

Factors Affecting Demand For Meat Production In Uganda A Case Of Nakasero Market In Kampala.

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Abstract: *The study looked into the variables influencing the demand for meat production in Kampala's Nakasero market. The study's three main goals were to ascertain the relationship between the price of meat and the need for meat production, the relationship between the price of livestock and the demand for meat production, and the relationship between consumer income and the desire for meat. A sample of 60 participants out of 100 participated in the study, which used a cross-sectional research design, and data were collected utilizing an interview protocol. The explanatory factors' causal relationship with production of meat was examined using a multiple linear regression model. The study's findings showed that the regression model produced an R-Squared of 0.726, indicating that the price of meat, the dimensions of the residence, and the income of the customer account for 72.6% of variations in the amount of meat purchased, while other factors not included in the model account for 27.4% of those variations. Since the independent factors included in the study (meat price, household size, and consumer's income) have a predictive power on the predictor variables, the F-Statistic was likewise significant because its p-value (0.0000) was less than 0.05. (quantity of meat). Demand for meat was significantly impacted by both the price of meat and the user's income, with price reducing demand by 17% and income increasing demand by 31%. Although the influence of households on meat demand decreased by 11%, it was not statically important. The price of livestock was also found by livestock traders to have a negative effect on manufacturing levels. Farm-gate price (37%) was cited as the main factor that influences livestock price, followed by the cost of purchasing livestock on the open market and the price of substitute foods (18.5%), the cost of transporting livestock (14.8%), and government levies on animals (11%).*

Keywords: demand and meat production

Background of the study

One of the most significant agricultural products in the world is red meat. This holds true both in terms of its contribution to the overall gross value of agricultural capitalist production and in regard to its added value to other commodities and products.

The world's biggest market for meat is in China. There will probably be more economic prospects for meat producers both inside and outside of China if China's meat consumption keeps increasing. As a result, changes in China's meat consumption may have an impact on nations that export meat, such as the United States (Journal of Ethnic Foods, Mach 2018(In 2012, it was projected that the export industry for meat and live animals, including cattle, goats, and sheep, in the Middle East African Arab countries of North Africa and the East African region was worth US\$1648000 (UBOS, 2013).

With 85% of exports, 70% of the work force, and 23.7% of Uganda's GDP coming from agriculture in 2008/09, it is the most significant sector of the country's economy. The production of livestock is a significant part of Uganda's agriculture business, accounting for 7-9% of GDP and 17-19% of agriculture GDP (MAAIF,2007). In addition to providing nourishment and a livelihood, it also serves as a mobile bank, a source of social security, and a means of accumulating capital (Davie et al,2007, David et al, 2001). One of the largest marketplaces in the Kampala City central business center is Nakasero Market, which is situated 50 meters off Entebbe Road. The primary meats offered in Nakasero market include beef, chicken fillets, goat meat, mutton, and hog. The forces of supply and demand decide the cost of meat. The expenditures associated with where animals are purchased also affect prices. For instance, the price of beef ranges from 13,000 to 15,000 shillings, the price of goat meat is 17,000 shillings, the price of pork is 20,000 shillings, and the price of local chicken is between 25,001 and 35,001 shillings. These prices are always subject to seasonal variations, such as when festivals are in season.

Problem Statement.

There is a need for accurate understanding and knowledge of the government's meat consumption patterns and demand forecasts because it is unlikely that domestic and international meat demand will both be satisfied.

These estimates of demand and data regarding the nation's meat consumption trends are not well understood. This has led to unforeseen timelines for the production of beef and consequently, significant losses. Although the government has made efforts to commercial farming through trade and market liberalization (Ministry of Trade and Tourist Industry, 2005), meat manufacturing has remained low, varying between 10% and 12%, contributing to the current per capita meat shortfall of 41.2kg (FAO, 2006). The farmer's survival strategy of reducing risk associated with keeping large herds in order to prevent productivity from falling below subsistence level and the risk of total herd loss rather than maximizing advantages per animal in cash has further aggravated this.

