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Consumer Preferences for Animal Source Foods in Uganda: Quality, Retail Forms and Retail Outlets

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ABSTRACT

This paper presents the results of a rapid consumer survey undertaken in Uganda. The survey aimed at identifying preferred quality and safety attributes, retail forms and retail outlets for major livestock products and by type of consumers. Results of the survey, combined with nationally representative household datasets, allows description of both the quantitative and qualitative dimensions of the developing market for animal-source foods, which is anticipated to provide major business opportunities for small-scale livestock producers in the short and medium terms.

Keywords: Demand; Quality; Livestock products; Livestock Revolution, Uganda

1 Background

Growing demand for animal-source foods in developing countries, portrayed as the “Livestock Revolution” (Delgado *et al.*, 1999), anticipates unprecedented business opportunities for livestock producers. However, institutional difficulties and market imperfections constrain producers’ ability to tap into the market and benefit from it. The cost to society of such lost opportunities is justification for some form of public intervention, which helps smallholders access the market, improve their livelihoods and, in some cases, assist them in escaping poverty.

The lack of specific data and indicators to properly characterize livestock markets represents a major constraint on the design of effective investments to increase smallholders’ market access. Although information such as that collected in household budget surveys is available on trends for overall consumptions of animal products, this data still insufficient.

This is the case not only for quantities purchased but also for consumers’ preferences for quality and safety attributes, retail product forms used, and the nature of retail outlets frequented. Yet, this information is a pre-condition for identification of the business opportunities that will enable smallholders to benefit from the “Livestock Revolution”.

This paper presents a practical methodology for, and results from an example of, a rapid consumer assessment and retailer survey. This was undertaken under the auspices of the World Bank-FAO-ILRI Livestock Data Innovation in Africa Project* in Uganda, and aimed at identifying the quality and safety attributes, retail forms and retail outlets preferred by consumers of animal foods. The results of the work

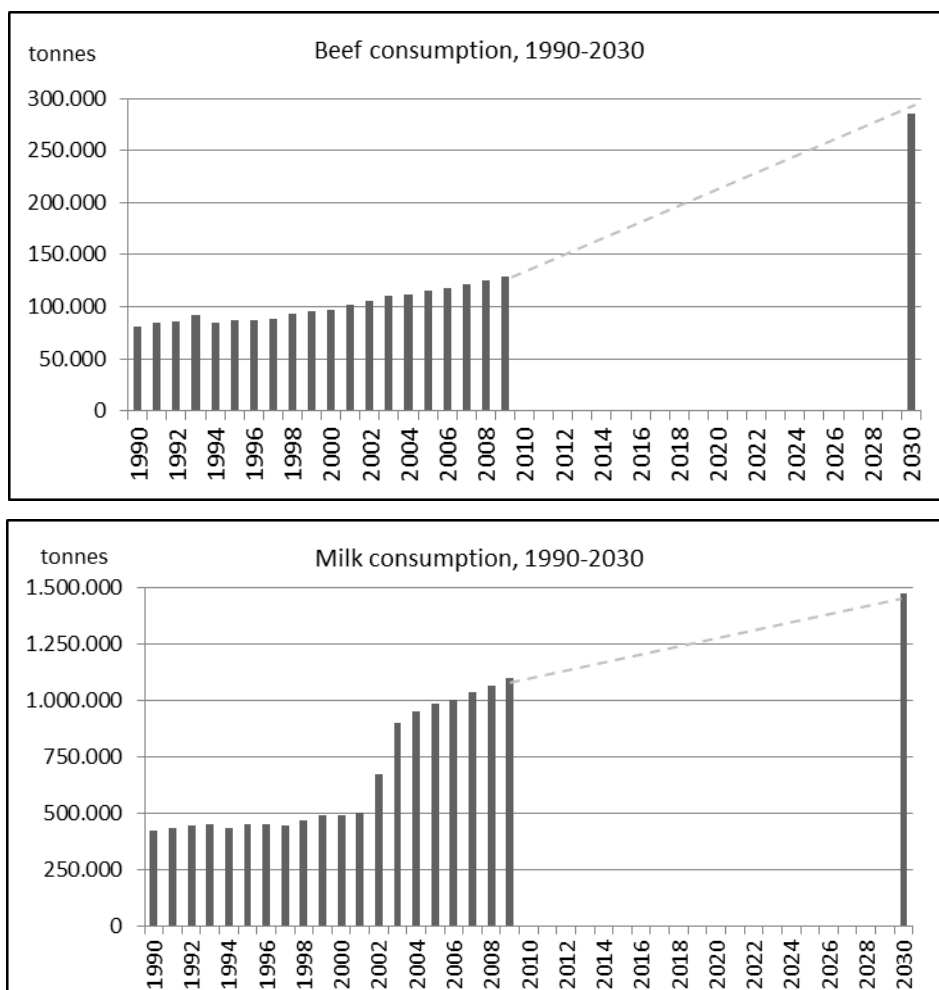
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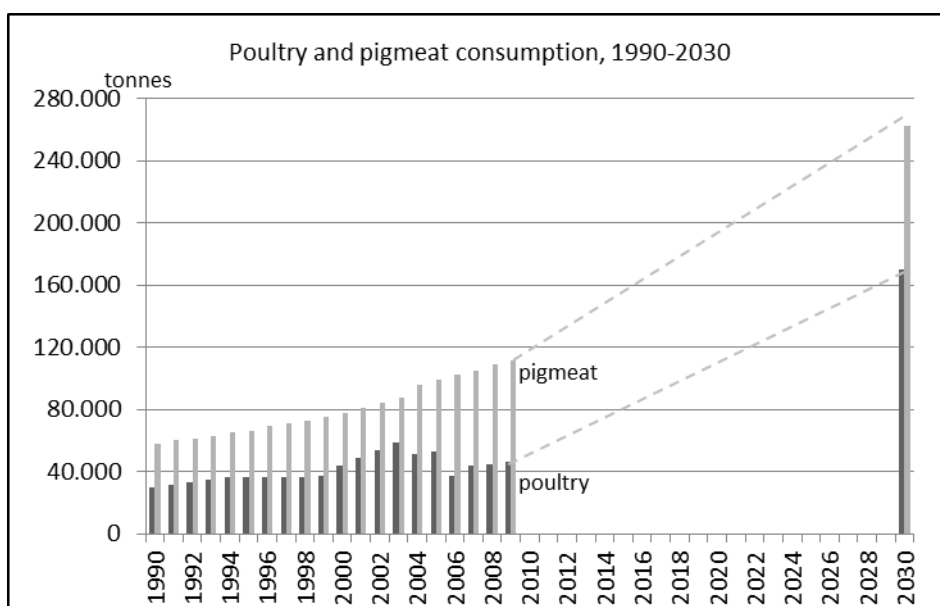
are used to describe better the emerging opportunities in the market for animal source-foods.

