CONJOINT ANALYSIS ON MONGOLIAN MEAT CONSUMPTION

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ABSTRACT

The diet in Mongolia is essentially based on animal products: meat, considered as "red food", and dairy products, "white food". Related to urbanization and changes of lifestyle, Mongolian food consumption structure is changing. But, meat is still important food for Mongolians. Therefore, Improvement of meat quality and meat safety issues is core issues of meat production and meat consumption.

The studyapplied conjoint analysis methodology for consumer choice of meat. In result of Conjoint Analysis, Mongolians prefer good price and high fat content meat and safety meat. In future, the Mongolian Government should be oriented meat production and supply with trade mark and increase a production of Mongolian Brand meat.

KEYWORDS: conjoint analysis, choice based model, meat consumption, choice on meat consumption

INDRODUCTION

The Mongolian meat production volume depends on number of animals. Mongolian total number of animals and meat production increased dramatically between 1984-2012 years. But, growth rate of cattle population was not high and cannot keep number of cattle in number of before Dzud of 1999/2000.

Mongolians produce ecological puremeat in pastoral animal husbandry. Thetable below shows that meat quality comparison of Mongolian meat with New Zeland and Russian meat.

Table 1

Mongolian meat comparison with New Zeland and Russia[1]

	Mongolian meat					New Zealand		Russia
Content	Sheep	cattle	horse	yak	Goat	sheep	cattle	horse
Protein	18.82	20.35	20.11	21.26	19.26	17.14	21.31	19.50
Fat	2.78	2.15	1.73	2.29	5.21	18.50	3.50	3.10
Minerals	1.11	1.16	1.10	1.13	1.17	0.88	1.05	1.00
Moisture	75.76	75.47	76.06	75.31	74.28	62.84	74.1	75.90

[1] N.Nyamsuren, “Regression analysis on meat price”, Mongolian National University, 2013, UB

Mongolian mutton and beef quality is similar with New Zeland whileMongolian mutton is fatter than New Zeland mutton. Alternatively,Mongolian horse meat quality is similar with Russian (table 1).

In Mongolia, there arefewer meat processing units. They produced 5.5 thousand tons of processed meat, 1412.4 tons of sausage and others and 139.4 tons of canned meat in 2012. Table 2introduces Mongolian meat balance of supply and consumption.

Table 2

Balance of meat production and consumption

Average	Number of Population \thousand persons\	Meat Production, thousand tons	Consumption, thousand tons	Consumption rate, %	Margin of meat, thousand tons
Average of 1980-1990	1805,1	237,3	151,6	156,5	0
Average of 1991-2000	2060,2	253,2	173,1	146,3	0
Average of 2001-2011	2503,5	194,1	210,3	92,3	7,9

Mongolians satisfy meat consumption by their own production. During 1980 – 2000 years, Mongolians over produce of their consumption and they have an experience on meat export to Russia. The meat price is increased year by year from 2000 to recent. By economic theory, product price should be decreased when supply increased. But, for meat example, this theory not goes a well and meat supply and meat production increase both. Increasing meat price depends on or caused by petrol price, inflation, economic growth and other factors.

METHOD AND MATERIALS

We used conjoint analysis[2] for consumer choice of meat.The studyproposed to define: a/ which products people chose to purchase; b/ which product attributes were most attractive to the purchaser; c/ how these responses varied between different consumers. 200 consumers were selected randomly for the survey and survey method was focus group discussion and individual discussion. The survey sample are classified 100 male and 100 female, consumers aged 20-35 (60 consumers), consumers aged 36-55 (80 consumers)and consumers aged above 55 (60 consumers). Nine attributes were developed for meat consumption choices and defined most attractive attributes.

RESULTS AND DISCUSSION

The meat consumption is interested in various aspects of meat offerings: 1/ Brand, 2/ Price, 3/ Fat content of meat. From this a list of attributes and levels is developed the captures the whole range of levels under consideration.