Objectives of the Study.

1. To examine the effect of meat price on demand for meat production in the Nakasero market.
2. To examine the effect of price of the livestock on demand for meat production in Nakasero market.
3. To examine the effect of consumer's income level on demand for meat production in Nakasero market

Research Questions

1. Prices of meat do not affect demand for meat production in Nakasero market.
2. Prices of livestock do not affect the demand for meat production in Nakasero market
3. Consumer's income does not affect demand for meat production in Nakasero market.

Methodology

Research Design

The study adopted a cross-sectional research design in conjunction with the descriptive data and both qualitative and quantitative approaches were used during data collection. Qualitative approach helped to gather information based on in-depth understanding of human behavior and the resources that govern the behavior of why and how. Quantitative approach was used because it deals with the numerical expression in figures which involve measurement of quantity.

Sample Selection and Sample Size

A number of respondents were randomly selected around Nakasero market and from a few areas where the livestock are bought from. The respondents were interviewed in the study out of a targeted sample of 100 respondents as calculated from the formula below; the method of sample size determination was applied using the 95% confidence level (Stanley & David, 1990).

$$n = \left(\frac{Z_{\alpha/2} * \sigma}{E} \right)^2$$

where;

n= sample size

Z= critical value that depends on the level of confidence

δ = Standard deviation

E = Sampling error

$$n = \left(\frac{1.96 * 2.6}{0.51} \right)^2$$

$$n = 99.843$$

$$n \approx 100$$

Data Collection Methods

The methods of data collection were the interviews. Interviews were used to collect qualitative data. The interview took place between the two people that is the interviewer and the respondent. The purpose for the use of the interviews was because some of the respondents were not well versed with reading and writing, and so, could not find ease in reading questions and writing of answers due to illiteracy. Also, many respondents were not settled (because they were mainly business persons handling customers).

Data Analysis

Regression Model

This estimation involved the calculation of the demand for meat production. The quantity demanded of meat in Kgs was calculated as a function of price of meat keeping other factors constant.

Following the Gauss Markov theory which states that "given the assumptions of a classical linear regression model, the ordinary least square (OLS) estimators have variance and are blue (Gujarati, 1995)

This is estimated as shown below.

$$Y_i = \beta_0 + \beta_1 X_i + U_i$$

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + U_i$$

Where;

Y = Quantity demanded of meat

X1 = Price of meat

X2 = Price of livestock

X3 = Consumer's income

X4 = Number of people in the consumer household.

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$ = Regression coefficients

U_i = Error term

Prior Expectations

The expected signs of the regression coefficients were as follows,

β_1 & β_2 were expected to be negative as postulated by the law of demand

β_3 & β_4 were expected to be positive as far as the quantity demanded is concerned.

Data Analysis and Presentation

Quantitative analysis of raw data will be done, raw data will take a variety of forms including measurements, survey responses and answered interviews.

Analysis and interpretation of raw data will be based on the responses and opinions, Qualitative and quantitative data analysis techniques will be used to manipulate data during the analysis phase in order to draw conclusions (Pindyck & Rubinfeld, 1991).

RESULTS

Respondent Category and Response Rate

The study had an involvement of several classes/groups of respondents, and they are classified in four groups. Before going to the market, researcher expected to find on a normal business day, the following categories and numbers of respondents (Table 4.1). However, the total sample of 100 was not achieved, rather, the researcher was able to interview 60 respondents, and they were distributed as shown in Table 4.1

Table 1: Respondent Representation by Category

S/N	Stratum	Population	Sample
1	Cow Traders	15	$\frac{15}{100} \times 60 = 9$
2	Meat Traders	70	$\frac{70}{100} \times 60 = 42$
3	Chairpersons/Leaders	3	$\frac{3}{100} \times 60 = 2$
4	Transporters	12	$\frac{12}{100} \times 60 = 7$
Total		100	60

Source; Primary Data, (2022)

Therefore, the study was able to achieve a response rate of;

$$\text{Response Rate} = \frac{60}{100} \times 100 = 60\%$$

Demographic Characteristics

The demographic characteristics are the attributes that define the nature of individuals in society or study population. During the study, some demographic characteristics were captured such as sex, age (and age groups were formed), and level of education of the study participants.

