, transportation and retailing. Furthermore, the marketing of agriculture food products requires some public rules such as grading and standards, food safety policies, market information and future markets. The marketing of agriculture food products is very different from marketing of agriculture commodities in general. Some uniqueness of agriculture food products is their short shelf life, non-uniform size, color, physical shape and taste. The other important distinguishing characteristic of agriculture food products is the remoteness of the farm form the final consumer. Thus, these characteristics require special handling treatments and marketing strategies (Kalabova, 2003).

The global "youth crisis" have prompt the global community to recently place a strong interest and emphasis on developing "youth-friendly" policies and implementation strategies to combat the negative social, economic and political consequences stemming from precarious youth livelihoods (Boehlje, 1999). In Cameroon, most attention on agricultural research has centered towards cash crops for exports such as cocoa, coffee, bananas and oil palm, and a number of studies on vegetable crop production while less attention has been given to honey research.

In fact, research evidence show that the demand for honey presently exceeds supply due to low capital investment to boost production, lack of trained personnel in honey extraction, poor post- harvest storage facilities and poor marketing strategies (Kalabova, 2003). However, the income effect of honey extraction has not been well documented giving doubts to youth if they will make income engaging in honey agribusiness. Although a dearth of information on the cultivation, nutritional content, and of compounds in honey for medicinal utility exist, there is a need for more research studies to identify the challenges preventing youth involvement in honey agribusiness and to address this significant untapped potential of this sizeable and growing demographic. Such research should need to contribute to policy development towards enhancing youth engagement in agribusiness and rural economic activities in Cameroon in miniature and Africa large. To resolve these issues, this study targets the following objectives: (i) to assess how youths are engaged in honey extraction and marketing in Bamenda city council, (ii) to assess the income effects of youths engaged in honey extraction and marketing in Bamenda city council and (iii) to identify the challenges faced by youths during honey extraction and marketing in Bamenda city council.

2. Literature Review

Principal studies related to this domain of literature are: Ayansola, 2012, Ayansola and Banjo, 2011, Dutzik et al., 2010; Downey et al., 2005; Havesteen, 1983 and Robinson (1980) etc. Concerns over the fall in the consumption of animal products, in particular, have been raised (Kalabova, 2003), with economic factors being thought as the main drivers behind these changes (Ayansola and Banjo, 2011). Nevertheless, no attention has been paid to the consumption of premium food products with enhanced quality properties. For instance, the consumption of honey, which is a product valuable for its health preserving benefits, might be of particular interest in a European region where mortality from preventable conditions is higher than that in Western European countries. Lithuanian and Latvian youth perceive agriculture as "back-breaking hours in the field, low skill requirement and low wages" (Edwards & Schultz, 2005) while Malawian youth recognize agriculture as "dirty work and demeaning with relatively small profits difficult to reconcile with the high labour requirements" (Genovese et al., 2001). Besides, youth perception about agriculture in the Caribbean Islands is associated with the region's history with slavery (Fernandez-Torres et al., 2005).

Dutzik et al (2010) indicated that youth in the Caribbean Island view agriculture as an area for failures and persons who are punished for not doing well in the pure sciences and other more prestigious academic fields. The differences reported by studies conducted across various regions and localities recognize the heterogeneity of the global youth population in their perceptions, experiences, attitudes and needs. The challenges faced by young men taking up agriculture

are multiplied for young women (Ayansola and Banjo, 2011). It is imperative that all research actively solicit and integrate their target population's perceptions, attitudes and needs into the development process.

The positive youth development theory contrasts with other theories that focus on problems experienced by young people as they grow up. It looks at their capabilities, developmental potentials, and increases their thriving behaviors rather than their deficiencies (Robinson, 1980). By enforcing these traits, an individual's assets are built, thus protecting him or her from health-compromising behaviors, whilst enhancing the opportunity for positive developmental outcomes and building resiliency in an effort to counter problems (Allen et al., 1991). This theory addresses young people from a balanced and positive perspective, as it views them as resources rather than problems. According to Dutzik et al (2010) this theory stresses that positive youth development emerges when the potential plasticity of human development is aligned with developmental assets. It conceives of young people from a strength-based position by recognizing that their unending potential is consistent with their strengths (Peterson 2004). The Positive Youth Development theory is based on the five Ps identified by Allen et al (1991).