The next section presents past trends and projections in the consumption of livestock products in Uganda, based on FAO data. Section 3 outlines the methodology developed to appreciate the preferred quality/safety attributes, retail product forms and retail outlets by consumers in different income brackets and section 4 reports the results of a rapid assessment conducted in rural and urban areas of Uganda. Section 5 presents conclusions

2 Livestock products' consumption in Uganda

In the past two decades the consumption of animal-source foods has been generally increasing in the developing world, and is expected to grow further in the coming decades, particularly in sub-Saharan Africa (Delgado *et al.*, 1999; Pica-Ciamarra *et al.*, 2013; Sumberg and Thompson, 2013). Figure 1 displays consumption trends for beef, milk, poultry and pork in Uganda for the period 1990-2009 as well as the estimated consumption in 2030, as reported in FAOSTAT (2013) and FAO (2011).





Source: FAOSTAT (2013) and FAO (2011)

Figure 1. Livestock products' consumption in Uganda, 1990-2030

Between 1990 and 2009, the annual growth rate of beef, poultry and egg consumption was between 2.3 and 2.5 percent; that of mutton and pork averaged between 2.4. and 2.6 percent per year; and that of milk over 6 percent per year. Trends in milk consumption are influenced by Uganda's 2000 Dairy Industry Act which, by making the registration of milk production and sales easier for producers, facilitated the collation of dairy sector data. This explains the sudden increase in recorded milk consumption in 2000-2003 (Mette et al., 2011). Projections to 2030 suggest that consumption of livestock products will continue growing between 1 percent (milk) to 4.6 percent (poultry) per year, with total consumption increasing from a low of 34 percent for milk to over 360 percent for poultry (FAO, 2011) over the period.

From these data, the Livestock Revolution's extension to Uganda may be inferred. The key development question is then whether smallholders can profitably tap into the growing market for animal-sourced food. Indeed, according to the 2008/09 National Panel Survey, about 60 percent of rural Ugandan households keep some animals, with an average herd size of about 1.4 cattle equivalent (using a 250 kg live weight unit), while at the same time only 59 percent of all households report to consume livestock products (UBOS, 2010).