Sex Distribution of the Study Respondents

The study involved both male and female respondents and their proportional representation are depicted in the following table (Table 2).

Table 2: Distribution of Respondents by Sex

Sex	Frequency	Percentage
Males	41	68.33%
Females	19	31.67%
Total	60	100.00%

Source; Primary Data, (2022)

According to Table 4.2, male respondents (68.33%) exceeded their counterparts – the female respondents (31.67%). This informs us that male respondents were probably more concerned about this particular study or that they are the majority involved in the activity relative to the females. At the same time, there was minimization of possible biases and discrimination based on gender during the selection of study participants.

Age Distribution of the Study Respondents

Respondents of varying age groups were included in the study and their proportional representation is reflected in Table 3 below.

Table 3: Respondent Distribution by Age Group

Age bracket	Frequency	Percentage
18-25	29	48.33%
26-35	17	28.33%
Above 35	14	23.33%
Total	60	100.00%

Source; Primary Data, (2022)

According to Table 3, most of the respondents were youths in the age bracket 18-25 making a composition of 48.33%, and these were followed by respondents in the age bracket 26-35 years who made a composition of 28.33%, and lastly, the respondents who were above 35 years old who made a composition of 23.33%.

Education Background

Education level was helpful in estimating the level of reliability and precision of the given thoughts since more educated respondents are usually expected to have significantly different ability to reason out issues relative to those with lower education achievement. Table 4.4 below shows the education background/levels of the study respondents.

Table 4: Respondent Characterisation by Education Achievement

Education	Frequency	Percentage
Tertiary	7	12%
Secondary	27	45%
Primary	19	31%

No Education	7	12%
Total	60	100%

Source; Primary Data, (2022)

From Table 4, it can be observed that most of the respondents that took part in the study were of secondary level (45%). These were followed by those whose academic achievement did not exceed primary education, with a percentage representation of 31% of the total number of the study respondents. Respondents with tertiary education and those without any academic achievement were equally represented, with 12% of the total number of respondents from each cluster.

Analysis of the Study Objectives

The analysis of the regression model produced the study's conclusions. The model that was outlined in the study's preceding chapter contained all of the study's variables.

On analyzing the regression model, it was discovered that some factors' measurements differed from those of other variables. For instance, the quantity and cost of meat have different figure sizes. The researcher chose to transform the numbers in that instance to percentages.

The average amount of meat consumed in the previous month and the average amount of beef consumed in the study's monthly report (June) were used to gauge the demand for meat. The researcher then computed the % change on her own. Each participant was required to reveal the average selling price during which they purchased beef in the month prior and in the monthly report because people occasionally purchase beef from other markets at various prices and/or in the same industry but at various prices due to differences in dates of purchase and purchase stalls. The price of livestock, consumer income, and household size were all subject to this type of variable assessment.

Yet because so few respondents—specifically, just the merchants and carriers of cows who bring to and distribute the animals to markets—responded to this question, the price of cattle was not taken into account in the model.

Results of the regression analysis are split into two tables

Table 5: Regression (a) ANOVA

Source	SS	df	MS	Number of obs. = 60 F (3, 27) = 87.33 Prob. > F = 0.0000 R-Squared = 0.7260 Adj. R-Squared = 0.6813 Root MSE = 1.0494
Model	0.260	3	3.087	
Residual	1.734	57	0.101	
total	3.104	60	0.765	
<i>Source; Primary Data, (2022)</i>				

From Table 5, the R-Squared (0.726) indicates that 72.6% of the variations in the quantity of meat demanded (Y) is determined by meat price, consumer's income, and household income, while the remaining 27.4% is determined by other factors. This is a good fit.