- Possibilities and preparations: this asks what opportunities are available for youths in communities? This refers to creation of opportunities that will develop young people in every part of their lives either physically, intellectually, morally, spiritually, socially or emotionally (Bakier, 2007). Ayansola and Banjo (2011) asserts that programmes should provide opportunities for youth to develop in a variety of ways and help them to avoid risk factors that interfere with good outcomes.
- Participation: do we know how youth are spending their out-of-school time? This approach aims to understand, educate and engage youth (Damon 2004). It is essential that the young not only identify, but also accept their responsibilities as individuals, citizens and group members. Youth participation in decision making gives them voice by shaping the course of their development through encouraging them to take part in influencing processes, exposing abuses of power and realizing their rights (Downey et al., 2005).
- People: who are the people interacting with youth daily? Who is in charge of youth programmes? Boehlje (1999) identified youth workers to be in charge of youth programmes. On the other hand, Downey & Erickson (1987) highlighted the investment and involvement of public and private sectors and the wider community as crucial for youth development (Downey et al., 2005).
- Places and pluralism: what resources are available for young people? How can they be accessed? This involves evaluating the resources that young people can use to meet their needs and maximize their potential (Dutzik et al., 2010). This will entail checking availability of opportunities, resources and support systems necessary for the development of young people (Edwards & Schultz, 2005).
- Partnership: Are young people partners in planning and implementing programmes that affect them? A sense of ownership could be fostered by engaging them to become proactive in their development and also to involve them in decision-making processes (Ayansola, 2012).

Education remains key to overcoming development challenges in rural areas (Genovese et al., 2001). Not only is there a direct link between food security and education of rural youth, but it has also been shown that basic numeracy and literacy skills help to improve farmers‟ livelihoods (Fernandez-Torres et al., 2005). Unfortunately, youth strongly perceive agriculture and agricultural related occupations negatively, due to stereotypes reinforced by cultural beliefs and the media. For example, Lithuanian and Latvian youth perceive agriculture as "back-breaking hours in the field, low skill requirement and low wages" (Franck, 2004) while Malawian youth recognize agriculture as "dirty work and demeaning with relatively small profits difficult to reconcile with the high labour requirements" (Ayansola, 2012).

Besides, youth perception about agriculture in the Caribbean Islands is associated with the region's history with slavery (Genovese et al., 2001). Havesteen (1983) indicated that youth in the Caribbean Island view agriculture as an area for failures and persons who are punished for not doing well in the pure sciences and other more prestigious academic fields. The differences reported by studies conducted across various regions and localities recognize the heterogeneity of the global youth population in their perceptions, experiences, attitudes and needs. The challenges faced by young men taking up agriculture are multiplied for young women (Ayansola, 2012). It is imperative that all research actively solicit and integrate their target population's perceptions, attitudes and needs into the development process.

3. Methodology

Bamenda also known as Abakwa is a city in northwestern Cameroon and capital of the Northwest Region. The city has a population of about 2million people and is located 366 Kilometers (277 mi) north-west of the Cameroonian capital, Yaoundé. Bamenda is known for its cool climate and scenic hilly location. Bamenda has a tropical savanna climate very close to being classified as a tropical monsoon climate with a long summer wet season and considerably less rainfall in the winter. The climate of Bamenda, like that of most parts of the Northwest Region, is generally cool and pleasant. There are two main seasons: the rainy season that lasts for about six months with an annual

rainfall of about 200 mm. The other half of the year is the dry season. The vegetation is mainly savannah with patches of deciduous forest. Grooves of raffia palms dominate the riverine slopes and afforestation with eucalyptus trees has greatly modified the dominance of the savannah. The area is drained by River Mezam and its tributaries which flow through the sub-urban villages of Mbatu and Nsongwa.

