Data Article

Preference and willingness to pay for small ruminant market facilities – Discrete choice experiment data

Fresenbet Zeleke Abshiro [a], Girma T. Kassie [b,*], Jema Haji [a], Belaineh Legesse [a]

[a] School of Agricultural Economics & Agribusiness, Haramaya University, P. O. Box 138, Dire Dawa, Ethiopia
[b] International Center for Agricultural Research in the Dry Areas (ICARDA), Rabat, Morocco

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ABSTRACT

The data described in this brief were collected in 2018 as part of a national study to elicit preferences and estimate willingness to pay (WTP) for small ruminant market facilities in Ethiopia. We employed multistage sampling method to identify respondents. First, Menz Gishe area was selected from North Shewa administrative zone for its high small ruminant population. Second, three districts from five districts found in Menz Gishe were selected randomly. Then, eight

* Corresponding author.
E-mail addresses: frewza@gmail.com (F.Z. Abshiro), g.tesfahun@cgiar.org (G.T. Kassie), jemmahaji@gmail.com (J. Haji), belaineh.legesse@gmail.com (B. Legesse).
Social media: 🐦 (G.T. Kassie)

Kebeles[1] from fifty one Kebeles were selected randomly. Finally, 360 farmers were randomly selected proportional to the total number of farm households in each Kebele. We used discrete choice experiments to elicit preferences from the 360 respondents across the three districts whereby we presented 12 choice situations to each of them and hence generated 4320 observations. Generalized multinomial logit model (GMNL) and latent class model were used to investigate preferences for the market and heterogeneities around them. We also estimated the GMNL in WTP space to estimate the WTP values for the facilities. The dataset complements an original article entitled "***Preference and Willingness to Pay for Small Ruminant Market Facilities in the Central Highlands of Ethiopia***"[2] and will be useful in replicating results for academic purposes and or employing the data for further development of choice behavior models.

Specifications Table

Subject	Livestock Marketing, Livestock sciences, Agricultural Economics
Specific subject area	Preference elicitation using discrete choice experiments and estimation of implicit prices of small ruminants market facilities using Generalized Multinomial Logit and Latent Class Models.
Type of data	Table
How data were acquired	In person interviews using discrete choice experiments.
Data format	Raw: .dta, .csv
Parameters for data collection	Menz Gishe is an area where small ruminants are important asset of the community. The sample respondents were identified from a list of farm households who were keeping small ruminants. The head of the household or his/her spouse was interviewed. Sample households were randomly drawn from eight Kebeles found in the three districts in Menz-Gishe area.
Description of data collection	Identification and selection of the market facilities was done with a series of individual and group interviews before the structured survey with which this dataset was collected. These data were was collected by trained enumerators in person using closed ended questions and choice cards which pictorially described experimentally developed small ruminant market. The respondents were briefed about the purpose of the study and the procedures of the choice experiment were explained to them before the interview began.
Data source location	Menz Gishe in North Shewa administrative zone of the Amhara administrative region in Central Ethiopia
Data accessibility	All the data are in a public repository: Repository name: Mendeley. Data identification number: doi: 10.17632/4754fk2tw7.2 Direct URL to data: https://data.mendeley.com/datasets/4754fk2tw7/2
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[1] Kebele [plural Kebeles] is the smallest administrative unit in Ethiopia.

[2] The article has been revised and resubmitted to the Journal of International Food & Agribusiness Marketing.

Value of the Data

- The data shall benefit private and public investors to check the empirical analysis and concurrently prioritize the market facilities to invest on.
- The dataset will be important for researchers and agricultural extension workers to enhance their efforts to improve livestock markets and identify potential strategies for sustainable provision of market services to the livestock keepers.
- The dataset will be useful for broader studies that intend to compare preferences for livestock market facilities in the developing world.
- The dataset shall be useful for academicians and researchers interested in meta-analysis and development of broadly applicable choice behaviour models.

1. Data Description

Raw data: file "IJFAM_2020.dta" is the raw data used in all the analyses reported in the article indicated above. It has the socioeconomic variables characterizing the sample population and the trait preference data elicited using discrete choice experiment.

The variables in the discrete choice experiment data are described in Table 1 below. The names of the variables as presented in the data set, their definition and the levels or ranges of values they take are summarized in the table.

Table 1
Variables from the choice experiment.

Variable name	Label	Levels/range
hhid	Household/case identifier	1–360
obsid	Order of observations for each household	1–36
cset	Choice set identifier	1–4315
alt	Alternative	1–3
choice	Choice indicator (chosen=1)	Yes, No
sfen	Fenced market shed	Fenced shed, no-shed
sunf	Unfenced market shed	Unfenced shed, no-shed
VET	Veterinary clinic	Vet clinic, Not-vet clinic
hld	Holding barn	Holding barn, no-holding barn
wat	Watering trough	Watering, No watering
tcln	Toilet with a cleaner	Toilet with a cleaner, no-toilet
tncl	Toilet without cleaner	Toilet without cleaner, no-toilet
fdsh	Feed shop/stall	Feed shop, No feed shop
feec	Market service fee in Birr*/animal	5, 7.5, 10, 12.5

Note: * Birr is the official Ethiopian currency and currently 1 USD = 35 Ethiopian Birr.

