Importance of Informational Labeling in Exporting Beef to South Korea: Preferences of Retailers, Wholesalers and Importers

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Country of origin labeling and brand labeling play important roles in affecting purchasing behavior of buyers in the Korean beef supply chain. This paper presents a model which explain differences in the attitudes and purchase behaviors of three marketing groups regarding country of origin and other important quality attributes. The results show some of the diversity of buyers' attitudes, preferences and willingness to pay for different country of origin and brand of foreign packers in three marketing groups.

Keywords: Informational Labeling, Logit Model, Korea, Beef Export, Quality Preference, Retailers, Wholesalers and Importers,

Introduction

With intensive coverage of local media on the outbreak of *Foot & Mouth Disease* (FMD) and *Bovine Spongiform encepphalopathy* (BSE)- so called 'Mad Cow' disease in European livestock sector in February 2001, decline in demand for imported beef has been drastic and has had a marked effect on major beef exporters. In the first month eight months 2001, South Korea's beef imports have declined 33% in volume and 42% in value, due to European livestock disease problems and the sluggish economy (USDA 2001a). Some major retailers of imported beef in South Korea reported that consumption of imported beef decreased by 70% for the first quarter of 2001 (Interview 2001). Recent food safety scares have motivated new actions on the part of beef producers and exporters in order to counteract such concerns and to restore confidence in the Korean beef market.

Beef exporters and regulators are responding to consumer concerns for safety and quality of imported beef by utilizing brands and labeling policies to signal quality. Beef importers, wholesalers and retailers in South Korea are responding to such concerns by customizing and extending the variety of imported beef products (Figure 1). These actions are having significant impacts on demand for imported beef in South Korea. However, perceptions about origin labeling and branding of imported beef have not been well documented since most beef quality studies have focused mainly on consumers. As the main three marketing groups in the Korean beef supply chain, importers, wholesalers and retailers are important players in the imported beef market.

The aim of this paper is to present a model which explain differences in the attitudes and purchase behaviors of these three marketing groups regarding country of origin and other important quality attributes. This objective is achieved by analyzing the effects of four attributes on purchase behavior of retailers, wholesalers and importers in South Korea. These attributes include prices, country of origin, brand of foreign packer and quality of meat texture.

Comparison of attitudinal differences among three different marketing groups [retailers, wholesalers and importers] of imported beef toward selected attributes will provide insights to particular characteristics and interest of each marketing group. An understanding of preferences of the Korean marketing groups for quality attributes of imported beef will aid exporters' planning process for future marketing activities regarding product/service design, pricing and labeling strategy, distribution channel and communication strategy selection. Ultimately, this

study assesses the effectiveness of origin labeling and brand strategies that are used by major beef exporting countries at different level of the beef supply chain in South Korea.

Korean Beef Supply Chain

The Korean beef market is undergoing important structural changes. On January 2001, the Korean government liberalized importation of beef in South Korea by replacing the import quota with a tariff of 41.6% (Table 1). Relaxation of the beef import system is expected to provide increased market opportunities to beef exporters and intensify competition among them. It is expected that domestic beef production will decrease significantly under the liberalization scheme as some small-scale producers will be unable to supply beef at competitive levels. Faced with a reduction in imported beef prices, the Korean beef market will increase the levels of imported beef at the expense of domestic producers (Stringer 2000). Transformation of the Korean beef market to an import-oriented supply chains is leading to increased supply of more value-added beef products by competitive beef exporters. In addition, the marketing of imported beef in South Korea is becoming more differentiated with a wide variation of quality attributes.

South Korea has a separate retail distribution system for domestic and imported beef. Under this system, imported beef and domestic Hanwoo beef are required to be marketed under segregated retail sales outlets: Hanwoo beef shops and imported beef specialty stores. Since the price of Hanwoo beef is much higher than that of imported beef, many retailers are claimed to be involved in fraudulent marketing of beef products in South Korea. The Korean government views the separate retail system as a mode to prevent the mislabeling of imported beef as domestic beef and to prevent deceptive practices by retailers against consumers (Interview 2001). However, major exporting nations including the U.S., Canada and Australia jointly filed a petition to the World Trade Organization (WTO) regarding Korea's separate beef marketing system in 1999. The WTO beef panel ruled that Korea's beef marketing system to be discriminatory in July 2000, and recommended Korea to reform its beef retail system to allow sales of both imported and domestic beef in one outlet by September 11 2001 (USDA 2001b). Removal of the separate retail system is expected to enable Korean consumers to have greater access to imported beef. For instance, beef exporters will have full access to 50,000 butcher shops in South Korea through an unrestricted retail system.

