Consumer Preference for Palm Oil in Urban Togo, Africa

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Introduction

The country of Togo sits on the Western Coast of Sub-Saharan Africa. This past decade, Togo has seen an 18% increase in population from 5.4 million in 2004 to 6.6 million currently. The country is facing natural resource allocation problems due to their rapid population growth and the population density jumping from 95 people per square kilometer in 2004 to 117 in 2014 (Country Economy "Togo- Population", 2014). Its tropical climate leads to long growing seasons and a variety of agricultural commodities produced. The majority of agricultural production focuses on staple carbohydrate crops, yams, cassava (manioc, tapioca), corn, rice, millet, and sorghum. Agriculture contributes to 33% of Togo's GDP and employs about two thirds of the country's work force. (FAO "The Republic of Togo", 2014). The top industries in Togo are: phosphate mining, agricultural processing, cement, handicrafts, textiles, beverages (World Factbook, 2013-14).

Large-scale palm oil production is becoming more commonplace in West Africa. It is being farmed largely as village low-yield multi-crop stands. A few publically or privately owned agro-industrial estates also currently exist. Many companies that already have existing plantations and other investors are now looking to expand their operations into these estates to meet the growing demand for the commodity (Sustainable Palm Oil Platform, 2014).

Palm oil is a staple in the West African diet. It is the base for nearly all sauces and included in the main dish of each meal. In the past twenty years, the West African country of Togo has shifted from domestic production of palm oil to importation. The average yearly production of palm oil in the 1980's was 20,000 metric tons (MT) and in the 1990's it dropped to 15,200MT. Between 1995 and 1996 domestic production dropped 55%; the country began importing palm oil in 1996. Togo imported 3,000 MT of palm oil in 1996. By 2003, Togo was importing 107,000 MT, a 35% increase, and imports peaked in 2009 at 227,000 MT. Table 2 shows the palm oil production, imports, exports, consumption, and distribution in Togo in 2014 and compared these figures against the world rank. In 2014, Togo was ranked 27th in the world for production; 30th in the world for imports, 38th in the world for exports, 29th in the world for domestic consumption, and 40th in the world for total distribution. Figure 1 shows the production, imports, and exports trends over a 25 year period of palm oil in Togo.
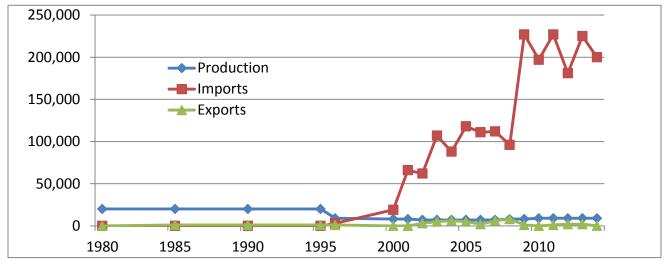

Figure 1. Togo Palm Oil Production, Imports, and Exports 1980 – 2014
Source: Index Mundi, United States Department of Agriculture, 2014

Change in consumers' preference, urbanization, and improved trade routes have led to palm oil becoming Togo's top imported agricultural commodity. In 2013, palm oil had a trade value of $61,424,000 USD and was just under 1 percent of the total imported share at 0.88 percent of over 800 items (B2B Marketplace, 2015). Import growth over the past 5 years is 146.57 percent.

"Agribusiness is the sum total of all the operations involved in the manufacture and distribution of farm supplies, production operations on the farm and the strong processing distribution of commodities and items" (Tersoo, 2014). Agribusiness includes the growing, processing, and selling of a crop. Agribusiness promotes economic development in developing countries by creating jobs, supplies income, reduces poverty, and encourages infrastructure growth. For example, a rural village may pool together money, labor, and resources to improve roads to easily transport crops from the fields.

Agribusiness is divided into three subsections; farm production, farm processing, and product distribution. An established local palm oil business can encompass all three subsections of agribusiness. For farm production, farmers are capable of managing their crops and harvesting fruits. For farm processing, farmers can process the oil. Finally, for product distribution, farmers can package, market, and sell their own products. However, Tersoo points out that this value chain is only successful with "infrastructural facilities like land, labour capability, water and management."