The F-Statistic (102.33) is statistically significant since its p-value (0.0000) is less than 0.05. This implies that the independent variables included in the model (meat price, consumer's income, and household income) altogether have an explanatory power on the dependent variable, say, demand for meat.

The coefficients of the regression model are given in Table 4.6 below.

Table 6: Regression (b) Coefficient

Meat Demand	Coef.	Std. Err	t	P > t	95% Conf. Interval	
Meat Price	-0.1701	0.0764	-2.49	0.016	-0.2188	0.3094
Consumer's Income	0.3123	0.1123	3.76	0.000	0.1905	0.5412
Household Size	-0.1123	0.0348	-1.32	0.120	-.2788	0.0341
Cons.	-0.2034	0.0476	-0.45	0.5523	-0.4321	0.0532
<i>Source; Primary Data, (2022)</i>						

From Table 4.6, the following regression model is obtained

$$Y = -2.03 + 0.17X_1 + 0.31X_2 - 0.11X_3$$

From Table 6 and the fitted regression model above, it can be explained that by resting all the factors included in the model, say, meat price, consumers' incomes, and household size, the demand for meat would fall by 20.31%.

The coefficient for household size is -0.1123. This implies that an increase in the number of members in a household by 1 person leads a fall in meat demand on average by 11.23% of the original number of kilograms purchased every month. The implication of the findings is that when members of a household rises, it becomes costlier to feed them with the expensive sauce like meat, rather, families seek for alternative food alternatives that are less costly to feed their increased families. Sometimes, the increase in family size is sometimes not brought about by birth of new babies, rather, by the coming and joining to be part of the family by relatives who enlarge the family/household size. This statistic is however, not statistically significant since the p-value for household size is large, say, $P > |t| = 0.552 > 0.05$.

Effect of Meat Price on Meat Demand

From Table 6, the coefficient for meat price is 0.1701. This implies that an increase in the price of meat by 1% of the original price of meat leads to a decrease in the quantity demanded of meat averagely by 17.01% of the original quantity of meat demanded by the consumer/s. The effect of meat price of quantity demanded of meat, is statistically significant at 5% since the p-value for meat price is less than 0.05, say, $P > |t| = 0.016 < 0.05$.

Effect of Price of Livestock on Demand for Meat Production

In analyzing this objective, a separate analysis from the regression modeling was done. In this case, cattle traders and transporters were asked to choose that most hindering factor which is related to livestock price that influences their purchases of livestock. The result of their views are presented in Table 7 below.

Table 7: Livestock Price and Demand for Meat Production

Livestock Price Factor	Frequency	Percentage
Farm-Gate Price	7	37.0%
Purchase Price at Nakasero Market	3	18.5%
Government levy per Animal	1	11.1%
Livestock Transport Costs	2	14.8%
Price of Alternative Foods	3	18.5%
Total	16	100%

Source; Primary Data, (2022)

From Table 7, most of the cattle traders find the farm-gate price of livestock to be the most influencing factor in making purchases. In this case, 37% of the traders all agreed that the price they pay at the farms from where the animals are obtained for sale, influences the quantity of animals they purchase, either negatively or positively, depending on whether the price is increased or decreased.

On the other hand, the price at which the animals are bought when they are delivered to Nakasero market, influences the quantity of animals many of these traders choose to deliver to the market. In this case, over 18% of the traders believed that this price either attracts them or hinders them from procuring larger numbers of animals to Nakasero market. Similarly, traders who are influenced by the price of alternative were the same as those who claimed that it's the price at the market that influences them, as these were also 18.5% of the total number of traders and transporters of livestock.

