The Market for Animal-Source Foods in Uganda: Looking Beyond Quantity: Rapid Apprasial of Consumer Preferences for Retail Outlets, Retail Forms and Safety and Quality Attributes

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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.*

1 Background

The growing demand for animal-source foods in developing countries, dubbed the "Livestock Revolution" (Delgado et al., 1999) anticipates unprecedented business opportunities for livestock producers. However, institutional and market imperfections make it difficult for many of those, and in particular for the disadvantaged, to tap into and benefit from the growing market for livestock products. 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.

A major constraint on the design of effective investments to increase market access and utilization for smallholders is that, while information is available on trends in the overall consumption of animal products – such as those collected through household budget surveys – there are scant data and indicators to properly characterize livestock markets. This is the case not only for quantities demanded but also for consumers' preferences for quality and safety attributes, retail forms and retail outlets. Yet, this information is a pre-condition for identification appreciation of opportunities for smallholders' effective benefits from the "Livestock Revolution".

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This paper presents results of a rapid consumer assessment and retailer survey undertaken by the World Bank-FAO-ILRI Livestock Data Innovation in Africa Project[2] in Uganda, which aimed at identifying the quality and safety attributes, retail forms and retail outlets preferred by consumers of animal foods. Results of the survey, combined with available national data which provide indications on the income and expenditure elasticities for livestock products by different typology of consumers, are used to better describe the emerging opportunities in the market for animal source-foods.

The next section briefly presents trends in the consumption of livestock products in Uganda, based on FAOSTAT data. Section 3 presents the methodology developed to appreciate the preferred quality/safety attributes, retail 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 and in Uganda

Over the last two decades the consumption of animal-source foods has been generally increasing in Uganda, as shown in figure 1. Beef and pig consumption have recorded significant growth rates over the period 1990-2000, with an average of 2.4% and 3.4% respectively, and since 2002 the growth rate in milk consumption has been similar.

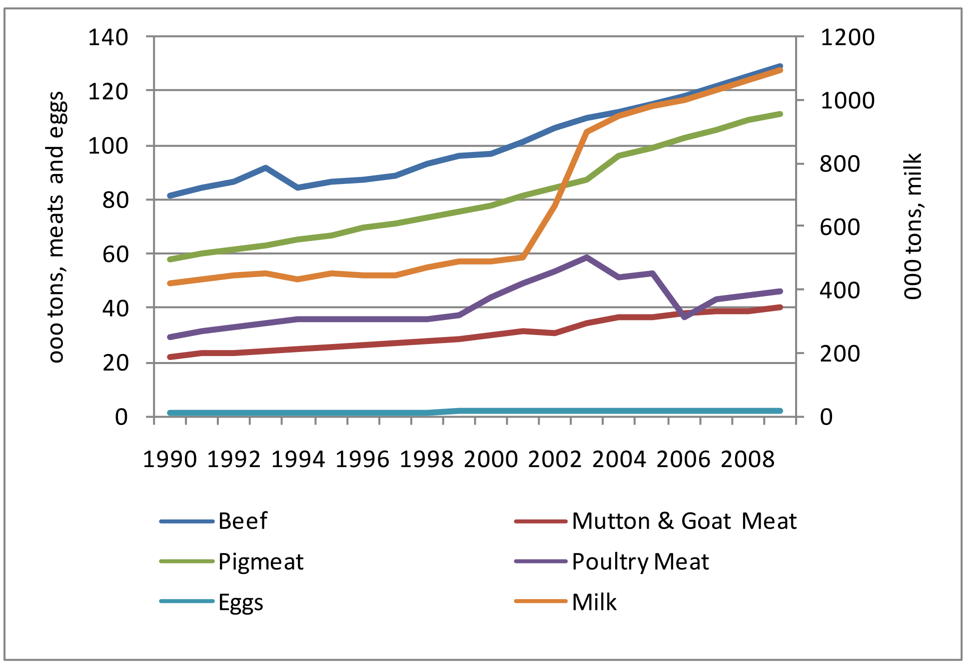

Figure 1. Livestock products' consumption in Uganda Source: FAOSTAT

The sudden increase in milk consumption over the period 2000-2003 (over 33%) is said to be an outcome of Dairy Industry Act, which made the registration of milk production and sales easier for producers (Mette *et al,.* 2012). From 2004 to 2010, the growth rate in milk consumption

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2 http://www.africalivestockdata.org/afrlivestock/

averaged 3.4 % per year. Chicken meat consumption saw an increasing tendency up to 2004, drastically declined during the following two years, to increase again since then with an annual average rate around 4% over the last three years. Eggs, goat meat and mutton are less consumed compared to the other livestock products, but both products are observing a growing consumption pattern with average annual rates of 2.1% for eggs and 3.0% for goat meat, albeit starting from lower bases.