The value chain of palm oil fruit features the value added possibilities for the oil palm fruit when it is broken down into the crude palm oil, fiber, and nut. The crude palm oil is arguably the most important part of the chain, producing frying oil, margarine, cocoa butter substitute, detergent, and biodiesel. The chain begins at the top with oil palm, then the fruit. The fruit is divided into three subsections; nut, fiber, and crude palm oil. The nut contains the subsections of: palm cake then animal feed, fertilizer; kernel then frying oil, oleochemical, and energy; sludge then soap, fertilize, and animal feed; and shell then activated carbon, particle board, and energy. The fiber contains the subsection of pulp paper. Crude palm oil contains the subsections of detergent, biodiesel, frying oil, margarine, and cocoa butter substitute. Ofosu-Budu and Sarpong (2013).

Agribusiness can help with rural development. A study in nearby West African country Nigeria was conducted by Tersoo (2014) on agribusiness as a tool for rural development. Nigeria and Togo are both agrarian societies: "Given the value chain process via employment, income, markets and poverty reduction from agribusiness the rural sector can attain sustainable growth from the raising farm-nonfarm equilibrium." Tersoo examined employment, income generation/poverty reduction, food security, complementarity/ structural transformation, and corporate social responsibility. It was concluded that because agriculture is the highest employer of the rural workforce, improving the value chain and commercial value of agriculture would lead to change. "Agribusiness is said to be a veritable tool for rural development because the farm-non-farm linkage would actually create employment, income, poverty reduction, complementarity etc." (Tersoo, 2014).

An example of palm oil agribusiness entrepreneurship in Togo is AVE PALM; the organization was profiled in a 2013 article by the World Bank (World Bank, 2013). AVE PALM was a recipient of funding from the Ministry of Agriculture to invest in modern technology to make the process of extracting the oil easier. The work which would previously take a week's time can now be completed in a single day. The organization has 40 members, mostly women; they purchase the palm kernels at local markets and manufacture the oil with the machines. The production yield has tripled because of the machines and the organization generates about 5 thousand CFA per week. The Ministry of Agriculture, Agriculture Sector Support Project is using AVE PALM as the lead example of the success which can be achieved when investing in agribusiness entrepreneurship.

Problem Statement and Objectives

Examining the preference for local versus imported palm oil in Togo is beneficial to food security because determining what makes a consumer choose local versus imported palm oil will enable local farmers to produce a product which Togolese consumers are more likely to buy. Also, increased production of local palm oil will benefit the local economy. Money will stay within the community. Palm oil allows small landowners an opportunity to make money and employ local labor. This proposed improvement of agribusiness strengthens the domestic economic value chain and advances rural development. Income remains in their local community and can lead to improved infrastructure. In Togo, life is dependent on what can be grown locally. The Togolese are reliant on what is in season, what grows well, and what requires minimal capital and an inexpensive means of production. Growing and harvesting food is labor-intensive. Disease and malnutrition are prevalent among the populace, making reliable, healthful crop choices critically important.

Globally, the production of palm oil has resulted in numerous environmental problems. Worldwide, large plantations result in loss of agricultural diversification, deforestation, native species habitat loss, and an increase in greenhouse emissions (Danielsen et al., 2008). "Yield is much lower in Africa than in Southeast Asia for various reasons, including climate and infrastructural limitations and a predominantly smallholder approach to production. It is debatable whether comparative yields are achievable even with investment and improved growing techniques" (Sustainable Palm Oil Platform, 2014). The Roundtable on Sustainable Palm Oil was created in 2004 to establish global standards for producing palm oil and advance the production of sustainable palm oil products. The organization boasts over 1000 members. One of the organization's most powerful members, Unilever, the world's largest purchaser of palm oil, has stated that it will only purchase sustainably farmed palm oil. Because the local government is unable to properly regulate the sector, Roundtable on Sustainable Palm Oil was established.

Ecologically and economically sustainable agriculture is crucial to the economic growth of West Africa. First-hand knowledge of farming techniques for oil palm trees, the everyday uses, and the buying and selling of the product at the market helped guide country-wide land-use decisions and inform producers on the best ways to meet the demands of the market.

The objectives of this study are as follows: 1) determine if the attributes of origin, use, place of purchase and price are tied to demographic preferences; 2) provide recommendations to producers and other stakeholders. To accomplish the above objectives, this study will utilize a conjoint choice experiment (CCE) of palm oil in Togo to determine what attributes and pricing consumers most desire. Survey data will be analyzed using Latent Class Analysis to determine palm oil attribute preferences and significant socio-demographics of palm oil consumers. Findings will be presented to Togolese palm oil farmers so they can better market their product. This will likely lead to a change in the product producers create and the purchasing of more locally grown and produced palm oil.