3 Methodology

A variety of surveys can be used to quantify the demand for and consumption of food, including those sourced from animals. Questions on food consumption are typically included in Household Budget Surveys, Household Expenditure Surveys, Living Standards Measurement Surveys and in some cases, the Agricultural Censuses (Pica-Ciamarra et al., 2012). The collated data, however, provide information only on whether the household consumed selected food items over the reference period or not, and on the quantity consumed. They do not convey information on the quality and safety attributes preferred by consumers, nor on the retail product forms purchased, nor the kind of retail outlets at which the products were purchased. These pieces of information are critical to the appreciation of market opportunities. Indeed, quantifying safety and quality attributes is a data-intensive exercise, embracing some non-observed and subjective dimensions[†]. Yet, in developing countries' context this information is essential for identifying the business opportunities that will enable smallholders to benefit from the markets for

[†] Food safety refers to all those hazards, whether chronic or acute, that may make food injurious to the health of the consumer. Quality refers to all other attributes that influence a product's value to the consumer, such as spoilage, contamination, off-odours (negative attributes) and colour, flavour, and texture (positive attributes). Quality has an objective and subjective dimension, the former being built into the produce and the latter perceived by consumers (FAO/WHO, 2003; Grunert, 2005). The distinction between quality and safety is not always very clear for consumers, with safety often considered as an essential part of quality (Islam and Jabbar, 2010; Röhr et al., 2005). Indeed, the two can be positively associated: contaminated food, for example, can be both unsafe and of poor perceived quality.

livestock products (the “Livestock Revolution”), and hence to guide public sector policies, and investments by public and private sectors as well as aid actors and funding agencies.

A method was developed to capture information in a robust, rapid and cost effective way, about preferred quality and safety attributes, retail product forms, and retail outlet choice across a variety of Ugandan consumer types. An initial step was an interview with expert informants to identify major types of retail outlet, including abattoirs, butcheries, roadside outlets / wet (open air) markets, small retail shops, supermarkets and ready-to-eat outlets; and the forms of each product traded in each outlet. Cicia and Colantuoni (2010) have found from a meta-analysis study, that food safety is the most important attribute that meat consumers consider when selecting the product. Some five principal food product safety and quality attributes were identified for each product based on expert informant interviews and published results of analyses of consumer preferences in developing countries (Jabbar *et al.*, 2010; Mergenthaler *et al.*, 2009). In this context, safety was considered as an attribute of quality. For beef, for instance, the following five attributes were identified: (1) Freshness; (2) Fat content; (3) Marbling; (4) Cleanliness of premises / absence of flies; (5) Presence of packaging. An important selection criterion for the attributes was that they be visible to the enumerator, to enable assignment of a quality score (0 or 1 depending on absence or presence of the attribute) to the product consumers were actually buying and/or that retailers were actually selling. The simple (unweighted[‡]) sum of scores for extant quality attributes was used as follows:

Table 1.
Quality scale for livestock products

Number of positive attributes	Quality level
0-1	Low
2	lower-medium
3	Medium
4	upper-medium
5	Good

As a second step, two sets of questionnaires were administered to measure purchased quantity and quality, record stated preferences, and assess the level of wealth / income of consumers buying a given livestock product, in a given retail form, at a given type of retail outlet. The first questionnaire was administered to retailers, and the second to consumers, of beef, chicken, eggs, goat meat, dairy products, and pork. Operators/proprietors in a sample of retail outlets were asked questions regarding their perception of customers’ level of income, sales trends in livestock products, and the main constraints to expansion of sales of the individual products. Consumers were asked questions about the reasons for purchase from a particular outlet, trends in consumption of nominated retail products, willingness to spend more on specified livestock products; and two questions on means of transport (used as a proxy for income, for which three levels were derived).

A double-stratified sampling method was used. The first stratum accessed specified numbers of urban and rural locations; the second, categories of retail outlet in each location. Within each of the seven categories of retail outlet, 3 outlets in urban areas and 3 outlets in rural areas were randomly selected, for a total of 42 outlets. Retailers were interviewed and, in each type of outlet, a minimum of 4 consumers randomly selected for interview, for a total of 168 consumers. After cleaning the data, a usable sample of 161 consumers was delivered (table 2).

Primary data collection (surveys) was undertaken during the periods of May to July 2011 and in April 2012, and took place in different rural and urban locations. Urban outlets were visited in the districts of Kampala and Wakiso; rural outlets were visited in Buikwe, Mukono, Kampala and Jinja districts.

[‡] Weights could have been used to arrive at more nuanced quality/safety scores, but expert informants did not agree on specific criteria for such weights, particularly pointing out the differences likely to be expressed by different types of consumer.

Table 2.