Cameroon Gender and Environment Watch (CAMGEW) is a nonprofit organization created in October 2007 with authorization number N0 000998/ RDA/JO6/BAPP to look for a solution to environmental and women's issues in Cameroon. CAMGEW works locally and thinks globally, integrating gender in solving environmental problems in Cameroon. CAMGEW's vision "A society free from poverty, gender inequality and unsustainable environmental practices". CAMGEW"s mission statement is" We do environmental protection by strengthening the capacity of community members especially women and young people in co-businesses and forest regeneration for livelihood improvement in the Kilum-Ijim forest area "with some objectives of to develop projects and seek funds to handle challenges in the Bamenda Highlands forest area and develop a good system to manage funds, CAMGEW will work with like-minded organizations and people to share knowledge, experience on forest local governance issues and learn from them.

CAMGEW from 2012 to 2020 planted 87.300bee loving trees in the Kilum–Ijim forest and developed 3 tree nurseries with about 10.000 trees. It has also been able to reach out more than 60,000 persons on forest education. Community members trained also own tree nurseries and plant trees individually to get different benefits. CAMGEW has trained more than 1600 bee farmers in honey production, honey and its product quality control and bees wax extraction and donated above 1700 beehives to trained bee farmers. Above 1300 bee farmers have been organized into 5 Oku white honey cooperatives located around this forest with women and youth in decision making positions. CAMGEW created a honey shop in Bamenda to convert bee farmers, honey/honey products to money. The honey shop sells various honey products. The honey shop also serves as a demonstration and resource center to the public with learning facilities. More than 350 youth and women have been trained on entrepreneurship in honey value chain development.

Data Setting

Primary data is information collected through original or firsthand research or data that has been generated by the researcher himself/herself. Primary data were obtained by means of a questionnaire survey, which are a "collection of information from a sample of individuals through their responses to questions" (Havesteen, 1983). Key informant interview which refers to the person with whom an interview about a particular organization, social program, problem, or interest group is conducted and field observations. A research population is also known as a well-defined collection of individuals or objects known to have similar characteristics. All individuals or objects within a certain population usually have a common, binding characteristic or trait (Kalabova, 2003). The population of this study consisted of actors and farmers in honey extraction value chain in Bamenda, North West region of Cameroon, who have been carrying out the activity for at least two years and work in collaboration with any NGO involve in honey extraction and marketing or with the Ministry of Agriculture and Rural Development (MINADER).

Sampling is a process used in statistical analysis in which a predetermined number of observations are taken from a larger population. The methodology used to sample from a larger population depends on the type of analysis being performed, it may contain simple random sampling or systematic sampling (Robinson, 1980). The study employed a multistage sampling technique to select the individual honey farmers in the communities. a snowball sampling technique was used to further identify honey extractors and marketers within the study area. The sample size refers to the number of participants included in the study. The inhabitants of Bamenda were those selected for the sample size with a total of 50 respondents with valid information. In addition, honey farmers in the study area were identified and selected following the snowballing that gave the total.

Model specification

Since the dependent variable is dichotomous, we used a Binary logistic regression (logit) to measure the relationship between youth's engagement and income effect. We also used the same regression analysis method to analyze the relationship between youth's engagement and income effect. At the center of the logistic regression analysis is the task estimating the log odds of an event. Mathematically, logistic regression estimates a multiple linear regression function defined as:

$$\text{Logit}(I) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \ldots. B_n X_n + \mu_i \quad (1)$$

Where I =income from honey extraction, β_0, β_1, β_2, β_3.... B_n is the regression coefficient to be estimated, (β_0 is the constant), $X_1 + X_2 + X_3 + \ldots. X_n$ are the independent variables and μi is the error term.

4. Results

4.1 Characteristics of respondent

Based on the population considered under this study, the results revealed that 21(42%) of the respondents were male while 29 (58.0%) of them were female giving a total of 50 respondents and a valid 100% (Table 1). This is probably due to the fact that Government and non -government agencies provide training programs that targets mostly women (women empowerment) in most developing countries

(Booker, 2017 and Mishra, 2008). Entrepreneurship development amongst women groups has been reported to be an important approach to mainstream gender in agriculture. The result also shows that most of the respondents 40 were married giving us a valid (80%) while the rest were single (20%) (Table 1). This show that many married youths are interested in honey extraction and also, the fact that married people have more financial responsibility to their families and as such get involved in income diversification activities to cope with their financial vulnerability.