By identifying the attributes which drive consumer purchases, Togolese palm oil producers can alter their production and distribution methods. This will lead to increased local production of palm oil in Togo. Small scale farmers will have the opportunity to identify consumer preferences and adjust their production and distribution accordingly. For example, the place of purchase for a consumer indicates the quality and refinement process, if that is a deciding factor in what palm oil a consumer purchases, the farmers can change their product. The increase in local palm oil production will keep money within the local community. Keeping money in the local economy will lead to investment in the local infrastructure e.g., roads and schools.

Campaigning for domestic palm oil will have several benefits for the environment. Imported products result in greater environmental damage because of the costs of transportation and foreign exchange expenditures. In addition to the fossil fuels used in transportation, imported palm oil also contains more plastic packaging. Local palm oil is often sold in reusable containers. If the consumption demands of the country are met with small scale farms the state will not need to invest in large scale plantations. These plantations lead to deforestation and are not sustainable. A small, local farmer could include oil palms on his land along with other crops; contributing to diversity and improve the health of the soil. California wine growers have been campaigning to advance the perception of their products over the years; California wine was once seen as inferior and now has an excellent reputation for quality. The survey strives to identify the tools which help to facilitate the production and perception changes in order to achieve the same success with palm oil that California was able to accomplish with wine.

Methodology

This study considered multiple variables in a final recommendation for the people of Togo which will increase the local production of palm oil. The recommendation comes from a literature review, interviews with stakeholders, and the assessment of the conjoint surveys.

Conjoint Choice Experiment

Researchers use Conjoint Choice Experiment (CCE) to identify key attributes of a product that are believed to influence respondents' preferences. Conjoint choice is designed to study hypothetical markets and determine consumer preferences of a product based on the bundled characteristics of that product (Louviere and Woodworth, 1983). The characteristics' of a product are referred to as "attributes" and the different forms the attributes can take are referred to as "levels." Lancaster (1966), theorized the utility of a product is based on the bundle of attributes it has, rather than the good itself. Different levels for each attribute are chosen and variations of those attributes are explored. These attributes are formed into several profiles of the product featuring permutations of the attribute levels that are chosen to satisfy an experimental design. Respondents are asked to evaluate and select profiles through a survey-based method. The respondents' results are used to estimate preference structure and evaluate product interest. Respondents' must make a trade-off for the product they most desire.

Survey Design

Surveys consist of two parts, a seven-question socio-demographics section and a 12-question choice consumer preference section. The demographics section was designed to collect basic background information about the sample population. The conjoint choice questionnaire for this study uses a set of twelve multiple choice questions, referred to as "tasks." Each task provides the respondent with two bundled variations of palm oil attribute-levels to choose from. These bundled variations are referred to as "profiles." When respondents choose one of the two palm oil profiles, they must make tradeoffs between which

attribute-levels are most desirable or important to them. The profiles selected by the respondents can be analyzed to determine trade-offs and values.

Relevant attribute levels align with consumers' preferences. One technique for selecting attributes is in-depth interviews for identifying attributes. (Bech-Larson et al., 1997). Attributes for this project were chosen based on the characteristics and varieties of palm oil available in West Africa, on the observation of the Togolese palm oil market, a literature review, and interviews with stakeholders. Because of being in a remote location, interviews were conducted over the phone to gain insight and expert opinion on the issue of Togo's importation of red palm oil. Olowo-'djo Tchala, Paul Sinandja, and Tamimou Elhaj were interviewed. These experts gave insight on the current market prices of palm oil in Togo, market trends, technology being used for oil extraction, and general consumer knowledge of the product.

Four attributes were chosen from stakeholder interviews and a literature review: (1) origin, (2) use, (3) place of purchase, and (4) price. The product attributes and corresponding levels used are featured in Table 1. The combination of the four attributes with their corresponding levels lead to a total number of 48 hypothetical products.

