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## 5th International Conference of AAAE

23 - 26 September 2016, United Nations Conference Centre,  
Addis Ababa - Ethiopia

Transforming Smallholder Agriculture in Africa:  
The Role of Policy and Governance



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*Invited paper presented at the 5th International Conference of the African Association of  
Agricultural Economists, September 23-26, 2016, Addis Ababa, Ethiopia*

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# **A survey of consumer perceptions and preferences for geographical indication and quality attributes of honey in Kenya**

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**A paper submitted for oral presentation at the 5<sup>th</sup> International Conference of the African Association of Agricultural Economists (AAAAE), 23<sup>rd</sup> - 26<sup>th</sup> September 2016, Addis Ababa, Ethiopia**

## **Abstract**

Geographical indication (*GI*) is an important measure for revealing the origin of a product and communicating the salient site-specific practices embedded in the value chain. For most products and services, recent literature has extensively documented consumer concerns for *GI* and other quality attributes especially in the developed nations. However, in the developing countries there is very limited empirical analysis of these aspects; in fact there is a complete lack of research insight on *GI* for honey in Kenya. The present study contributes to fill this knowledge gap through a choice experiment survey of consumer perceptions and preferences for *GI* and other important quality attributes in honey. The study applied the random parameter logit (RPL) model to analyze data from a random sample of 478 honey consumers drawn from three distinct areas in Kenya: a rural semi-arid honey producing area, *Kitui*; a humid production-consumption area, *Nakuru* and; a cosmopolitan net consuming area, the city of *Nairobi*. Results show that consumers have significant positive preferences for *GI* labelling, floral source disclosure, organic production methods and joint public-private certification of honey quality. The middle income category of consumers and the relatively aged ones have a specifically strong preference for organic honey. These insights should be integrated in the improvement of honey value chains.

**Key words:** Geographical indication, quality-attributes, honey, consumers, Kenya.

## 1.0 Introduction and the Research Issue

Food quality and safety are critical elements of the food security equation, and contribute towards the achievement of sustainable development of any society. Globally, the *codex alimentarius* of the Food and Agriculture Organization of the United Nations (FAO) prescribes various standards that must be enforced to ensure that the food supplied to consumers does not harm their health and safety. However, non-compliance with the standards continues to be a great challenge in the food value chains. Consequently, there is rampant occurrence of food fraud; mostly manifested through food labels portraying false identities and quality and safety levels of various products. For instance, Cawthorn et al. (2013) reported incidences where traces of meat from donkey, goat and buffalo was packaged as beef and sold in retail stores in the Republic of South Africa. In Kenya, Kutto et al. (2011) found excess *lead* metal contamination in the kales vegetables sold to consumers in the capital city, Nairobi. Further, Muthui (2012) noted cases of middlemen adulterating honey with concentrated sugar solution, molasses, melted sugar and crushed bananas. Such food adulteration has the serious consequence of possibly causing health hazards to consumers. From a marketing perspective, conveying wrong product information erodes consumers' trust in food traders' labels and makes them shun the affected retail stores, with concomitant economic losses in the food trade (Premanandh, 2013; Stanciu *et al.*, 2013). Considering the primary responsibility of food value chains to safeguard human health, the World Trade Organization (WTO) prescribes use of geographical indication (*GI*) to authenticate food product origin and production methods (European Commission, 2012).

Essentially, using *GI* labels is meant to emphasize site-specific aspects that have a bearing on product composition with the aim of enticing consumers to pay a premium for authentic products; for instance, fruit taste depends on soil type and climatic variables of a specific region. Indeed, *GI* is an important attribute for accessing high-value niche markets for special products. The *GI* concept has mainly been adopted in the marketing of wines and spirits in Europe. In the case of honey, known *GI* labels include *Manuka* honey from New Zealand (Blakeney *et al.*, 2012) and *Oku* honey from Cameroon (Kaškonienė and Venskutonis, 2010). Studies show that consumers in developed countries are readily willing to pay premiums for origin-labeling of honey (Mabiso, 2005; Skuras and Vakrou, 2002; Wu *et al.*, 2015). In Kenya, however, the adoption of *GI* labelling of honey is still at a pilot stage; and this requires insights on whether consumers would be willing to pay a premium for this initiative.