The result indicated that most of the respondents were famers 25(50%), while some were Business men (34%), students (12 %), designer (4%).This reveals that most of the honey extractors and marketers were farmers by profession. In addition, the result indicated that honey extraction and marketing is only a secondary activity. This is probably as a means of generating added income and contributing to nutritional security of households. In addition, most of the respondents 28(56%) registered the honey business as a common initiative group, while only 22.0% were registered as Association (Table 1). The result shows that (11%) of honey farmers registered as cooperatives, partnership etc. The results show us that most of the respondents 11 (22%) were involved in honey extraction and marketing for 11 years while (78.0%) were involved for less than 2 till 10 years (Table 1). This means that majority of honey extractors and marketers have a good experience in the extraction and marketing of honey.

The results show that 3 persons out of the sample population had acquired an ordinary level certificate, 31 of them had an advanced level certificate, 10 had a higher national diploma and 6 had a Bachelor's degree, which therefore means that a majority of them had attained a level of education at least "O" level certificate (Table 1). This implies that many honey farmers in Bamenda, are educated individuals. It was also observed that, out of the 50 respondents, (52%) resided at Nkwen, (24%) at Mankon and Bamendankwe (24%). This indicates that a majority of honey extractors and marketers were in Nkwen. Most youth engaged in honey extraction and marketing in Nkwen as a result of the presence of NOWEFAM, which is a farmer messenger in various honey and honey products, bee farming materials like bee suits, gloves, boats etc.

4.2 Youths engagement in honey agribusiness

Table 2 Represents responses of youths engaged in honey agribusiness. From the information above the question about youths' engagement in the offering of training in the extraction of honey, 11 respondents strongly agreed with that they are engaged in the provision of training in the extraction of honey, and a percentage of 22%. 39 respondents agreed to this fact and with a percentage rate of 78%, thus making total respondents of 50 and a percentage of 100%. Thus, since no respondent said no, it therefore means that youths are significantly engaged in the offering of training in the extraction of honey. We also see from the table that organizing show/contest was a way of engaging youths in honey agribusiness whereby 6 persons strongly agreed to the fact that show contest were being organized, 8 persons out of the sample population with a valid 16% agreed to this same fact mean while36 persons out of the sample population disagreed to the fact that show /contest were not organized giving a valid 72% It was also observed that no person strongly disagreed to this fact and the total respondent of 50 persons and a valid 100% . Therefore, we can say that a majority of respondents disagreed to the fact that show/contest were not organized just from observing Table 2.

Another aspect was the engagement in monitoring and follow-up were we see that 4 persons out of the sample population strongly agreed to the fact that youths are engaged in monitoring /follow-up hereby giving us a valid 8%,(32) persons out of the population agreed too that they are been engaged in monitoring/ follow-up and giving us a 64% validity,14 persons disagreed to this fact that they are not been engaged in monitoring /follow-up giving us a 28% ,meanwhile no respondent strongly agreed the fact that they are engaged in monitoring/follow-up. In our observations looking at this table, all of this will give us a total of 50 respondents and 100% validity. We can conclude that a majority i.e.36 persons agreed to this fact that youths are engaged in monitoring /and follow-up and a total of 72%.

Another aspect was engaging youths on raising awareness on the importance of honey were we observe that, 9 persons out of the sample size strongly agreed to the fact that youths are engaged on raising awareness on the importance of honey giving us an 8% validity,41 out of the population agreed that youths are engaged on raising awareness on the importance of honey which gives a rise to an 82% validity, none of the respondent disagreed nor strongly disagreed to the fact that youths are engaged on raising awareness on the importance of honey. This results gives us a total of 50 respondents and a valid 100% with a greater percentage of 100% that agrees to this fact ,so we can say that all of the population agreed to this aspect on engaging youths in honey agribusiness,47 persons out of the population was also for that fact that youths are been engaged in the provision of input with a 94% validity, no respondent strongly agreed to this aspect of engaging youths, 3 persons disagreed that youths are not engaged in the provision of input and it gives us a 6% ,no respondent strongly disagreed to this fact .