Overall, the Livestock Revolution extends to Uganda. The key development question is 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 (250 kg live weight).

3 Methodology

A methodology was developed to capture information about the preferred quality and safety attributes, retail forms and retail outlets of different types of consumers in Uganda. First, expert informants were interviewed to identify major types of retail outlets, including abattoirs, roadside butcheries, roadside outlets / wet (open air) markets, small retail shops, supermarkets and ready-to-eat outlets; as well as to identify five major quality/safety attributes for each product. For instance, for beef the following five attributes were identified: (1) Freshness; (2); Fat content; (3) Marbling; (4) Cleanliness of premises / presence of flies; (5) Packaging (see annex 2 for safety/quality attributes for all the study's products). A major criterion to select the various attributes was that they had to be 'visible' to the enumerator, who could then attach a quality score to the product consumers were buying / retailers were selling. The simple (unweighted) sum of extant quality attributes was used as a scoring system as follows:

QUALITY / SAFETY SCALE: NUMBER OF POSITIVE ATTRIBUTES	
0-1	low
2	lower-medium
3	medium
4	upper-medium
5	Good

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.

As a second step, two sets of questionnaires were designed and administered to assess the level of wealth / income of consumers who were buying a given livestock product, in a given retail form, in a given retail outlet and of some observable quality. The first questionnaire (annex 1) was administered to retailers, and the second (annex 2) to consumers, of beef, chicken, eggs, goat meat, dairy products, and pork. Operators in a sample of retail outlets were asked questions regarding their perception of customers' level of income, trend in their sales of livestock products, and the main constraints on expansion of their businesses. Consumers were asked questions on the reasons why they purchased from a particular outlet, trends in their consumption of nominated retail products, willingness to spend more on specified livestock products; and two questions on means of transport, which were then used to cluster consumers into three income brackets.

A double stratified sampling method was used to arrive at the final sample. The first stratum consisted of urban and rural locations; the second of nominated 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 15 consumers randomly selected –i.e. the first 15 that purchased some livestock products when the interviewer was in the retail show– were also interviewed, for a total of 168 consumers.

Primary data collection (surveys) was undertaken during the periods of May to July 2011 and 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.

Table 1. Detail of sample sizes for retailers and consumers

Retail outlets categories	No. of outlets interviewed	No. of consumers interviewed	Livestock product	No. of retailers selling the product	No. of consumers interviewed
Abattoirs	6	19	Beef	10	34
Roadside butcheries	6	37	Chicken	12	35
Roadside outlets	6	28	Eggs	11	34
Wet markets	6	15	Pork	5	8
Small retail shops	6	21	Dairy	12	38
Supermarkets	6	24	Goat	7	19
Ready to eat outlet	6	24			
Total	42	168	Total	57	168

4 Results

Observed quality scores

Overall quality and safety scores in the 42 retail outlets were found, somewhat surprisingly, to be high in both urban and rural areas (figure 2), with only 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 urban, areas.

Quality differences among retail outlets within urban and rural areas were also found to be small, with abattoirs, supermarket and ready-to-eat outlets recording high quality scores, and wet markets and roadside outlets selling products with less desirable safety and quality levels.