Besides *GI*, several studies have documented consumer willingness to pay for various quality and safety attributes of food products (see for example, Carlsson *et al.*, 2005; Caswell, 1998; Loureiro and Umberger, 2007; Verbeke and Ward, 2006). More specifically, Cosmina et al. (2016), Murphy et al. (2000), Roman et al. (2013) and Yeow et al. (2013) have investigated consumer preferences for honey quality attributes. However, no study has examined preferences for *GI*, quality and safety attributes in an integrated manner, especially in a developing country context. The present study used primary survey data from a choice experiment method (Adamowicz *et al.*, 1998) to understand Kenyan honey consumers' perceptions and preferences for *GI* and other quality attributes.

## 2.0 Methodology

### 2.1 Choice Experiment Design and Data Collection

Following standard practice in CE design, two sets of attributes; compulsory and voluntary features were defined. The compulsory attributes are the mandatory national and global legal requirements that must be adhered to in line with established code of conduct for all food value chain actors to prevent food poisoning. Voluntary (optional) attributes are the ones that enter CE design framework; they allow consumers sufficient flexibility to exercise axioms of rationality in expressing their preferences guided by expected utility. Six important honey attributes and their levels (Table 1) were identified and validated through a comprehensive review of received literature, key expert consultations and focus group discussions (FGD) with representatives of consumers, food quality assurance officials and policy makers.

**Table 1: Honey Attributes included in the CE Design**

<i>Attribute</i>	<i>Possible levels</i>
Geographical indication	Yes; No
Disclosure of floral source	Yes; No
Production method	Organic; non-organic
Viscosity	Loose; thick
Quality certification organization	Public; private; joint public-private
Price premium per half kilogram of honey (in Kshs)*	300; 375; 450

Note: \*1USD\$ was equivalent to Kshs 95 at the time of survey.

*GI* labelling was deemed necessary to enable traceability. Further, the *floral source* conveys information on type of plants used by bees to form nectar and this influences the quality of honey (Kaškonienė and Venskutonis, 2010). *Production method* signifies whether natural methods (organic) have been used and this addresses the emerging concerns by consumers for chemical-free foods. *Viscosity* is an attribute that shows the extent of concentration/dilution of honey. Generally, preference for viscosity depends on the intended use of honey; thick honey is preferred for medicinal applications, while loose honey is commonly used in normal meals. *Certification organization* measures consumer perception and trust on the efficacy of public versus private institutions in quality assurance. Finally, *price* provides the basis for estimating consumer trade-offs (in monetary terms) for each attribute of honey.

A *D-optimal* procedure (Scarpa and Rose, 2008) was applied to generate the CE design. This was achieved in two stages; first, an orthogonal fractional factorial design was applied in a pilot survey of 60 consumers to estimate prior coefficients. Next, the prior coefficients were used to create an efficient design (with a *D-efficiency* measure of 87% and *B-estimate* of 82%). The design was generated using *NGENE* software (ChoiceMetrics, 2009) and during the survey, each respondent was randomly shown six of the 36 paired choice tasks. Each choice task had two alternatives (*A* and *B*) describing different possible combinations of honey attributes, and a neither option (alternative *C*) to allow respondents flexibility in the choices. An example of the choice tasks presented to respondents is illustrated in Table 2.

A random sample of 478 honey consumers were interviewed in three distinct areas in Kenya: a rural semi-arid honey producing area, *Kitui*; a humid production-consumption area, *Nakuru*

and; a cosmopolitan net consuming area, the city of *Nairobi*. The survey was conducted by use of structured questionnaires and the CE design using face-to-face interviews.