This result gives us a total of 50 persons and valid 100% with a majority agreeing to the fact that youth are engaged in input provision. Also we see that no respondent was for the fact that youths are engaged in the provision of extractors hereby giving us a 0% ,12 persons agreed that youths are engaged in the provision of extractors with a 24% validity,38 disagreed to this

fact saying youths are not engaged in the provision of extractors giving us a76% validity, however none strongly disagreed to this fact giving us a total of 50 respondents and a 100% validity with a greater portion of the respondent disagreeing to the aspect of youths been engaged in the provision of extractors. Coming to the aspect of provision of materials some respondent (10) with a 20% validity strongly agreed that youths are engaged in the provision of materials, 22(44%) agreed that youths are been engaged in the provision of materials, 18(36%) disagreed that youths are not engaged in the provision of materials, and so far no respondent strongly disagreed to the fact that youths are engaged in the provision of materials giving us a total population of 50 respondents and a 100% validity. Still looking at the table we see that 7(14%) of the youths strongly agreed that they are they is a provision of market access that engages them in honey agribusiness, 22(44%) also agreed to the fact meanwhile, 18(36%) disagreed that youths are not engaged in the provision of market access with no respondent strongly disagreeing to this aspect giving us a total of 50 persons with a 100% validity.

No youth strongly agreed to the fact that they are engaged in the provision of tools i.e. bee suits, smokers etc., with a 0%, 42(82%) out of the population agreed that youths are been engaged in the provision of tools,8(16%) disagreed to that aspect, none strongly disagreed to this aspect of engaging youths giving us a total of 50 respondents and 100%.8(16%) reported strongly agreeing that youths are engaged in the provision of access to capital (land, finance etc. 7(14%) agreeing to the fact too ,35(70%) strongly disagreed that youths are not engaged in the provision of access to capital with no respondent strongly disagreeing to this fact giving us a 0% and we realize a total of 50 respondents and a 100% validity with a majority strongly disagreeing to this aspect as seen on the table above.

Again we can observe that 10(20%) strongly agreed that youths are engaged in the provision of ICT tools, 36(72%) agreeing to this aspect of engaging youths, 4(8%) disagreeing to it and none strongly disagreeing 0(0%). Therefore, we can say 46 persons agreed to this fact which means that youths are engaged in the provision of ICT tools 92%. Thus, a total population of 50(100%). The results clearly indicated that the government and some NGOs like the Center for Development and Environmental Protection (CEDEP), Cameroon Gender and Environmental Watch (CAMGEW) engaged youth in honey agribusiness by engaging them in different activities in Bamenda. These activities include: training programs and workshop, talents show and contests, mentoring and follow-up, awareness raising, provision of tool (such as Capping Tank, hot knife, uncapping a catcher, bucket honey frames, strainer etc.), provisions of materials, provision of access to capital (finance and space), provision of market access, provision for facilities for publicizing and sharing of knowledge (ICT tools).

4.3 Linking honey extraction for agribusiness and household income

From the Table 3, we realize that 50 persons reported to experience an increase in the household income due to income from honey extraction with a valid 100%

This indicates that all the respondent provided a positive response that their income is been increased as they engage in honey extraction. After observing the table, we see that 5 persons among the population reported to have experienced a decrease in income with a percentage of 10 meaning that these persons realized a decrease in income as they engage in honey extraction, 45 persons out of the population reported to have experienced a significant increase in their income from the extraction of honey with a valid 90% as seen in Table 3.