Table 2 similarly summarizes the socioeconomic variables collected in the survey and used in the analysis of preference heterogeneity. These variables were all checked as covariates to explain the unobserved heterogeneity in preferences. Finally, only those variables that explained part of the unobserved heterogeneity were included in the models estimated.

2. Experimental Design, Materials and Methods

Small ruminant market attributes preference data were elicited using a discrete choice experiment. The experiment started with identification of important market attribute and attribute levels. The decision on the attributes to be included in the choice experiment was made following iterative processes of focus group discussion (FGDs) and key informant interviews (KIIs). The FGDs and KIIs were conducted in eight selected small ruminant markets using checklists.

Table 2
Socioeconomic variables.

Variable	Label	N	Mean/%	St. dev.	Min.	Max.
district	District					
	1. Menz Gera	120	33.3			
	2. Menz Keya	120	33.3			
	3. Menz Mama	120	33.3			
gender	Sex of the respondent (male=1)	360	77.50			
maininco	Main source of income					
	1. Farming	352	97.78			
	2. Petty trading	8	1.67			
	3. Runs one's own business					
	4. Temporary employment	1	0.28			
	5. Permanent employment	1	0.28			
ageinyrs	Age of the respondent in years	360	43.789	13.720	18.000	78.000
educ_yrs	Education in years	360	4.342	3.983	0.000	30.000
hhd_size	Household size in adult equivalent	360	5.231	1.805	1.000	10.000
distmakt	Distance to Market in walking hours	360	0.615	0.476	0.010	3.000
freqlivm	Frequency of market visit	360	3.253	2.502	0.000	24.000
smrumtlu	Small ruminant herd size in TLU	360	0.961	0.899	0.000	6.300
frminha	Total land holding in hectare	360	0.905	0.543	0.000	3.000

Pair-wise ranking was used to determine the set of market attributes, attribute levels and the distribution of values of the fee for alternative market scenarios included in the study.

Once the attributes and their levels were determined, we proceeded with a Bayesian efficient experiment to determine the optimum number of choice situations. The design determined the number of profiles of markets over several draws taken from random prior distributions of parameter values [1,4,5]. The needed prior values of the parameters were derived from a preliminary model estimated based on the data obtained from a pilot survey of twenty households. Using the Bayesian efficient method, a design of 24 choice scenarios (CSs) was generated using Ngene Version 1.2. Each scenario consisted of a combination of two small ruminant market alternatives and an opting out option. To reduce response fatigue, the 24 choice sets were blocked into two where 12 choice sets were presented to each respondent. To assist farmers' visualization of the hypothetical market alternatives, pictorial cards were prepared and presented during the survey.

Each choice set was presented separately for the respondent and he/she chooses an alternative or opt-out from all 12 choice sets assigned to him/her. So, the data contain the choice indicator [1 for selected alternative and 0 otherwise] and the levels of the traits which characterized each of the alternatives. The opt-out option is included not to force choice and disinterest in the two hypothetical alternatives. This option does not indicate any level of traits and hence the variables take no value or are coded as missing.

Respondents for the survey were drawn from household heads in three districts (district); i.e., Menz Gera, Menz Keya, and Menz Mama of Menz Gishe area of central highlands of Ethiopia. We employed multistage sampling method to identify respondents. First, Menz Gishe area was selected from North Shewa administrative zone for its high small ruminant population. Second, three districts from five districts found in Menz Gishe were selected randomly. Then, eight Kebeles from fifty one Kebeles were selected randomly. Finally, 360 farmers were randomly selected proportional to the total number of farm households in each Kebele.

Before the actual survey was started, we conducted a pre-test with the enumerators and selected farmers to ensure that there is a clear understanding of the process both by enumerators and respondents. The survey questionnaire consisted of both the socio-demographic and choice experiment questions.

The data were analysed using the Generalized Multinomial Logit (GMNL) model [2,3]. The WTP values were estimated using GMNL model in WTP space. We used NLOGIT Version 6 to

estimate the GMNL model. Latent class [LC] models were also used to investigate trait preference heterogeneity and heuristics. We used LatentGold version 5.1 to estimate the LC models.

Ethics Statement

For the data obtained through the survey, we confirm that informed consent was obtained from the respondent before the beginning of the interview.

Declaration of Competing Interest

Authors declare no conflicts of interest with respect to authorship and publication of this article.

Acknowledgment

Supplementary Materials

Supplementary material associated with this article can be found in the online version at doi:10.1016/j.dib.2021.106887.

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