**Table 2: Illustration of Choice Options Presented to Respondents**

<i>Attribute</i>	<i>Honey option A</i>	<i>Honey option B</i>	<i>Neither option A nor B</i>
<i>GI labeling</i>	Yes	No	
Floral source label	No	Yes	
Production method	Non-organic	Organic	
Viscosity	Thick	Loose	
Certification organization	Private	Private	
Price per half litre (Kshs)	450	300	
<b>Which ONE would you prefer?</b>			

## 2.2 Model Specification

The Random Parameter Logit (RPL) model, which allows preference heterogeneity (Train, 2003) was applied in data analysis. A model that comprises interactions of choice attributes and consumer characteristics was estimated. Further, following Hanneman (1984), marginal willingness to pay (WTP) estimates were computed to show the trade-offs that Kenyan consumers would make between various honey attributes and money. The estimations were done using LIMDEP version 10/NLOGIT 5 econometric software (Greene, 2012).

## 3.0 Results and Discussion

### 3.1 Sample Characteristics

Table 3 presents a summary of consumer characteristics. On average, most respondents were in the middle age bracket, which is a very active group in honey consumption. The average monthly household income is approximately USD\$400, with a typical consumer having completed secondary level of education. Two-thirds of the consumers interviewed were males.

**Table 3: Socioeconomic Characteristics of Honey Consumers**

<i>Variable</i>	<i>Statistics (n = 478)</i>
Average age of respondent	32.4
Average years of completed formal education	12.7
Average monthly household income (Kshs)	36,549.7
Gender (% male)	66.1

Source: Survey Data (2014).

### 3.2 Consumer Perceptions on Honey

Consistent with the emerging concern for healthy foods, organic honey is perceived to be better than non-organic (Table 4). Generally, consumers tend to associate organic foods with reduced chemical contamination, and hence consider such foods to have less likelihood of causing food-based lifestyle illnesses such as diabetes and obesity. There was a strong desire for honey to be labelled with indicators of origin, floral source and safety level. Over four-fifths of the consumers expressed a strong agreement with the notion that honey produced in relatively dry areas was of superior quality; due to the unique variety of plant species in such

ecologies. Further, about three-quarters of the consumers reported that thick honey was of higher quality than loose ones. Contrary to the growing emphasis on food processing as a form of value addition, honey consumers consider unprocessed honey (natural) as the ideal product. This can be explained by the fear of adulteration in the processing stage. Finally, slightly over half of the consumers thought that the current average price of honey (Kshs 500 per half litre) was rather too high; considered that it is not labelled with *GI* and other quality indicators.

**Table 4: Consumer Perceptions on Honey Aspects**

<i>Consumer Perceptual Issue</i>	<i>% of respondents (n = 478)</i>
Organic honey is more superior	85.4
Label honey with origin and floral source	78.8
Improve labelling for food safety	80.9
Thick honey has better quality than loose honey	73.2
Current prices for honey are too high	58.4
Honey from semi-arid areas is better than that from highlands	86.0
Unprocessed honey is better than processed one	52.0

Source: Survey Data (2014).

### 3.3 Random Parameter Logit Estimates of Preferences for Honey Attributes

The RPL results show that consumers had a positive and significant preference for *GI* labelling, floral source labels, organic and thick honey (Table 5). Further, there is a higher positive preference for private certification than public or joint public-private certification; this implies lack of confidence in quality assurance by public institutions. As expected, honey consumers display rationality, hence negative preference for price. Significant derived standard deviations for honey attributes show that preferences for *GI* labelling, organic and thick honey, and joint public-private certification are indeed heterogeneous among the sample of consumers. This calls for niche or segment-specific strategies for honey production, value addition and marketing. Specifically, the results from the interactions analysis indicate that: educated consumers do not prefer *GI*-labelled honey, while relatively older consumers and those with higher income prefer organic honey.