Table 1. Attributes and Levels

Attributes				
	Origin	*Types of Use*	*Place of Purchase*	*Price (per Liter)*
Levels	Local Imported	Cooking Cosmetic	Local Open Market Boutique Supermarket	500 CFA 1000 CFA 1500 CFA 2000 CFA

Note : 600CFA = $1 USD (XE Currency Converter, 2015)

Distributing and Conducting Surveys

The data used in this market study were collected from face-to-face interviews of 300 residents of Togo. Interviewers randomly selected consumers and asked for their participation. Surveys were conducted at markets, boutiques, with people walking down the street, door-to-door, and in street stalls. These various locations were chosen to fulfill the randomness needed of age, sex, and income levels. The surveys were distributed in the city of Sokodé. The town of Sokodé is the second largest city in Togo, boasting a population of just over 100,000 ("City Population: Togo," 2014). It is located within the central region of Togo, serving as a major transportation and trade route between Northern and Southern Togo, Benin, and Ghana. The presence of several large rivers accredits the ideal agricultural conditions.

Local Togolese people were employed to assist with the surveys and possible translation into local language, this also allowed for surveying of people with limited literacy. The Togolese selected to help covered a wide age range and were male and female. Having different ages and sexes allowed us to bypass any culture taboos of women addressing men and the young requesting help from the elderly.

Data Analysis

CBC Latent Gold 5.0 (Statistical Innovations Inc., 2005) was used to analyze the conjoint choice data. Latent Gold is a tool used to discover segments of the respondents who have similar preferences when answering the choice-based conjoint questionnaire. Latent Gold contains three modules for estimating latent class cluster models, discrete factor models, and latent class regression models. The CBC Latent Class Module provides a log-likelihood Bayesian information criterion (BIC) to help decide how many segments to accept. Smaller values of BIC are preferred when selecting segment size. In addition to BIC, the information provided within each segment is also important. For example, more segments may provide a lower BIC but convolute the results to the point that it is difficult to understand and interpret. Latent Gold will be used to evaluate what socio-economic factors influenced classes.

The goal of a traditional conjoint study of this kind is to determine the relative effects of each attribute in influencing one's purchase decision; a goal attained by estimating regression (or logit) coefficients for these attributes (Vermunt and Magidson, 2002).The first step of Latent class analysis is to determine if the study population is homogeneous or if there are two or more segments (classes). If more than one segment is found, regression models are estimated for each segment. These multiple segments may reveal different influences on purchasing decisions.

Latent Gold is used to evaluate respondent choice behavior by capturing both observable attributes of choice and unobservable factors found in the heterogeneity of individuals' behavior (Greene and Hensher, 2003). Respondents are placed into different classes based on their responses to the profile questions. According to MacFadden (1986), the probability of making a specific choice among a pair of product profiles is based on the perceived value of product attributes, and covariates of respondents (such as respondent's age and education). "The basic idea underlying latent class (LC) analysis is a very simple one: some of the parameters of a postulated statistical model differ across unobserved subgroups. These subgroups form the categories of a categorical latent variable" (Vermunt and Magidson, 2003).

Utility estimation is used with Choice-Based Conjoint or MaxDiff data. The estimation works by dividing respondents into classes with similar preferences based on their responses to profile questions. The part-worth utility and the probability of a respondent being in a specific class are estimated.

The classes feature the preferences of the respondents which are relatively similar, but the preferences are quite different from group to group. You may specify how many groups are to be considered, this study used 1-5 classes for data analysis.

Latent class reports the part-worth utilities for each class or "segment." Latent class analysis does not assume that each respondent is "in" one group or another. Rather, each respondent is considered to have some non-zero probability of belonging to each group. If the solution fits the data very well, then those probabilities approach zero or one. Latent Gold uses latent class and finite mixture to estimate three separate module segments. These modules include: LC Cluster models, DFactor models, and LC Regression models. The LC Cluster Model features clusters which contain homogeneous groups of respondents who share common model parameters. The DFactor Model is a restricted form of the LC Cluster model used to refine variable differences. The LC Regression Model predicts the dependent variable as a function of predictor variables. The part-worth utilities and z-values are determined by the regression models. Latent class and finite mixture comprises of three parts:
1. the assumed probability structure, which defines the relevant set of conditional independence assumptions among the variables in the model,
2. the assumed distributional forms for the response variables, which will depend on the scale types of the variables concerned,
3. the regression-type constraints used to gain parsimony in the description of the relationships between the variables in the model.
(Vermunt and Magidson, 2005).

Preference Model

The probability for individual n in class m choosing product profile i, P(i), is measured using two types of characteristics: (1) product attributes and (2) individual socio-demographic factors.

An example of the preference model is below, where (O, U, P_P, P, A, S, E, F) represents the attributes and socio-demographic factors. These attributes and factors are: origin, use, place of purchase, price, age, sex, education, and frequency of purchase.