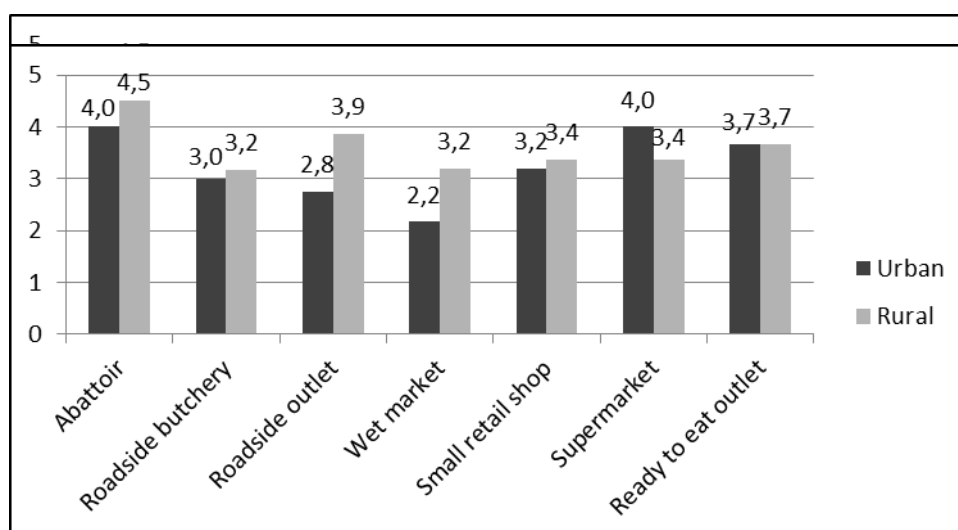
Detail of sample sizes for retailers and consumers

Retail outlets categories	No. of retailers (outlets) interviewed	No. of consumers interviewed	Livestock product	No. of retailers selling the product	No. of consumers interviewed
Abattoirs	6	19	Beef	10	33
Roadside butcheries	6	36	Chicken	12	34
Roadside outlets	6	27	Eggs	11	29
Wet markets	6	14	Pork	5	8
Small retail shops	6	17	Dairy	12	38
Supermarkets	6	24	Goat	7	19
Ready to eat outlet	6	24			
Total	42	161	Total	57	161

4 Results

4.1 Observed quality scores

Quality scores for the food items sold in the 42 retail outlets were found to be high in (somewhat surprisingly) both urban and rural areas (figure 2), with only the wet markets in urban areas having an average of just two positive attributes. Differences in observed scores between urban and rural areas were found to be small and, if any conclusion is to be drawn, the overall quality seems to be somewhat higher in rural, than in urban, areas. Quality differences between retail outlets within urban and rural areas were also found to be small, with abattoirs, supermarkets and ready-to-eat outlets recording high quality scores, and wet markets and roadside outlets selling products exhibiting lower safety and quality levels as measured here. Finally, as expected, individual retail outlets tend to sell livestock products of a consistent quality: i.e. there was no tendency for a retail outlet to sell at the same time low-quality and high-quality animal-sourced foods.



Note: Quality attributes: 0-1: Low, 2: Lower medium, 3: Medium, 4: Upper medium, 5: Good.

Figure 2. Observed quality and safety attributes – mean scores

4.2 Consumer types

Consumers were differentiated into three wealth / income brackets according to a straightforward indicator which serves as a proxy: they were considered poor if they did not own any means of transport; belonging to a middle income class if they owned a motorcycle; and to be among the rich if they owned a car. This criterion was considered as the most appropriate by expert informants in the context of a rapid appraisal survey but, admittedly, alternative criteria were not tested and there are known limits in using simple proxy measures, such as means of transport owned, for household wealth (Lindelow, 2006; Morris *et al.*, 2000). Retailers were also asked to assess directly the relative wealth of types of their individual customers. Results obtained from retailers' wealth assessment are largely inconsistent, and so not presented here.[§]

The distribution of consumers by income status / ownership of means of transport is presented in table 3: about 53 percent of consumers were assessed as poor; 30 percent as belonging to the middle class and 17 percent as better-off. While there is some difference in the distribution between rural and urban areas, in both cases the less-well off represent the largest segment of the population and the better-off the smallest one.

Table 3.
Consumer income distribution by urban/rural location

Consumers' income class	Urban *	Rural *	All
Less well-off	50.0%	55.7%	52.8%
Middle class	25.6%	34.2%	29.8%
Better-off	24.4%	10.1%	17.4%
Total	100.0%	100.0%	100.0%

*Statistical significance difference between the two location types at 5% level

These different identified income classes were found to pay markedly different prices for across the livestock products purchased. The average prices paid were observed to be US\$ 2.20 per unit by the less well off, US\$ 2.70 for the middle class and US\$ 4.00 for the better-off. This suggests that ownership of some means of transport, even if not the best predictor of level of wealth, does provide a reliable indicator for the wealth distribution across the Ugandan population. For example, according to the 2008/09 National Panel Survey, about 38 percent of the population is extremely poor in the country. It is worth noting, however, that the concept of poverty used here is a relative one as, in most cases, the extreme poor or those living on less than 1 US\$ PPP/day cannot afford to purchase livestock products. Again, data from the 2008/09 National Panel Survey indicate that about 41 percent of households do not consume livestock products in Uganda, including 45 percent in rural areas and 29 percent in cities and towns (UBOS, 2010).