As people gain more formal education, it is generally expected that their overall awareness level increases and thus, even without food-origin labelling, such consumers will tend to have requisite information on pertinent issues regarding the food production and composition. Older consumers have more choosy diets and generally avoid foods mixed with chemicals; they are more health conscious and would be expected to go for organic foods. Finally, the rising middle income-class society is more associated with hype; this is where organic foods are likely to be classified as one of the fashionable food items for the emerging young wealthy segment of consumers.

**Table 5: Consumer Preferences for Honey Attributes**

<i>Variable</i>	<i>Coefficient</i>	<i>Standard error</i>
<i>GI</i> label	2.041***	0.256
Floral source label	0.716***	0.075
Organic	1.935***	0.273
Thick honey	1.159***	0.101
Private certification	2.307***	0.521
Joint public-private certification	0.778***	0.129
Price	-0.002**	0.001
<b><i>Derived standard deviations</i></b>		
<i>Sd_</i> <i>GI</i> label	0.798***	0.131
<i>Sd_</i> floral source label	0.107	0.227
<i>Sd_</i> organic	1.328***	0.112
<i>Sd_</i> thick honey	0.945***	0.124
<i>Sd_</i> private certification	0.039	1.038
<i>Sd_</i> joint public-private certification	0.460***	0.167
<b><i>Interactions</i></b>		
Education* <i>GI</i>	-0.190**	0.085
Education*organic	-0.062	0.101
Income*organic	0.129*	0.073
Age*organic	0.436***	0.166

Note: *N* (sample size) = 478; McFadden *pseudo-R*<sup>2</sup> = 0.43; Log likelihood = -1,623.21; statistical significance levels: \*\*\*1%, \*\*5%, \*10%.

Source: Survey Data (2014).

Marginal willingness to pay (WTP) estimates were computed to show possible trade-offs that consumers would be expected to make if provided with honey that comprises *GI* and various quality and safety features. Table 6 below shows the WTP measures.

**Table 6: Marginal WTP for Honey Attributes**

<i>Attribute</i>	<i>Marginal WTP</i> <i>(95% confidence interval)</i>	<i>Standard error</i>
<i>GI</i> labelling	1,068.23** (590 to 1,547)	244.21
Floral source label	439.48*** (231 to 647)	106.06
Organic	1,293.13*** (692 to 1,894)	306.82
Thick honey	849 (473 to 1,225)	191.85
Private certification	2,325.76 (-527 to 5,178)	1,455.32
Joint public-private certification	314*** (160 to 468)	78.61

Note: statistical significance levels: \*\*\*1%, \*\*5%, \*10%.

Source: Survey Data (2014).



Consumers are willing to pay more for organic honey and *GI* labelling than other attributes. This signifies a greater concern for production methods and site-specific characteristics, including type of plants used by bees in honey formation. There is a desire to have joint public-private certification. Overall, the WTP estimates are somehow higher than current price of conventional honey; perhaps an indication that indeed consumers are prepared to pay more in order to have better honey comprising improved quality and traceable origin.

#### **4.0 Conclusions and Policy Implications**

This study has examined consumer perceptions and preferences for various honey attributes. It was noted that consumers perceive organic honey to be more superior to non-organic, honey from semi-arid areas is considered more nutritious than that from humid zones and there is a strong desire for indication of origin and floral source of the honey. The RPL results point to the need to focus on segment-specific value addition and marketing strategies. This should entail providing organic honey to the emerging middle income category of consumers. Also, the relatively older generation of consumers should be given organic/natural honey, which meets their preference range. Overall, honey consumers need *GI* labelling and floral source disclosure to assure them of where and how the honey has been produced and distributed. This is very essential for the development of consumer trust in transparent and responsible value chain development. The preference for joint public-private certification calls for building synergies between government and non-government agencies in strengthening food quality and safety inspection. Further studies that explore how to build honey producers' capacity to produce high quality *GI*-labelled honey and analysis of costs involved would provide relevant insights for comprehensive honey value chain development.

#### **Acknowledgements**

The authors acknowledge the African Economic Research Consortium (AERC) and the World Agroforestry Centre (ICRAF) for funding the survey from which for this paper is based.

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