(Equation 1). $$P(i) = f(O, U, P_P, P, A, S, E, F)$$

Results

Socio-Demographic Results

The first part of the surveying process included a seven part questionnaire to determine the background of the sample population being surveyed. Questions included: age, sex, number of years living in the city, use of palm oil, education level, and ethnicity.

Depending on differing classifications, there are between 20 and 40 different ethnic groups in Togo. Fourteen are represented in this survey, including: Tem, Kabyé, Moba, Tchamba, Balayk, Aby, Peule, Kotokoli, Losso, Koussoumbeau, Beninoise, Bassar, Tchokossi, and Kouloum.

Survey respondents were asked how often they purchase one-liter of palm oil. Thirty percent responded once of week, 42 percent purchase palm oil two or three times a month, and 28 percent purchase it once a month. The respondents' socio-demographic data were compared to Togo's demographic statistics to insure the survey is an accurate representation of the

population. The survey was conducted in an urban area, which accounts for the 95 percent response of living in a city compared to Togo's overall population of 38 percent (Index Mundi, 2014). In Togo, females account for 50.68 percent of the population and males 49.31 percent. In this survey, the respondents were 43.60 percent female and 56.40 percent male. The lower percentage of women can be attributed to the fact that the surveys were conducted in the middle of day and many women traditionally are occupied with household duties and commerce and do not have time to participate. The median age in Togo is only 19.6 years old. The life expectancy is 64.06 years. Following the guidelines of the Institutional Review Board, no one under the age of 18 was surveyed. This survey included a population older than the national average. The literacy rate, defined as anyone of the age of 15 who can read and write, for Togo is 60.40 percent (Index Mundi, 2014). This survey had similar representation with 53% of respondents with education of middle school or above.

Table 2. Socio-Demographic Data of Togo and Survey
Source : (Index Mundi, 2014).

Togo				Survey	
Age		*Age**		*Age*	
0-14 years	40.7%	0-14 years	0%	0-17 years	0%
15-24 years	19.7%	15-24 years	33.22%	18-24 years	21%
25-54 years	32.1%	25-54 years	54.13%	25-54 years	73%
55-64 years	4.2%	55-64 years	7.08%	55-64 years	4%
65+ years	3.3%	65+ years	5.56%	65+ years	2%
Sex					
Female	50.7%			Female	43.6%
Male	49.3%			Male	56.4%
Literacy Rate					
Age of 15 and over cannot read and write	39.6%			Respondents with no formal education or primary education	47%

*Percentage estimated by controlling for the exclusion of the under-15 age group to allow comparison to 100% of the sample. Data for 18-24 were not available.

Conjoint Choice Experiment Results

Data from three-hundred respondents were analyzed using Latent Gold software. The 2-class model was chosen as an optimal number of classes, because of the low BIC value (3412.21), and also the 2-class results are more interpretable. The results of this study reveal two distinct clusters of consumers; price-sensitive and origin-seeking consumers. These clusters were compared against the full sample size. Table 3 shows the part-worth utility value of each level for palm oil.

Table 3. Estimated Parameters Values of Palm Oil Attributes and Covariates.

	Full Sample	Price Sensitive Cluster	Origin Seeking Cluster
Class Size	100%	72%	28%
ATTRIBUTES			
Price	0.0000	-0.0001**	0.0001
Origin			
Imported	-0.3418**	-0.0779**	-1.8443**
Local	0.3418**	0.0779**	1.8443**
Use			
Beauty	-0.0914**	-0.1199**	0.0811
Cooking	0.0914**	0.1199**	-0.0811
Place of Purchase			
Boutique	0.0353	0.0946**	-0.0682
Market	0.0624	-0.0066	0.3224
Supermarket	-0.0978**	-0.0880*	-0.2542
COVARIATES			
Age			
18-35		0.0949	-0.0949
35+		-0.0949	0.0949
How Often Do You Purchase Palm Oil			
Less than Once a Week		0.1485	-0.1485
Once a Week		-0.1485	0.1485
Education			
Formal Education		-0.5028**	0.5028**
No Formal Education		0.5028**	-0.5028**
Sex			
Female		0.2441**	-0.2441**
Male		-0.2441**	0.2441**

*Significant at 0.05 level, **Significant at 0.01 level

The full sample shows a strong significant preference for local origin and a strong preference against imported origin. For type of use, respondents also had a strong significant preference for cooking and strong significant preference against beauty. Respondents also had a strong preference for purchasing at a supermarket. No other attribute levels were significant for the place of purchase attribute.