This gives us a total of 50 respondents and 100% validity. Also from the table, we can see an approximate monetary increase in households income due to income from honey extraction hereby 2 persons out of the population said to have an annual benefit of 240,000FCFAwith a corresponding 4%, 3 persons out of the population reported to have had a 250000FCFA annual benefits with a 6% validity, 24 persons out of the population said to have an annual benefit of 300.000FCFA, annual benefits from the extraction of honey and a 48% validity, 4 persons out of the population also reported to have a 350.000FCFA, annual benefit from the extraction of honey with a valid 8%, 11 persons out of the population reported to have a 400.000FCFA annual benefits from the extraction of honey and a 22% validity, and 6 persons out of the population selected reported to have an 500.000FCFA annual benefit from the extraction of honey .This gives us a total of 50 respondent and a 100% validity. We also see that a greater number of persons had an annual income benefit of 300.000FCFA in the Bamenda City Council.

4.3.2 Regression estimate of actual income effect due to honey extraction for agribusiness

Table 4 shows the results of the regression analysis of income effect of honey extraction. From Table 4, the variables of the income shows a significant effect of the extraction of honey on the income of the youths. The variable annual benefit from the analysis shows a significant effect on the income of youths. This can be seen from the variables coefficient of 0.8903 as opposed to the t value of 2.061 which signifies a 5% rate. This means that an increase in the extraction of honey by youths leads to a significant increase in the annual benefits of the youth's income. The variable age from the analysis above shows a significant effect on the income of youth's.

We can see it from the variable coefficient of 0.155 as opposed to the t value of 2.110 which signifies a 5% rate which indicates that the age of a youth has a significant increase in the income effect.

The number of active youth in the Bamenda City Council will lead to significant increase in their income as compared to those of the aged group. Also observing the table above, we see that the level of education has an effect on the income of youths in the Bamenda City Council. We can see that from the variable coefficient 0.854 with a corresponding t value of 2.110 implying that the more youths are educated or have attained a certain level of education, the more advanced they are honey agribusiness because they understand and adapt to new decisions easily and can perform their activities effectively and efficiently. Therefore, we can conclude that an increase in the educational level of youths leads to an increase in their income. From the above table, we can also see the variable marital status and how it affects the income effect of youths engaged in honey agribusiness.

The variable coefficient of -2.348 as opposed to the t value of -3.378 which signifies a 1% rate. We can say this is due to the fact that most married persons are more financially stable and can generate income still on other activities than the single persons that will enable them to engage themselves in honey agribusiness. Therefore, an increase in the number of married persons will lead to an increase in the income. However, the duration too can affect the income of youths engaged in honey agribusiness, the variable duration with the coefficient 0.278 and a corresponding t value of 1.784 indicates a 10% significant increase in the level of income. The higher the duration, the higher the experience, the technical knowhow, the higher the income of the youths engaged in honey agribusiness. Also, from the analysis above the resident of an individual can affect the income of the youth. The variable coefficient -0.627 and a corresponding t value of -2.874 indicates a 5% significant increase in the level of income of youth engaged in honey agribusiness. And the business type also has an effect on the income of youth. The variable with a coefficient 1.457 with a corresponding t value of 6.836 indicates a 1% significant increase in the level of income of youths engaged in honey agribusiness.

4.4.1 Challenges of honey bee production

Table 5. represents the challenges faced by youths engaged in honey agribusiness. At the production level, we see that 24 persons out of the population with a 48% experience the lack of adequate knowledge on production which hinders them to even engage in honey agribusiness, 15 persons out of the sample population in Bamenda City Council with a corresponding 30% to lack extraction machines that will help them in the extraction process of honey, 8 out of the population with a 16% reported the unavailability of materials such as bee suits, smokers etc. Also still at the production level 3 persons out of the population with a corresponding 6% said to have lack of credit for beekeeping sectors, all of this gives us a total population of 50 respondents and a 100% validity.

At transformation level they reported to face challenges in the various domains.7 respondent out of the selected population with a corresponding 14% said to have a challenge in the provision of knowledge on how to transform honey to other products ,34 out of the chosen population with a valid 68% said to have a problem as they lacked transformation machines that could assist them in the transformation of honey to other products ,9 persons out of the population with an 18% experienced other challenges that hindered them at the transformation level. Verbal responses such as inadequate skills to exploit these machines etc. was being taken into consideration. This amounted to a total population of 50 and 100% validity.