Under the reformed retail system, the country of origin (COO) labeling attribute is anticipated to play an important role in influencing choice behaviors of beef marketers and consumers in South Korea. Brand recognition of beef packers from exporting nations is also considered to play a significant role, as it becomes an integral part of Korean importers and wholesalers' marketing strategies. In response to anticipated changes in the retail system and public anxieties for food safety of imported meat products, the Korean Government developed initiatives to issue an administrative guidance seeking the national organization of meat retailers to exercise mandatory labeling of the country of origin (COO) for imported meat products (Interview 2001).

Interviews with the retailers and wholesalers in South Korea reveals that the COO labeling generates negative reaction of Korean consumers toward imported beef that are 'labeled' with specific exporting country of origin, due to 'perceived' inferior quality of imported beef and concerns for food safety of imported beef. This reporting suggests that it is crucial for exporters to establish an original and positive image of imported beef among Korean consumers by providing accurate information on processing, safety standards, breeding and feeding process of cattle and beef products in exporting nations.

At large, beef exporters are faced with a double hurdle if it wants to increase and sustain beef exports to South Korea. First, they need to improve the quality perception of the marketing groups on imported beef, in general. Second, they need to develop and improve the consumers' attitude particularly on beef from a specific country of origin by positioning themselves as a supplier of a high quality, safe and high-value [low-cost] product relative to other competing foreign beef products. This task would requires an in-depth understanding of the importers, wholesalers and retailers' cognitive preferences on imported beef regarding important quality attributes, and beef exporters' abilities to deliver beef products with characteristics that match consumer preference in South Korea.

The paper is organized as follows. In the next section, a brief description of the survey instrument used in this study is discussed. Results and discussions on marketing implications are outlined in the following section. A discussion of simulation analysis, valuation of origin attribute and conclusions follow the discussion of results.

Methods

To analyze attitudinal differences among three marketing groups towards COO labeling and other important quality attributes, an extensive interview survey was developed and conducted in South Korea in January and February of 2001. The survey instrument included questionnaire that is based on stated preference method (SPM). The SPM allows assessment of the potential demand for a new product attribute (i.e. labeling of country of origin), based on respondent's perception of that product (Lancaster 1966; Louviere, 2000). The SPM is widely used in empirical studies in marketing studies of agri-food industry (Quagrainie et al. 1998; Unterschultz et al. 1997; Kuperis et al 1999; Walley et al 1999; Bredahl L et al. 1998). The survey is designed to measure the relative importance of country of origin labeling, brand of foreign packers, price and quality of the meat texture (Figure 1). Selection of the quality attributes is based on the preliminary interviews with the industry representatives (Table 1).

Epple (1987) notes that identification problem can arise with using location or origin variable under the following conditions; 1) if location is associated in the minds of buyers with a particular set of attributes, 2) if an important attribute is neglected from the analysis and happens to be correlated with the Origin variable used in the analysis and 3) if the market is segmented to the degree that buyers have independent and differing sets of product attribute requirements. In order to avoid these problems, the questions were explicitly stated with a specific beef cuts (chuck roll) and with a specific packaging condition (i.e. frozen). The survey questionnaire was pre-tested with a group of retailers, wholesalers and importers prior to execution of the survey. A total of 105 respondents completed the interview and the questionnaire in January and February of 2001. The respondents consist of 33 retailers, 36 wholesalers and 36 importers in the Korean beef market.

Given the nature of discrete and unordered nature of the dependent variable (choice of each respondent), an unordered multinomial logit model (MNL) was developed. The logit technique is preferred over other categorical variable estimation technique (Maddala, 1983) and is a better procedure for capturing the magnitude of the independent variable effects for qualitative dependent variables than are probit models (Amemiya, 1983). With the application of the MNL model, the probabilities were estimated for choosing among three different alternatives (Figure 1). In Eq. (1), the probability of choosing alternative i is defined among three alternatives, =1,…3 given specified conditions of beef quality attributes of three alternatives;

$$\Pr(y_i \mid X_{in}) = \frac{\exp(V_{in})}{\sum_j \exp(V_{jn})} \quad (1)$$

V is a theoretical index determined by a set of explanatory variables X_{in}.

$$V_{in} = \beta_1 + \beta_2 x_{in2} + \ldots + \beta_k x_{ink} \quad (2)$$

The variables X_{in} in Eq. (2) include a variety of quality attributes (i.e. price, country of origin; brand recognition and quality of meat texture). Buyers' choices were mutually exclusive, and remove any potential problems with irrelevant alternatives. The MNL model is built based on assumption that a set of explanatory variables affect the decision making of buyers in purchasing imported beef. Empirical MNL model is specified as follows:

$$y_i = \sum_{k=1}^{4} \beta_{1kt} \Pr ice_{kt} + \sum_{k=1}^{4} \beta_{2kt} COO_{kt} + \sum_{k=1}^{4} \beta_{3kt} Brand_{kt} + \sum_{k=1}^{4} \beta_{4kt} MT_{kt} + \varepsilon \quad (3)$$

where,

$\Pr ice_{kt}$ =effect coded price variable for buyer type t ; COO_{kt} = country of origin level k for buyer type t ; $Brand_{kt}$ = brand of packer level k for buyer type t ; MT_{kt} =quality of meat texture level k for buyer type t ; ε = error term specific to each alternative choice.