The price sensitive cluster (72% of total respondents) had a negatively significant price attribute. This signifies a consumers' willingness to pay more for a desired product. This cluster also significantly preferred local origin and significantly did not prefer imported origin. For type of use, respondents significantly preferred cooking use and did not prefer beauty use. For place of purchase, respondents significantly prefer to buy from a boutique and significantly do not prefer to purchase from a supermarket. The socio-demographic analysis reveals that respondents from this cluster purchase one liter of palm oil once a week and are formally educated.

The origin seeking cluster (28% of total respondents) significantly prefers local origin and significantly does not prefer imported origin. No other attributes or levels were significant for this cluster. The socio-demographic analysis reveals respondents from this cluster purchase palm oil less than once a week and are not formally educated.

Attribute Importance is used to determine which attribute consumers favor the most when purchasing the product. According to Orme (2010), attribute importance is calculated to quantify the importance that each class placed on an attribute when selecting palm oil options from the questionnaire. Attribute importance is determined by considering how much difference each attribute could make in the total utility of a product. That difference in total utility is the range in the attribute's utility values, or its part-worth utility.

For the full sample, origin was the overwhelming most important attribute with 66%, followed by use (18%) and place of purchase (16%). The price sensitive cluster is fairly evenly split with price (23%), origin (21%), use (32%), and place of purchase (24%). The origin seeking cluster had origin has the most important attribute (81%), then place of purchase (13%), use (4%) and finally price (2%).

Table 4. Attribute Importance for Palm Oil in Togo

	Full Sample	Price Sensitive Cluster	Origin Seeking Cluster
Class Size	100%	72%	28%
ATTRIBUTE IMPORTANCE			
Price	0%	23%	2%
Origin	66%	21%	81%
Use	18%	32%	4%
Place of Purchase	16%	24%	13%

Discussion and Conclusions

Globalization and expanding trade routes has led to increased importation of goods to meet the basic demands of a growing population. Goods which were once grown in the country and exported worldwide are now being imported. One of those goods is palm oil, which plays a central part of the Togolese diet. Between 1995 and 1996 domestic production was reduced by half; the country began importing palm oil in 1996. Togo imported 3,000MT of palm oil in 1996. By 2003, the county was importing 107,000MT (Index Mundi, 2014).

A conjoint choice experiment of consumer preference for palm oil was conducted in Togo. Examining a consumer's preference for domestic versus imported palm oil will aid local farmers in producing the most desirable product. In June 2014, three-hundred surveys were collected over a two week period in Togo. The objectives of this study are as follows: 1) determine if the attributes of origin, use, place of purchase and price are tied to demographic preferences; 2) provide recommendations to producers and other stakeholders.

The results of this study reveal two distinct clusters of palm oil consumers in Togo. Based on the z-value, attribute importance, and socio-demographic data; a price sensitive and origin seeking clusters were identified. The price sensitive cluster included consumers who bought palm oil more frequently and were formally educated. These characteristics could be the driving force behind this cluster having seven significant attribute levels; more educated consumers are more selective with their goods. It is recommended that local farmers who wish to market at a competitive price to produce local palm oil for cooking and sell it at boutiques. It is advised producers not market their product to supermarkets.

Assisting farmers by identifying the ideal product consumers want will increase local palm oil purchasing. Even with this information, it is crucial that small-scale farmers adapt their technology to make production more efficient. It is not uncommon for communities to come together in labor and capital to accomplish a large project. Community members can share the machinery needed for extraction. This is currently done with such machinery as tractors. An increase in local production will drive down the demand for imported palm oil.

This study is one of a few existing market research studies on palm oil in West Africa. This study will link farmers to markets, improving the value chain of palm oil. Farmers are able to add value to their product; increasing local production and supporting the local economy. Upon completion of this study, findings will be shared with agricultural aide organizations based in Togo and local farmers. A site suitability analysis revealed the best growing areas for palm oil with in the country of Togo; this analysis will also be shared. The producers will be able to take the new information and add value to their products, creating additional income. Market information will be provided to producers on how to grow cost effectively so they can produce what is desired at the willingness to pay price. This emphasis on local palm oil production strengthens the domestic economic value chain, advances rural development, and moves the country toward a better balance of trade and conserve valuable foreign exchange. To insure continued success for small-scale palm oil producers, there needs to be additional extension services provided by the government and international non-profits linking producers to market information and guiding them on how to use the information appropriately.