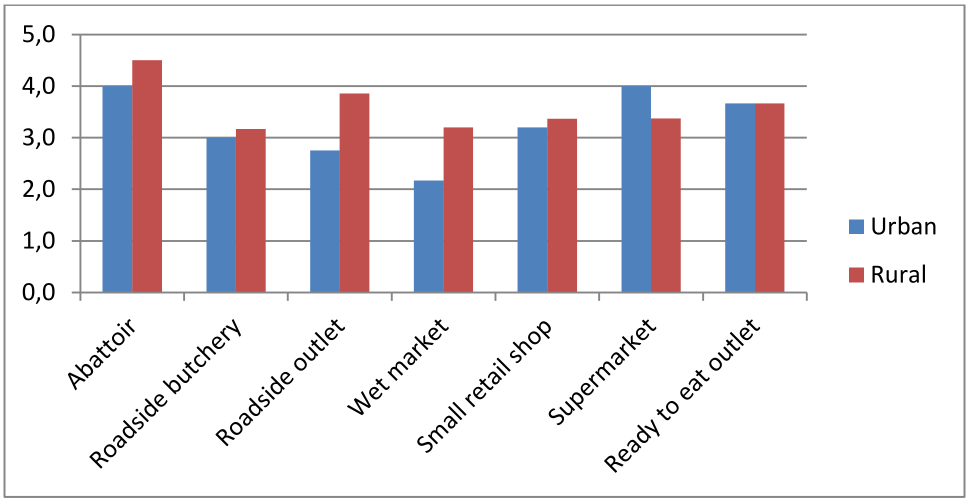

Figure 2. Observed quality and safety attributes – mean scores

Note: Quality attributes: 0-1: Low, 2: Lower medium, 3: Medium, 4: Upper medium, 5: Good Quality attributes were scored for Freshness, Fat content, Marbling, Cleanliness of premises and Packaging based on presence/absence of key quality attributes.

When quality ratings are reported by product groupings (Figure 3), pork products obtained the highest quality and safety attributes' scores in both urban and rural retail settings. Chicken meat obtained the lowest scores. Chicken sold by urban retailers was assessed as "lower medium" quality product, whereas for urban retailers it was rated as "medium". The difference between products' rating from urban and rural retailers is also pronounced in the case of beef, which rural retailers ranked "upper-medium" quality, whereas urban retailers ranked it as "medium". Again, livestock products sold by rural retailers obtained higher quality and safety scores than did those sold by urban retailers; an exception is goat meat.

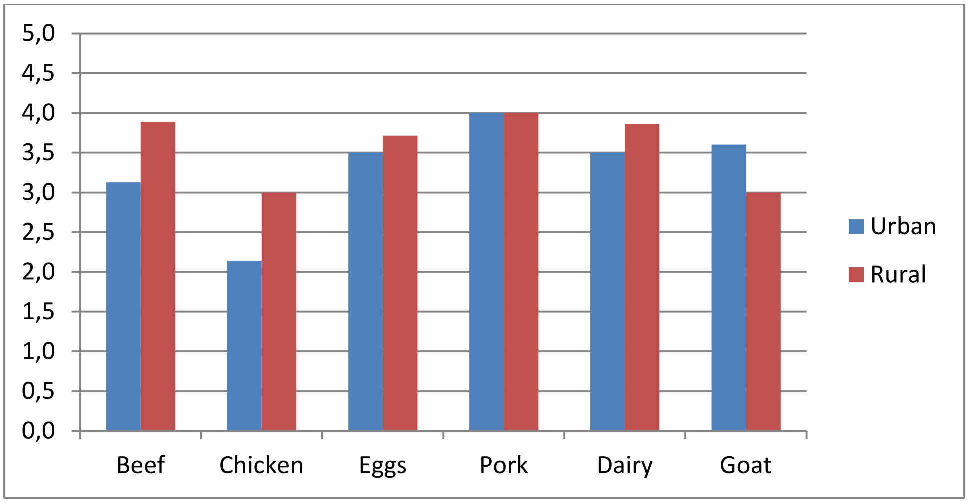

Figure 3. Average livestock products' scoring on the basis of quality and safety attributes

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

Consumer types

Consumers were differentiated into three wealth / income brackets according to a straightforward criterion which serves as a proxy: they were considered poor if they did not own any means of transport; belonging to the middle class if they owned a motorcycle; be among the rich if they owned a car. This criterion was considered as the most appropriate by expert informants but, admittedly, alternative criteria were not tested. Retailers were also asked to directly indicate what was, according to them, the relative wealth of their customers. Results are largely inconsistent and so not presented here: most likely due to the variety in retailers' criteria and the subjectivity of their assessments.

The distribution of consumers by income status / ownership of means of transport is depicted in figure 4: about 53 percent of consumers were assessed as poor; 30 percent as belonging to the middle class and 17 percent as better-off.

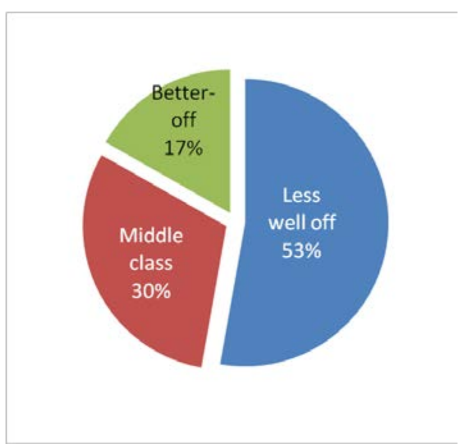

Figure 4. Distribution of consumers by assessed wealth status

These different identified income classes were found to pay markedly different prices for livestock products (table 2). This suggests that ownership of some means of transport, even if not the best predictor of level of wealth, seems to provide a reliable snapshot of 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.