In the marketing aspect unlike other aspects engaged in honey agribusiness face challenges too, 6 respondent out of the total said to have limited marketing at the lower level with a corresponding 12% 5 persons said to face a challenge based on the negative attitude of the consumers towards the product with a corresponding 10%,27 said to have faced a challenge on the lack of advertisement channels that could people to know about their products ,benefits etc. with a 54%, lack of access to external markets was the response of 12 persons in the population with a corresponding 24% . This amounted to 50 persons and 100 % validity.

5. Conclusion

The study sough to assess Youth Engagement and Income Effects in Agribusiness in Honey Extraction and Marketing in Bamenda City Council. The Study found out that some youth are engage in honey agribusiness through the action of government and NGO who provide training and workshop on honey production, transformation and marketing in Bamenda City Council. Secondly the study found out that the honey growers in Bamenda makes more income while marketing honey and that for all those involve in the business of honey they have witness an increase in their standard of life. However, youth can explore the opportunities in the transformation and marketing stages of the honey value chain to further increase their income. Furthermore, the result shows that many youths in Bamenda do not have the intent to engage in honey agribusiness and for those who are interested, the study found out that most are involve only with the production of honey, some for marketing and consumption. In addition, for those involve, challenges such as: lack of adequate knowledge on honey extraction, Lack of bee farming materials (Bee suits, Smokers Gloves, Boats etc. also, lack of knowledge on how to transform the product, lack of conservation facilities, were the crux of the challenges.

The results of the study indicate that youths are engaged in training programs and workshops, organizing show/contest, monitoring and follow-up and also honey farmers in Bamenda make more income while marketing honey and for all who engaged in honey agribusiness witness an increase in

the standard of living however, youth can explore the opportunities in the transformation and marketing stages of the honey value chain to further increase their income. Also the shows that most youths in Bamenda do not have the intent to engage in honey agribusiness. And for those who are interested, the study found out that most are involve only with the production of honey, some for marketing and consumption. In addition, for those involve, challenges such as: lack of adequate knowledge on honey extraction, Lack of bee farming materials (Bee suits, Smokers Gloves, Boats etc.).

The study leads us to conclude that in Bamenda, youth who are involved in honey agribusiness generate income that improves their standard of living. It is evident that the youth of Bamenda have a long tradition of honey utilization and therefore there is a possibility for large scale production and a ready market, but this has to go hand in hand with research. Let us all join our hands to improve human health and nutrition and to discover the Bacillus genus of Cameroon, a country blessed with abundant natural resources. Although the production stage presents a high net income, honey farmers in Bamenda can make more income if transformation and marketing stages are harnessed to a greater extend. Therefore, government policy that promotes production, transformation and marketing of honey will engage youth in the business.

In addition to government involvement

Table 1. Characteristics of respondent

Modality	Frequency	Percent	Valid Percent	Cumulative Percent
Distribution according to gender				
Male	21	42.0	42.0	42.0
Female	29	58.0	58.0	100.0
Total	50	100.0	100.0	
Distribution according to marital status				
Married	40	80.0	80.0	80.0
Single	10	20.0	20.0	100.0
Total	50	100.0	100.0	
Distribution according to business type				
CIG	28	56.0	56.0	56.0
Association	11	22.0	22.0	78.0
Others	11	22.0	22.0	100.0
Total	50	100.0	100.0	
Distribution according to occupation				
Faming	25	50.0	50.0	50.0
Business	17	34.0	34.0	84.0
Designer	2	4.0	4.0	88.0
Student	6	12.0	12.0	100.0
Total	50	100.0	100.0	
Distribution according to education				
O/L	3	6.0	6.0	6.0
A/L	31	62.0	62.0	68.0
HND	10	20.0	20.0	88.0
BSC	6	12.0	12.0	100.0
Total	50	100.0	100.0	
Distribution according to residence				
Bamendanke	12	24.0	24.0	24.0
Mankon	12	24.0	24.0	48.0
Nkwen	26	52.0	52.0	100
Total	50	100.0	100.0	