REFERENCES

[1] B2B Marketplace. (2015). "Top Products Imported by Togo" http://countries.bridgat.com/Top_Products_Imported_by_Togo.html

[2] Bech-Larson T.; Grunert, K.G.; and Poulsen, G.B. "The Acceptance of Functional Foods on Denmark, Finland, and the US: a Study of Consumers' Conjoint Evaluation of the Quality of Functional Food and Perceptions of General Health Factors and Cultural Values." Working Paper 73, The Aarhus School of Business, April. 2001.

[3] "City Population: Togo." (2014). http://www.citypopulation.de/Togo.html

[4] Danielsen, Finn et al. (2008). "Biofuel Plantations on Forested Lands: Double Jeopardy for Biodiversity and Climate." Conservation Biology. vol. 23, no. 2 pg: 348-358.

[5] Greene, W. H. and D.A. Hensher. 2003. A latent class model for discrete choice analysis: contrasts with mixed logit. Transportation Research Part B: Methodological, 37 (8):681-698.

[6] Index Mundi. (2014). "Palm Oil Production by Country in 1000 MT" http://www.indexmundi.com/agriculture/?commodity=palm-oil&

[7] Lancaster, K. "A New Approach to Consumer Theory." *Journal of Political Economy*. 1966. vol. 74 no (2) pg: 132-157

[8] Louviere, Jordan J.; Woodworth, George. "Design and Analysis of Simulated Consumer Choice or Allocation Experiments: An Approach Based on Aggregate Data." *Journal of Marketing Research*. 1983. pg: 350-367.

[9] McFadden , Daniel. (1986). "The Choice Theory Approach to Market Research Marketing Science" Vol. 5, No. 4, Special Issue on Consumer Choice Models (Autumn, 1986), pp. 275-29

[10] Ofosu-Budu, K., and D. Sarpong. (2013). "Oil palm industry growth in Africa: A value chain and smallholders study for Ghana" *Rebuilding West Africa's Food Potential*, A. Elbehri (ed.), FAO/IFAD.

[11] Orme, B. (2010). "Getting Started with Conjoint Analysis: Strategies for Product Design and Pricing Research." Second Edition, Madison, Wis.: Research Publishers LLC

[12] Statistical Innovations Inc. (2005). LatentGold Version 5.0.0.14303 Belmont, MA 02478

[13] Sustainable Palm Oil Platform. 2014. "Africa. RSPO Facts and Figures." http://www.sustainablepalmoil.org/palm-oil-by-region/africa/

[14] Tersoo, Pawa. (2014). Agribusiness as a veritable tool for rural development in Nigeria. International Letters of Social and Humanistic Sciences. Vol. 3 pgs. 26-36 http://www.ilshs.pl/wp-content/uploads/2013/10/ILSHS-3-2014-26-36.pdf

[15] United Nations Food and Agriculture Organization (FAO). "The Republic of Togo." 2014. http://www.fao.org/SD//2003/SDARcdrom/docs/TogoE.htm

[16] Vermunt, Jeron .K. and Magidson, Jay. (2002). "Nontechnical Introduction to Latent Class Models." Statistical Innovations White Paper #1. http://www.statisticalinnovations.com/articles/lcmodels2.pdf

[17] Vermunt, Jeron .K. and Magidson, Jay. (2003). "Latent Class Analysis", Encyclopedia of Social Science Research Methods, Sage Publications. http://www.statisticalinnovations.com/articles/Latclass.pdf

[18] Vermunt, Jeroen K. and Magidson, Jay. (2005). "Technical Guide for Latent GOLD 4.0: Basic and Advanced." Belmont Massachusetts: Statistical Innovations Inc. http://www. statisticalinnovations.com/products/LGtechnical.pdf

[19] World Bank.(2013). "Betting on Palm Oil." World Bank News. http://www.worldbank.org/en/news/feature/2013/11/19/betting-on-palm-oil

[20] The World Factbook 2013-14. "Field Listing: Industries." Washington, DC: Central Intelligence Agency, 2013 .https://www.cia.gov/library/publications/the-world-factbook/index.html

[21] XE Currency Converter. (2015). "(USD/XOF) US Dollar to CFA Franc Rate." http://www.xe.com/currencyconverter /convert/?Amount=1&From=USD&To=XOF