Table 2. Average unit price paid for purchases of livestock products by consumer type

Consumer type	Average unit price paid for purchases of livestock products
Less well-off	US$ 2.2
Middle class	US$ 2.7
Better-off	US$ 4.0

Preferred retail outlets

The histogram below identifies the distribution of consumers by income bracket in the different retail outlets visited.

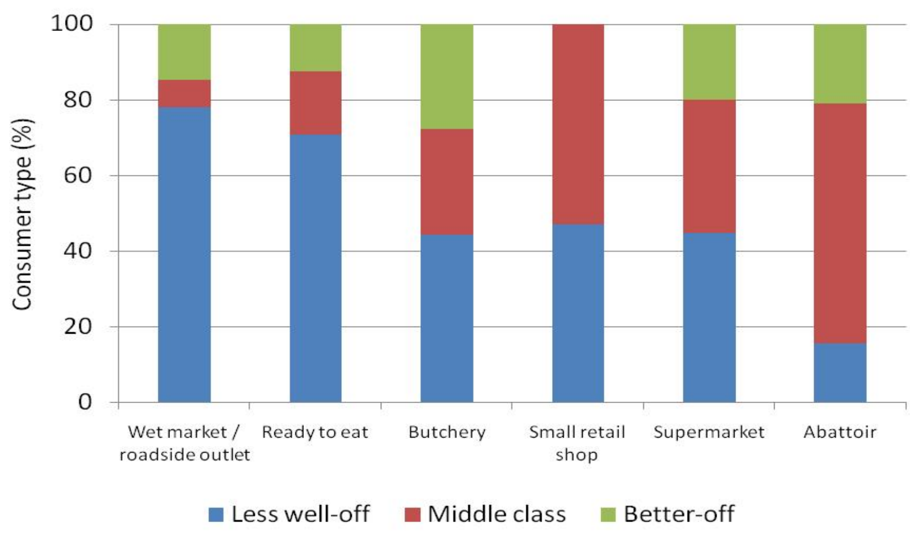

Figure 5. Types of consumers shopping in different retail outlets (%)

It appears that less well-off consumers are more likely to purchase livestock products in wet markets / road-side outlets and in ready-to-eat premises than are middle-class and better-off consumers. These latter groups are more likely to purchase animal foods 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 and not even in abattoirs where, in many circumstances, only large pieces of meat can be bought.

Preferred retail forms

We present in the graphs below the preferred retail forms for beef, milk and chicken by consumers disaggregated into three income / wealth terciles. There were not sufficient data to generate statistics for pigmeat and mutton, nor for households in the top tercile in the case of beef.

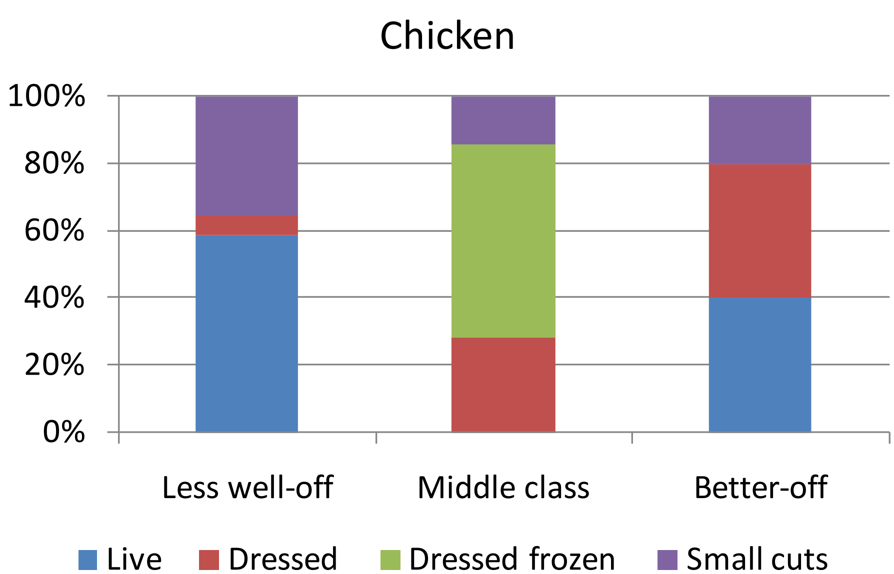

Figure 6. Chicken: preferred retail form by type of consumer (%)