Livestock transportation costs and the levy imposed by the government on every animal that crosses the district were also pinned at strong factors that influence the decisions of traders on the number of animals they can avail to the market. In this case, 14.8% of the traders accepted that transportation is usually the biggest block especially when fuel prices go up. Some traders ascertained that when fuel prices are high, they are pushed to the point of sharing vehicles with fellow traders in order to share the costs, and so, the space as well, which therefore reduces the number of animals they get to deliver to the market. On the other hand, 11% of the traders (who were also the least) supported the view that the levies imposed by the government along borders on every animal sold, influences greatly the decisions of many to transport a given number of these animals. In this case, some end up transporting few animals in order to face lower levies.

Effect of Consumers' Income on Meat Demand

From Table 7, the coefficient for consumers' income is 0.3123. This implies that an increase in the income of consumers by 1% of their original income, leads to an increase in the quantity of the kilograms of meat they are able to purchase by an average of 31.23%. This implies that meat is not an inferior commodity since people's consumption preferences are elevated for the product every time they experience a rise in their income levels. The effect of consumer's income on the quantity of meat purchased is statistically significant since the p-value for consumer's income (0.000) is less than 0.05.

Conclusions from the Study

According to the study's findings on the relationship between livestock costs and meat output, as livestock costs rise due to factors including farm gate prices, transport costs, and government levies per animal, meat industry decreases. This result is consistent with Mpanga's findings from 2021, who discovered that since it was difficult to transfer cattle between districts and livestock due to the foot and mouth disease outbreak, haulers were now charging exorbitant costs to move animals. The hefty taxes that were put on the meat vendors and the animals to get them to market forced them to raise the prices of all forms of meat, which in turn decreased consumer demand for it.

Recommendations from the Study

The government should reduce on the taxes levied on the transportation of livestock being taken for sale to market centers so as to reduce on the discouragement caused to traders.

The government should lay strategies to sure reduced prices of fuel in the country, such as through maximum price legislation such that cattle traders find more ease in doing their business.

Livestock traders should start engaging in direct livestock rearing by acquiring land either on lease or permanent basis so as to reduce on their exploitation at the farm-gate.

REFERENCES

- Allan, (2012). A case study on livestock and livestock products. Joint Donors Agencies Study on the performance and growth prospects for strategic Exports in Uganda. Delegation of the European Commission in Uganda.
- Alston, m. j. & Chalfant, A. J. (1987). Weak separability and a test for the specification of income in demand with an application to the demand for meat in AUSTRALIA. *Australian Journal of Agricultural Economics*, 31 (1), 1-15.
- Alston, M. J. & Chalfant, A. J. (1991). Can we take the con out of meat demand studies? *Western journal of Agricultural Economics*, 16 (1), 36-48.
- Anderson, W. E. & Shugan, M. S. (1991). Repositioning for changing preferences: the case of beef versus poultry. *Journal of consumer research*, 18(2), 219-232.
- Appleton, S. and A. Balihuta (1996). "Education and Agricultural Productivity: Evidence from Uganda". *Journal of International Development*, 8: 415-444.
- Atkins, J. F. Kerr, A. W. & McGivern, B. D. (1989). A note on structural change in Canadian *Journal of Agricultural Economics*, 37 (3), 513-524.
- Brester, W. G. & Schronder, C. T. (1995). The impacts of brand and generic advertising on meat demand. *American Journal of Agricultural Economics*, 77 (4), 969-979.

- Burton, P. M. & Young, T. (1991). Non-parametric tests for changes in consumer preferences for meat in Great Britain. *Journal of Agricultural Economics*, 19 (1), 165-180.
- Cooper and Emory, (1996): *Business Research Methods*. London University Press.
- Court, H. R. (1967). Utility maximization and demand for New Zealand meats. *Econometrical*, 35 (3-4), 424-446.
- Gao, M. X. Wailes, J. E. & Cramer, L. G. (1997). A micro econometric analysis of consumer taste determination and taste change for beef. *American Journal of Agricultural Economics*, 79 (2), 573-582.