Source: Author from field survey 2021

Table 2. Youth's engagement in honey agribusiness

Variable	Strongly agree	Agree	Disagree	Strongly disagree	Total
Training programs and workshops	11	39	0	0	50
	22 %	78 %	0 %	0 %	100%
Organizing show/contest	6	8	36	0	50
	12%	16%	72 %	0 %	100%
Monitoring/follow-up	4	32	14	0	50
	8%	64%	28%	0	100 %
Raising awareness on the importance of honey	9	41	0	0	50
	18%	82%	0	0%	100%
Input provision	0	47	3	0	50
	0%	94%	6%	0%	100%
Provision of extractors	0	12	38	0	50
	0%	24%	76%	0%	100%
Provision of material	10	22	18	0	50
	20%	44%	36%	0%	100%
Provision of market access	7	41	2	0	50
	14%	82%	4%	0%	100%
Provision of tools (e.g. bee suits Smokers, gloves etc.)	0	42	8	0	50
	0%	84%	16%	0%	100%
Provision of access to capital (Land, finance etc.)	8	7	35	0	50
	16%	14%	70%	0%	100%
Provision of ICT tools	10	36	4	0	50
	20%	72%	8%	0%	100%

Source: Author

Table 3. Income Effect due to honey extraction for agribusiness

Modality	Frequency	Percent
Increase in Household income due to income from honey extraction		
Yes	50	100
No	0	O
Total	50	100
Nature of Increase in Household income due to income from honey extraction		
Decrease income	5	10
Significantly increased	45	90
Total	50	100
Approximate monetary increase in Household due to income from honey extraction		
240000.00	2	4.0
250000.00	3	6.0
300000.00	24	48.0
350000.00	4	8.0
400000.00	11	22.0
500000.00	6	12.0
Total	50	100.0

Source: Author

Table 4. Regression estimate of income due to honey extraction for agribusiness

Variable	Unstandardized Coefficients		Standardized Coefficients	T
	B	Std. Error	Beta	
Annual benefit	0.8903**	0.432	.009	2.061
Age	.155**	.073	.575	2.110
Education	.854**	.390	.433	2.192
marital status	-2.348***	.695	-.623	-3.378
Duration	.278*	.156	.418	1.784
Residence	-.627**	.218	-.357	-2.874
business type	1.457***	.213	.851	6.836
Constant	.319	2.250		.142
R-Squared	0.653			
F-statistics	10.739[7; 0.000]			
Total observation	50			

Source: Author, from field survey. Notes ***, **, and * represents or indicates a 1%, 5% and 10% level of significance respectively.

Table 5. Challenges of honey bee production

Modalities	Frequency	Percent	Cumulative Percent
Marketing challenges			
limited marketing at the lower level	6	12.0	12.0
negative attitude of consumers towards the product	5	10.0	22
lack of advertisement	27	54.0	76
lack of access to external markets	12	24.0	100
Total	50	100.0	
Production challenge			
lack of adequate knowledge	24	48	48
lack of extraction machines	15	30	78
unavailability of materials	8	16	94
lack of credit for beekeeping sectors	3	6	100
Total	50	100.0	
Transformation challenge			
lack of knowledge	7	14.0	14
lack of transformation machines	34	68.0	82
Others	9	18.0	100
Total	50	100.0	

Source: Author

and honeybee conservation methods designed by environmental agencies, there are many things that regular citizens and homeowners can do to protect honeybees this summer. The Environmental Protection Agency and the Pesticide Action Network offer these tips. Use caution when applying any pesticides to home gardens. Be especially cautious when applying pesticides when bees are likely to be flying. If you must apply pesticides, do so only after dusk. Stagger your planting throughout the growing season. Rather than planting everything at once, stagger planting for flowers and other plants that have blooms. This gives bees plenty of pollen sources throughout early summer and into fall. Provide clean sources of water. A small garden feature or a rainwater collection is enough to provide bees with a drink when needed. Honeybees and other

bees require some sort of shelter. Dead trees and plants provide adequate shelter, so don't be so tempted to pull out all of the undergrowth in the name of aesthetics. Plant a garden that will attract bees. Resources for planting a bee-friendly garden can be found by visiting.

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