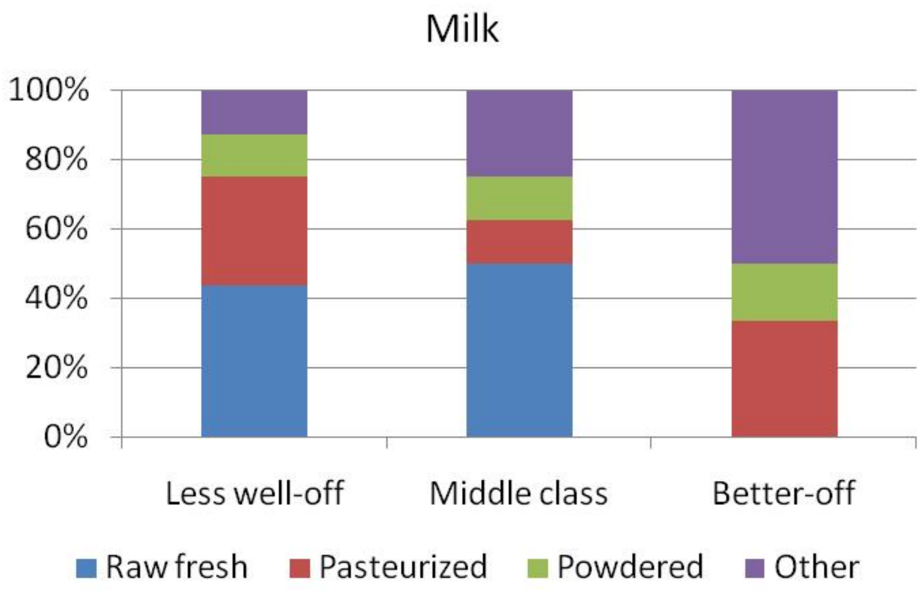

Figure 7. Milk preferred retail form by type of consumer (%)

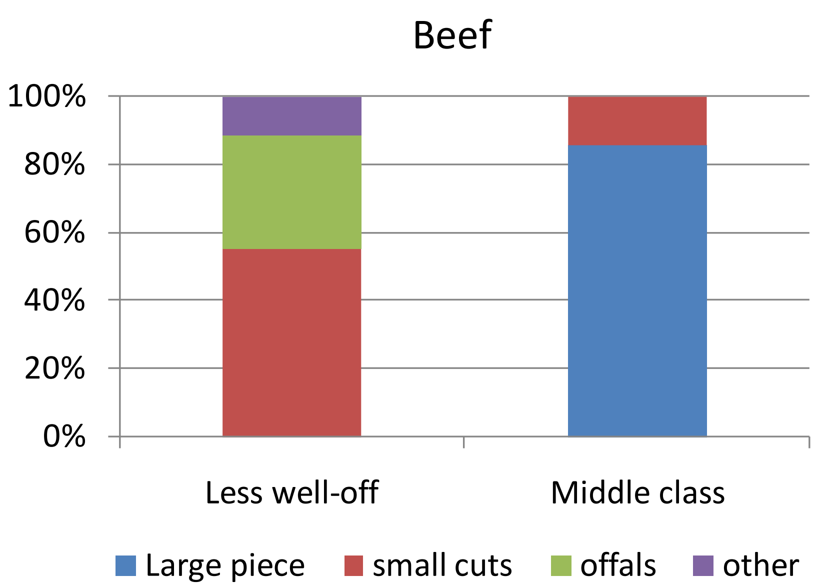

Figure 8. Beef: preferred retail form by type of consumer (%)

The results are consistent across the three livestock products, denoting some clear differentiation between the preferred retail forms for consumers in different wealth / income brackets. In the case of chicken, poor consumers prefer purchasing either live birds or small cuts, with only middle-class and better-off consumers buying dressed or dressed frozen chicken, whose prices can be up to the double than that of live birds. Interestingly, well-off consumers also purchase live birds, which are largely 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 segmented market. 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), its closest substitute, 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 the least by low income consumers . Indeed, the average prices of butter and ghee were found to be over UgSH 6,000 and close to UgSH per kilo respectively. Finally, small cuts and offals from beef are bought by relatively poor consumers, with the middle-class purchasing large pieces in abattoirs, as well as small cuts. Again, 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 kilo and that of large pieces of beef averaging about UgSH 7,000.

Preferred quality scores by consumers

We present in graph 9 the frequency distribution of quality scores by consumers in the three income brackets. Consistently with the observed quality/safety 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. Paradoxically, better-off consumers seem to care less about quality and safety than consumers in other income brackets, but the differences are not significant. This result may also be due to the notably different preferences for retail outlets between income classes, exposing them to different levels of food safety and quality.