4.3. Consumers' preferences for retail outlets

Figure 3 identifies the distribution of consumers by income bracket in the different retail outlets visited. It appears that less well-off consumers are more likely to purchase livestock products in wet markets, roadside outlets and in ready-to-eat premises than are middle-class and better-off consumers. These latter groups are more likely to purchase animal-sourced food in butcheries, small retail shops, supermarkets and abattoirs. There are two possible complementary explanations for these findings: first that relatively well-off consumers perceive as of low quality the animal products sold in wet markets / roadside outlets and, therefore, tend to avoid those premises; a second explanation is that the average unit price per livestock product is significantly lower in wet markets and roadside outlets than in other outlets (see next sub-section), i.e. relatively low income consumers cannot afford purchasing livestock products in small retail shops and supermarkets. The same is true for abattoirs where, in many cases, only large pieces of meat can be purchased.

[§] This is most likely due to the variety in retailers' criteria and the subjectivity of their assessments.

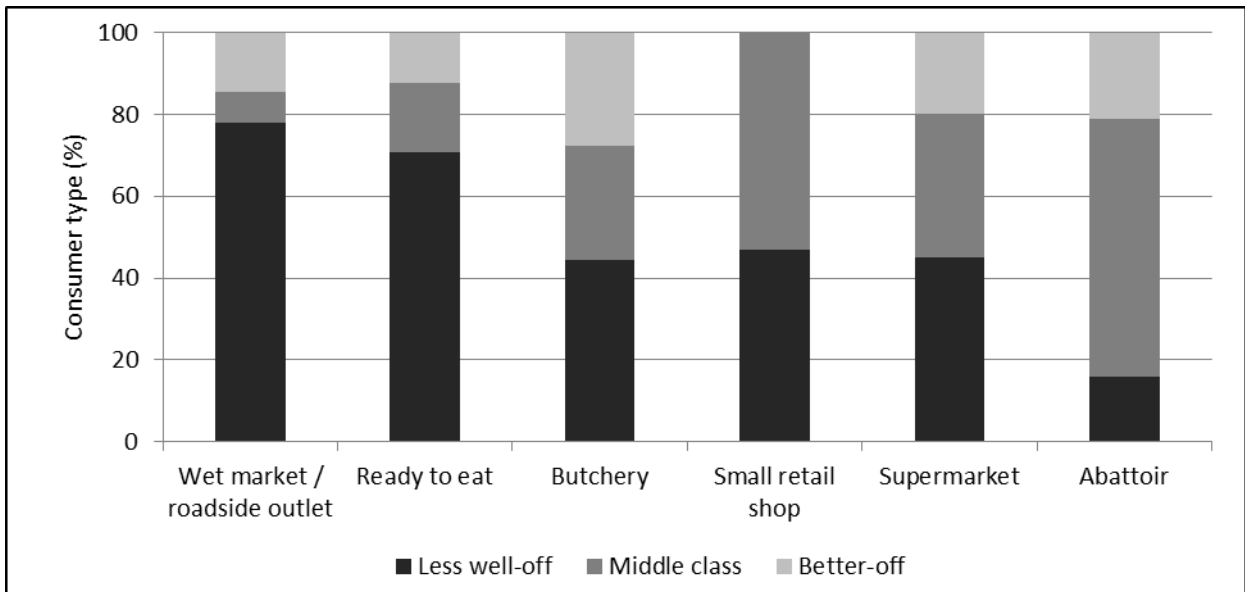


Figure 3. Types of consumers shopping in different retail outlets (%)

4.4 Consumers' preferences for retail product forms

Figures 4-6 below present results on the preferred retail forms by consumers disaggregated into three income / wealth terciles. There were not sufficient data to generate disaggregated statistics for pig meat and mutton, nor for households in the top tercile in the case of beef.

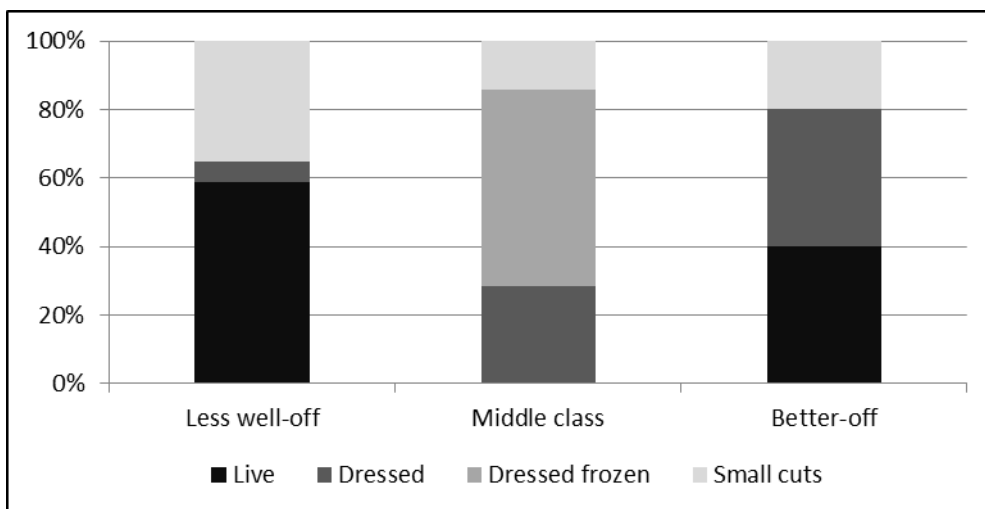


Figure 4. Chicken: preferred retail form by type of consumer (%)