Figure 1. Complex of meat choice

[2] The Basics of Conjoint Analysis, 2009

With each attribute having three levels there are 3 * 3 *3 =27 possible meat consumption combinations. For example, thus one combination would "Brand meat at 9000 tugrugs at 20% of fat". When faced with too many choices the decision process is not ideal, therefore it was reduced to 9. To resolve the problem of dealing with complex choices it became customary to use abbreviated design table. Please see a typical design table below.

Table 3

Table for Typical Design

Choices	Brand	Trade Mark	Non Brand	9000₮	8000₮	7000₮	20%	30%	40%
1			X			X		X	
2		X				X			X
3	X				X				X
4		X		X			X		
5			X		X		X		
6			X	X					X
7	X			X				X	
8		x			x			X	
9	X					x	x		

The Design table is balanced so that each level is shown exactly three times (Brand three times; Price three times; fat content three times; etc). It is this balance of the design table makes possible the estimation of the independent effect of each attribute with a relatively high degree of precision. Below table shows that consumers' real choice combination of meat.

Table 4

Consumers' real choice on meat

1	Non Brand 40% fat 8000 t 3	2	Trade Mark 40% fat 7000t 2	3	Brand 30% 7000 t 7
4	Trade mark 20% fat 9000 t 8	5	Non Brand 30% fat 9000 t 4	6	Non Brand 20% fat 9000 t 6
7	Brand 20% fat 8000 t 9	8	Trade mark 30% fat 8000 t 5	9	Brand 40% fat 9000 t 1

From the values of above table we computed a weight or part-worth for each of the attribute levels. At this point, most consumers had chosen a Brand meat with 40 % of fat content and 9000 tugrugs. Next, consumers had chosen a Trade mark with 40 % fat content and 7000 tugrugs.
Table 5 the offer values for the different attributes are shown in a re-arranged order to show the average scores for each attributes.

Table 5

Calculation of Conjoint Attribute Level Score of Meat

							Average	Score
Brand	Choice 3	7	Ch – 7	9	Ch – 9	1	17/3	5.66
Trade mark	Ch – 2	4	Ch – 4	7	Ch – 8	5	16/3	5.33
Non Brand	Ch - 1	3	Ch - 5	4	Ch - 6	6	13/3	4.33
9000 ₮	Ch -4	8	Ch – 6	6	Ch – 7	9	23/3	7.66
8000 ₮	Ch – 3	7	Ch – 5	4	Ch – 8	5	16/3	5.33
7000 ₮	Ch - 1	3	Ch - 2	4	Ch - 9	1	8/3	2.66
20% fat	Ch – 4	7	Ch – 5	4	Ch – 9	1	12/3	4.0
30% fat	Ch – 1	3	Ch -7	9	Ch -8	5	17/3	5.66
40% fat	Ch -2	4	Ch -3	7	Ch -6	6	17/3	5.66

The average score values are calculated by adding the values for the package of choices in each row and dividing by number of choice packages (ch). There is clear preference for those offers with a highest fat content and brand meat in Mongolia by result of Conjoint Analysis. An importance score is the effect each attribute has upon product choice, given the range of levels included in the survey.

Table 6

Calculation of Attribute Importance Scores

	Part-worth utility[3] scores			Attribute utility range	Attribute importance
Brand range	4.33	5.33	5.66	5.66-4.33=1.33	0.1355
Price Range	7.66	5.33	2.66	7.66-2.66=5.0	0.5431
Fat content	4.0	5.66	5.66	5.66-4.0=1.66	0.166
				Utility range total = 7.99	0.83

By contrast Price range has a very large (54.3%) impact on attribute importance, it has a very strong influence on choice of meat. Fat content range has an intermediate impact (16.6%) on meat choice. Brand range is a 13.6% .

CONCLUSIONS

Mongolian meat supply and demand are in balance.Mongolian meat quality is similar with meat of New Zealand and Russia.Meat price is most important for consumer's choice (54%).

The most preferred meat is "Non Brand meat" with a total score of 18.32, closely followed by meat with "Trade Mark" and with meat "Brand" the least preferred.

[3]Green. P and V.Rao, (1971), Conjoint measurement for quantityingjudgemental data", Journal of Marketing Research 8: 355-363

This is connected to the importance the consumer places on price and fat content.

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