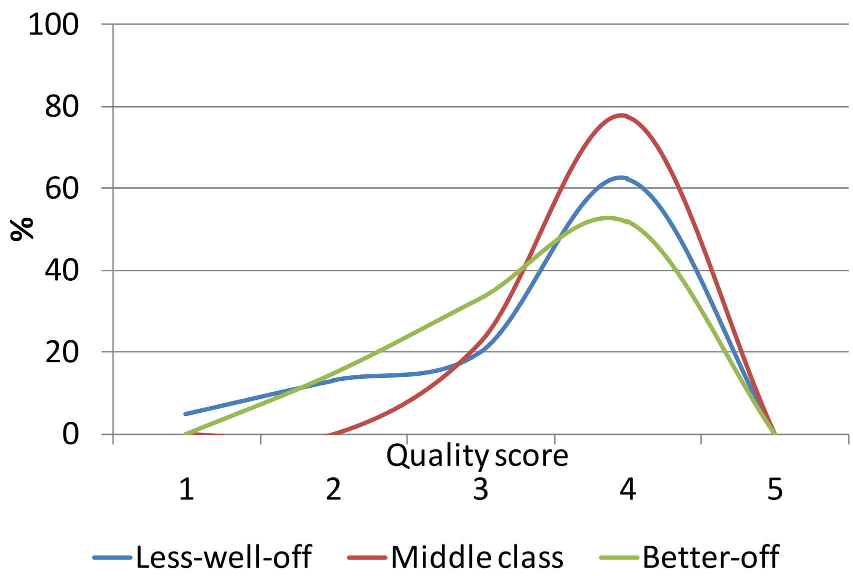

Figure 9. Frequency distribution of quality/safety score by type of consumer

The most plausible reason for this findings is that, most likely, consumers in low income brackets purchase less frequently livestock products than middle-class and better-off consumers and, for them, any purchase of animal-food is considered as a major and occasional expense, associated with some consideration and caution. 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 by far the most important determinants for consumers' stated reasons for retail outlet selection, followed by 'known and trustworthy' premise.

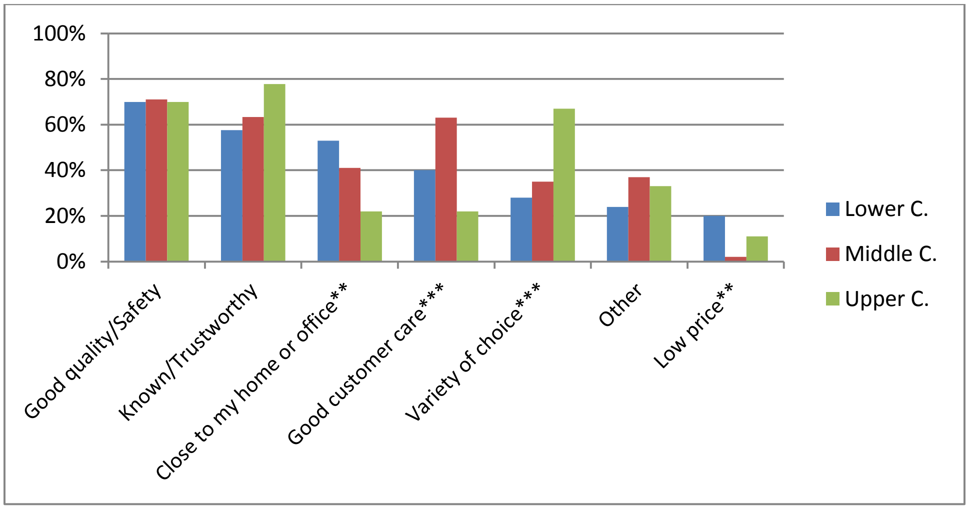

Figure 10. Factors affecting choice of retail outlet consumers

Note: ***, **, statistically significant difference between urban and rural respectively at 1% and 5%

This is a significant finding as it suggests that targeted improvements in sanitary and phytosanitary standards could be enforced through some demand-driven interventions, e.g. by informing poor consumers on how to best assess the safety / quality of the livestock products they purchase.

5 Conclusions

This paper presents preliminary findings of a rapid appraisal conducted in Uganda in 2011 and 2012, for which the objective was to characterize the market for animal-sourced foods in terms of preferred safety and quality attributes, retail forms and retail outlets by different type of consumers. A methodology was developed to this end, which consisted of developing a matrix of visible quality and safety attributes. This was then used to attach an overall quality score to livestock products available in markets. Interviews administered to both consumers and retailers in randomly selected rural and urban retail outlets were then used to record buying behaviour and preferences over quality and retail outlet. For each data collection activity, 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 in 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 that consumer-based interventions to increase the quality and safety of livestock products may be an effective way to enforce safety and quality standards, in the interests of avoiding the spread and dissemination 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 experienceto refine the methodology and re-apply on larger samples of consumers.