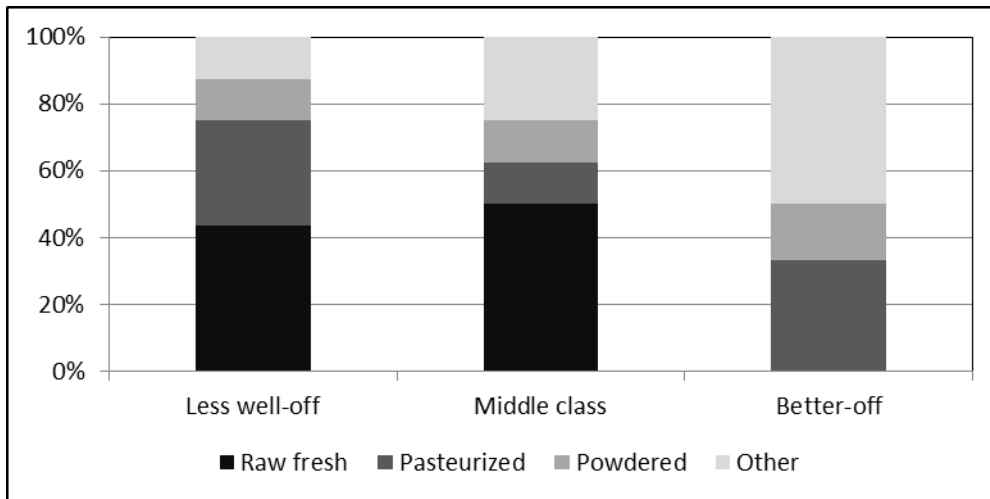


Figure 5. Milk preferred retail form by type of consumer (%)

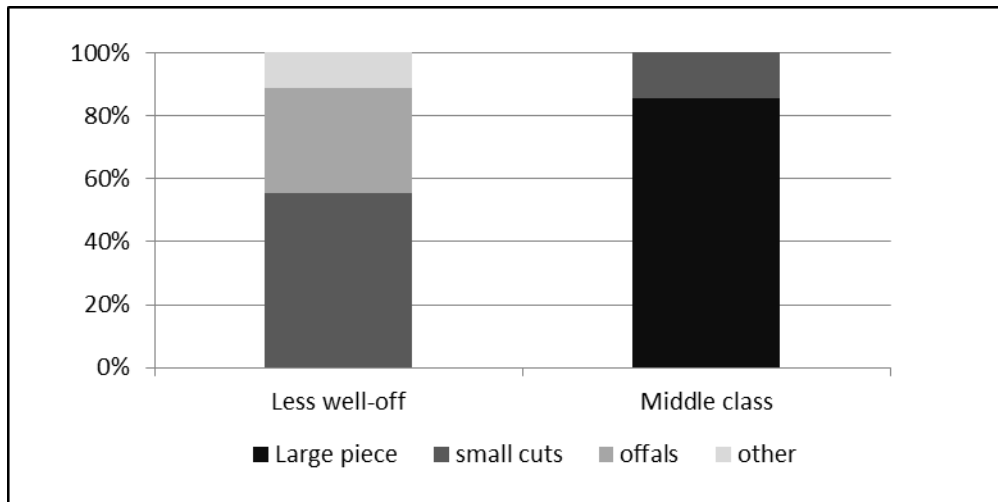


Figure 6. Beef: preferred retail form by type of consumer (%)

Across the three livestock products presented, the results are consistent and indicate some clear differentiation between the preferred retail forms for consumers across wealth / income brackets. In the case of poultry, poor consumers prefer purchasing either live birds or small cuts of chicken, with only middle-class and better-off consumers buying dressed or dressed frozen chicken, for which prices can be up to double those for live birds. Interestingly, well-off consumers also purchase live birds, which may be associated with local breeds' being widely appreciated as more flavoursome than are industrially produced broilers. It should be noted that the price of live birds varies significantly, ranging from a minimum of UgSH 6,000 to a maximum of UgSH 13,000, which likely indicates a market that is segmented in some ways, including by chicken breed. For milk, raw fresh milk – whose quality is often doubtful – is only bought by poor and middle-class consumers; indeed its minimum price per litre (500 UgSH) was found to be less than half the price of pasteurized fresh milk (from 1,200 Ugsh to 1,600 Ugsh litre), which is purchased by all types of consumer. 'Other milk' - which consists of more processed dairy products such as butter, ghee and yogurt - is bought most frequently by high income consumers and least frequently by low income consumers. The average price of butter, for instance, was found to be over UgSH 6,000 per kg. Finally, small cuts and offals from beef are bought by relatively poor consumers, with the middle-class purchasing large pieces as well as small cuts. The price dimension provides a straightforward explanation for these behaviours, with the price of offals ranging between UgSH 1,200 and UgSH 3,500 per kg and that of large pieces of beef averaging about UgSH 7,000.