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Annex 1: Retailer questionnaire used in data collection

Livestock Data Innovation Project

Identification of hot-spots amongst animal-source foods in Uganda

Retailer questionnaire

Date ______________________________________

Location ______________________________________

Market name (if any) ______________________________________

Type of retailer (tick as appropriate)

abattoir [_]
road side butchery [_]
road side outlet [_]
food (wet) market [_]
small retail shop [_]
supermarket [_]

bicycle trader [_]

1. **Look and rate main livestock products sold**

Beef	y	n	Price / Unit	Quality scale (no of positive attributes and safety/quality rate)
Bone in large piece				
Steak, cooking, frying or roasting piece				
Ground beef				
Mixed beef				
Offal				
Other (specify in cell)				

Chicken	y	n	Price / Unit	Quality scale (no of positive attributes and safety/quality rate)
Live chicken				
Dressed chicken				
Frozen dressed chicken				
Other (specify in cell)				

Eggs	y	n	Price / Unit	Quality scale (no of positive attributes and safety/quality rate)
Loosed				
Packaged, sorted in trays				
Other (specify in cell)				

Goats	y	n	Price / Unit	Quality scale (no of positive attributes and safety/quality rate)
Large piece				
Chop for frying or roasting				
Other (specify in cell)				

Dairy products	y	n	Price / Unit	Quality scale (no of positive attributes and safety/quality rate)
Raw fresh milk				
Packaged pasteurized fresh milk				
Reconstituted powdered milk				
Butter				
Ghee				

Yoghurt				
Other (specify in cell)				

Pigs	y	n	Price / Unit	**Quality scale** (no of positive attributes and safety/quality rate)
Large piece				
Chop for frying or roasting				
Sausage				
Other (specify in cell)				

2. **On a scale of 1 to 5, where 1 is very poor and 5 is very wealthy, how would you rate the typical consumer that shops at your place?** (tick as many as needed)

   1 (very poor) ☐

   2 ☐

   3 ☐

   4 ☐

   5 (very wealthy) ☐

3. **In the last few years, what are the two livestock products** (type of cuts / dairy products) **which you are selling more and two which you are selling less?**
   (tick one)

   1sr most selling product / retail format (if any) _________________

   A lot more ☐

   Slightly more ☐

   2nd most selling product / **retail format** (if any) _________________

   A lot more ☐

   Slightly more ☐

   1st less selling product / retail format (if any) _________________

   Slightly less ☐

   A lot less ☐

   2nd less selling product / retail format (if any) _________________

Slightly less ☐

A lot less ☐

4. **Please rank a maximum of three livestock products / retail formats that you would like to sell more, if any?**

   None (tick box if none) [_]

   1st product / retail format (if any) ________________

   2nd product /retail format (if any) ________________

   3rd product /retail format (if any) ________________

5. **What is the major constraint that prevents you from selling more of the above products?** (if any identified)

   1st product / retail format [product _______________/ retail format ________________]

   ____

   ____

   ____

   2nd product [product_______________/ retail format ________________]

   ____

   ____

   ____

   3rd product [product_______________/ retail format ________________]

   ____

   ____

   ____

Annex 2: Consumer questionnaires used in data collection

Livestock Data Innovation Project

Identification of hot-spots amongst animal-source foods in Uganda

Consumer questionnaire

Only interview buyers who are buying for their own households

Date ____

Location ____

Market name (if any) ____

Type of retailer ____

Gender of interviewee male [_] / female [_]

Product bought BEEF

Retail format (tick one) large piece [_] / piece of cooking size [_] / ground beef [_] / mixed beef [_] / offals [_] other (specify) [____________________________]

Unit price / quantity ____

Overall quality / safety (circle relevant level)

For BEEF

Freshness	**yes**	no
Fat content	**low**	high
Marbling	**high**	low
Cleanliness of premises / presence of flies	**clean**	unclean
Packaging	**yes**	no

FOR CHICKEN

Size / weight	**big**	small
Fatness	**low**	high
Breed	**local**	exotic
Cleanliness of premises / presence of flies	**clean**	unclean
Packaging	**yes**	no

FOR EGGS

Size	**big**	small
Breed	**local**	exotic
Shell colour	**brownish**	whitish
Cleanliness of premises / presence of flies	**clean**	unclean
Packaging	**yes**	no