4.5 Consumers' quality preferences

We present in figure 7 consumers' quality scores' frequency distribution across the three income/wealth brackets. Consistently with the observed quality levels, which we found to be relatively high across all products and retail outlets, the average quality score is high for consumers of all levels of wealth. This result may be due to the interaction of quality differences overall, with the above reported quality differentiation across retail outlets: consumers' notably different preferences for retail outlets across income classes results in their exposure to a range of levels of food safety and quality.

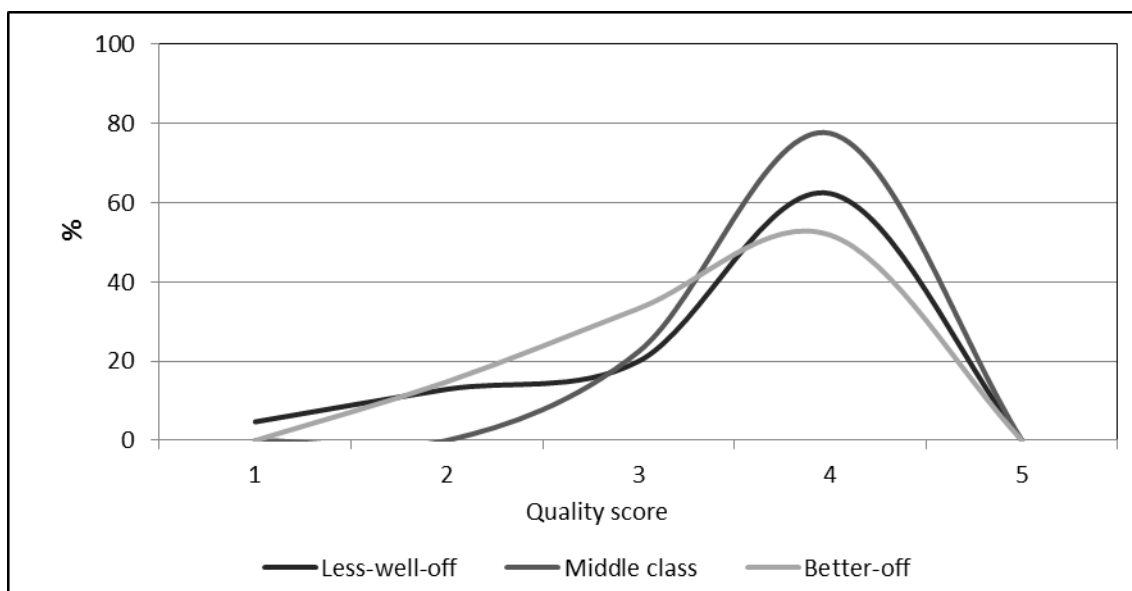


Figure 7. Frequency distribution of quality score by type of consumer

Another plausible reason for this finding is that consumers in low income brackets purchase livestock products less frequently than do middle-class and better-off consumers: hence any purchase of animal-source food is considered a major but occasional expense, undertaken with caution and after some consideration. In other words, before buying any livestock product, poor consumers want to be sure that its overall quality is relatively good. Indeed, the perceived quality and safety is found to be by far the most important determinant of consumers' stated reason for retail outlet selection (see table 4). This is a significant finding as it suggests that targeted improvements in sanitary and phytosanitary standards could be achieved by demand-driven interventions, e.g. by informing poor consumers on how to best assess the safety / quality of the livestock products they purchase.

Table 4. Factors' affecting choice of retail outlet by consumers' income segments*

Attributes	Lower class	Middle class	Upper class
Good quality/Safety	67% ^a	71% ^a	71% ^a
Known/Trustworthy	58% ^a	63% ^a	79% ^a
Close to my home or office	54% ^a	40% ^{ac}	25% ^{bc}
Good customer care	38% ^a	65% ^b	21% ^a
Variety of choice	26% ^a	33% ^a	68% ^b
Other	26% ^a	37% ^a	32% ^a
Low price	21% ^{ac}	2% ^b	11% ^{bc}

* Cells in the same row with different exponents indicate statistical difference at 5% using Sidak, Bonferonri and Scheffe tests.