FOR GOAT

Freshness	**yes**	no
Fat content	**low**	high
Origin / breed	**known**	unknown
Cleanliness of premises / presence of flies	**clean**	unclean
Packaging	**yes**	no

FOR DAIRY

Colour	**white**	yellowish
Fat content	**known**	unknown
Cleanliness of premises / presence of flies	**clean**	unclean
Refrigeration	**yes**	no
Packaging	**yes**	no

FOR PORK

Freshness	**Yes**	No
Fat content	**Low**	High
Cleanliness of premises / presence of flies	**clean**	unclean
Packaging	**yes**	no
Producer	**Known**	Unknown

Overall no. of positive attributes (in bold)	______
Safety/quality rate	______

1. **Why have you come to this retail outlet to buy your [product]?**
   (tick as many as needed)

   Known/trustworthy ☐

   Low price ☐

   Variety of choice ☐

   Good quality/safety ☐

   Close to my home ☐

   Other (specify) ____________

2. **In the last year, has your household consumption of this [product] changed?**
   (tick one)

   A lot more ☐

   Slightly more ☐

   No ☐

   Slightly less ☐

   A lot less ☐

3. **If you had more cash to spend on livestock products, would you?**
(tick as many as needed)

	YES	NO
Buy more of this products	☐	☐
Buy less of this product	☐	☐
There would be no change in quantity bought	☐	☐
But this product in other retail format	☐	☐
Buy this product in other shop	☐	☐

4. **What means of transport have you used to come to this shop?**
(tick one)

Walking ☐

Taxi (own car) ☐

Boda-boda ☐

Bus / minibus ☐

Own Motor-cycle ☐

Bicycle ☐

Other (specify) ______

5. **What means of transport does your household own (number)?**
(tick as many as needed)

None ☐

Bicycle ☐

Motor-cycle ☐

Car ☐

Other (specify) ______

Annex 3: Description of retail formats

Livestock product	Retail format description	Photograph
Beef	**Bone in Large piece** This is usually a thigh and a portion of the ribs.	
	Chops for roasting or frying These are usually small pieces of meat that are cut from the large piece and can easily be cooked without further cutting. The comprise of any part of the animal that is fleshy (e.g. ribs, muscles, bones and fats)	
	Ground beef This is usually the muscle that is minced in a machine. It may be lean or may contain some fats.	
	Offals These are the intestines and gastro enteric parts of a bovine which are edible.	

Livestock product	Retail format description	Photograph
Chicken	**<u>Live bird</u>** A bird sold alive	
	<u>Dressed chicken</u> A bird whose feathers, head and internal organs have been removed	
	<u>Frozen</u> A dressed bird which is packaged and stored at very low temperatures	
Eggs	**<u>Loose</u>** Eggs sold one by one	 
	<u>Packaged (in trays)</u> Eggs sold in trays	 

Livestock product	Retail format description	Photograph
Goat	**<u>Large piece</u>** This is usually a thigh and part of the chest	
	<u>chops</u> These are usually small pieces of meat that are cut from the large piece and can easily be cooked without further cutting. The comprise of any part of the animal that is fleshy (e.g. ribs, muscles, bones and fats)	
Pork	**<u>Large piece</u>** This is usually a thigh and part of the chest	
	<u>chops</u> These are usually small pieces of meat that are cut from the large piece and can easily be cooked without further cutting. The comprise of any part of the animal that is fleshy (e.g. ribs, muscles, bones and fats)	

Livestock product	Retail format description	Photograph
Dairy products	**<u>Raw milk</u>** This milk is usually sold in milk cans ridden on bicycles	
	<u>Pasteurized milk</u> This milk is usually sold in plastic packets	
	<u>Powdered milk</u> This milk is usually packaged in tins or paper packs	
	<u>Butter</u> Usually sold as a block wrapped in paper	
	<u>Ghee</u> Usually sold in plastic containers	
	<u>Yoghurt</u> Usually sold in cups, sachets or plastic bottles	 

Annexe4. Description of retail outlets

Retail outlet	Description	Photograph
Abattoir	A fairly large place where animals are slaughtered and hang in large pieces	
Roadside butchery	These are small outlets which specialize in selling meat products. The operators of such places usually purchase large pieces from abattoirs then sell chops to consumers	
Roadside outlet	These are sheltered or unsheltered places along roads which sell food products mainly to passersby.	
Wet market	These are specialized markets which sell live animals (mainly small ruminants)	
Small retail shop	These are small premises which sell an assortment of products ranging from groceries to non food domestic items	

Supermarket	These are relatively large retail outlets which have an assortment of products with prices properly displayed.