5 Conclusions

This paper presents a pragmatic method for rapid appraisal, and preliminary findings from its use in Uganda in 2011 and 2012. The study's objective was to characterize the market for animal-sourced foods in terms of preferred safety and quality attributes, retail forms and retail outlets, disaggregated by type of consumer. Based on a matrix of visible quality and safety attributes, an overall quality score was constructed for livestock products available in markets. Questionnaires administered to both consumers and retailers in randomly selected rural and urban retail outlets were then used to record buying behaviour and demonstrated preferences over quality and retail outlet. Based on survey questions, proxy measures of consumer income were employed.

Results indicate that consumers in different income / wealth brackets shop in different markets and prefer different retail products and that, on average, the overall quality of the livestock products sold / purchased is good in both urban and rural areas and for consumers from all income brackets. These are important findings, and for two reasons. First, they denote that there are major opportunities for smallholder livestock producers to better utilize the market for animal-source foods in Uganda, a country in which the majority of consumers is relatively poor or, as indicated by a nationally representative survey, still has yet to become 'rich enough' to purchase and consume livestock products. Second, the results suggest that consumer-based interventions to increase the quality and safety of livestock products may be an effective way to promote or enforce safety and quality standards, in the interests of reducing the public health impacts of zoonoses and food-borne disease.

The results of the rapid assessment are preliminary, and based on a relatively small sample. They are however credible, and logical inference can be drawn from them. We plan to analyse further the data, conduct a similar survey in Tanzania and other East African countries, and build on this experience to refine the methodology and re-apply on larger samples of consumers.

Acknowledgement

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References

- Cicia, J., Colantuoni, F. (2010). Willingness to Pay for Traceable Meat Attributes: A Meta-analysis. *International Journal on Food System Dynamics*, **1**(3): 252-263.
- Delgado, C., Rosegrant, M., Steinfeld, H., Ehui, S., and Courbois, C. (1999). *Livestock to 2020 – The Next Food Revolution*. Food, Agriculture and the Environment Discussion Paper 28. IFPRI, Washington D.C.
- FAO (2011). *Mapping supply and demand for animal-source foods to 2030*. Animal Production and Health Working Paper. No. 2. FAO, Rome.
- FAO and WHO (2003). *Guidelines for Strengthening National Food Control Systems*. FAO Food and Nutrition Paper 76, FAO, Rome.
- Grunert, K.G. (2005). Food quality and safety: consumer perception and demand. *European Review of Agricultural Economics*, **32** (3): 369-391.
- Islam, S.M. F., Jabbar, M.A. (2010). *Consumer preferences and demand for livestock products in urban Bangladesh*. ILRI Research Report 23, ILRI, Nairobi.
- Jabbar, M.A., Baker, D., and Fadiga, M. (eds) (2010). *Demand for livestock products in developing countries with a focus on quality and safety attributes: Evidence from Asia and Africa*. ILRI Research Report No. 24. ILRI (International Livestock Research Institute), Nairobi, Kenya.
- Lindelow, M. (2006). Sometimes more equal than others: how health inequalities depend on the choice of welfare indicator. *Health Economics*, **15**(3): 263-279.
- Mergenthaler, M., Weinberger, K., and Qaim, M. (2009). Consumer Valuation of Food Quality and Food Safety Attributes in Vietnam. *Review of Agricultural Economics*, **31**(2): 266-283.

- Mette Kjær, A., Mwebaze, T., and Muhumuza, F. (2011). The Dairy Sector in Uganda. Paper presented at the Annual EPP Workshop, Dar es Salaam.
- Morris, S.S., Carletto, C., Hoddinott, J., and Christiaense, L.J.M., (2000). Validity of rapid estimates of household wealth and income for health surveys in rural Africa. *Journal of Epidemiology and Community Health*, **54**(5): 381-387.
- Pica-Ciamarra, U., Morgan, N., and Baker, D. (2012). *Collecting livestock data: a snapshot of survey methods*. A paper of the Livestock Data Innovation in Africa Project, World Bank, Washington D.C.; FAO, Rome; and ILRI, Nairobi.
- Pica-Ciamarra, U., Baker, D., Morgan, N., Ly, C., and Nouala, S. (2013). *Investing in African Livestock: Business Opportunities in 2030-2050*. A paper of the Livestock Data Innovation in Africa Project, World Bank, Washington D.C.; FAO, Rome; and ILRI, Nairobi.
- Röhr, A., Lüddecke, K., Drusch, S., Müller, M.J., and Alvensleben, R.V. (2005). Food quality and safety – consumer perception and public health concern. *Food Control*, **16**(8): 649-655.
- Sumberg, J., Thompson, J. (2013). *Revolution Reconsidered: Evolving Perspectives on Livestock Production and Consumption*. STEPS Working Paper 52, Brighton STEPS Center.
- UBOS (2010). *Uganda 2009-10 National Panel Survey*. Uganda Bureau of Statistics, Kampala. Data freely available from download at www.worldbank.org/lsms-isa.