The β_{mkt} carry the mkt subscripts, with k distinguishing m independent X variables for buyer type t.

Results and Discussion

Maximum likelihood procedures were used to estimate the MNL model and the resulting parameters and supporting statistics area reported in Table 2. Table 1 provides an explanation of variables in Table 2. The pseudo R^2 show in Table 2 was 0.19. This value is reasonable considering the type of data (survey of individual respondents) used in this analysis. Most of the coefficient estimates are statistically significant at the 95% confidence level, and are shown to significantly influence buyers' purchasing decisions. Some of the findings were not consistent with prior expectations. An unexpected coefficient is the negative sign for price level at 4100 won (US$ 3.42) per 100 grams, indicating a lower probability of purchase of imported beef by respondents. The respondents were more likely to purchase imported beef that has a price range of 4500 won (US$ 3.75) to 4352 won (US$ 3.62) per 100 grams. Wholesalers are less likely to purchase beef if it is priced at 4852 won (US$4.04) per 100 grams compared to other marketing groups since the wholesale market in South Korea is primarily driven by price competition.

Variables of particular interests are COO and Brand. Preference ordering of COO attribute is found to be slightly different among three marketing groups. Retailer group prefers U.S. origin to Canada, while wholesalers and importers prefer Canada to the U.S. This may be due to the different nature of competition that exists in each level of the beef supply chain in South Korea. Canada is recognized to be a supplier of specialty cuts and items (Interview 2001). Given the intense competition at the wholesale and importing level of the supply chain, the buyers at these levels may seek for products from Canada in order to differentiate their products. Retailers are more likely to cater and respond to consumers' preference for country of origin.

Thus, consumers' preference for US origin is reflected at the retailer's level. The negative sign of the country of origin coefficient for both Australia and New Zealand implies that buyers' purchasing probability decrease with these origins.

The relative importance of Brand versus Origin varied across three marketing groups. Retailers are more likely to consider the Origin attribute as more important decision-making factor than the Brand attribute compared to other buyer groups. This may be due to the marketing situation at retailer's level. Brand of foreign packers are not sufficiently marketed to Korean consumers, thus retailers do not place significant value on brand attribute of products. However, import buyers and wholesalers are well aware of various foreign packers brand names and charge premium on brand name beef. The meat texture attribute is found to be the most important purchasing factor among four attributes indicating the importance of physical quality characteristics of imported beef in the mind of Korean beef marketing groups.

Simulation Results

The values of coefficient estimates can be used to find the implicit value of a particular attribute perceived by the respondents. First, we set a product profile based on the coefficient estimates derived from the MNL model. In the simulation analysis, two alternatives are assumed to have identical attributes except the origin variable. For instance, the simulations are conducted by comparing beef from US origin and Canadian origin. It is assumed that the price change that will lead to a buyer having the same probability of choosing either of beef from two competing origins represents an estimate of the dollar value of product origin. A buyer will have an equal probability of choosing between two products if he/she is indifferent between these products. This information can facilitate development of pricing and labeling strategies.

We set a specific product profile of frozen imported beef (chuck roll) with good meat texture, average brand recognition for the simulation analysis (Table 3 and 4). Calculated probabilities of choosing an alternative A or B are also reported in the tables. Several different scenarios can be generated to evaluate the impact of a change in an attribute on price. In this paper, we focus on estimation of implicit value of the origin attribute.

For retailers, the probability of choosing beef from Canadian origin is 45% and the probability of choosing US beef is 55%, *ceteris paribus*. A price reduction of 6.9% is required for Canadian beef to be equally competitive with US beef in terms of the origin effect. At the wholesale and importer levels, buyers prefer Canadian origin to US origin for imported chuck roll (Table 3). In order for US beef to be equally competitive to Canadian beef, price reduction of 17% is required in the wholesale market, and price reduction of 10% is required in the importer market.

Second scenario (Table 4) evaluates the relative values of product origin between Australia and New Zealand. In general, there is a higher probability of choosing beef product from New Zealand origin in all three marketing groups. A price reduction of 9.9% is required for Australian beef before retailers exhibit indifference between beef products from Australia and New Zealand. At the wholesale and importer levels, the price of Australian beef is required to be reduced to 4.1% and 5.9%, respectively before buyers become indifferent towards the two competing origins.

Marketing Implication and Conclusions

The results show some of the diversity of buyers' attitudes, preferences and willingness to pay for different country of origin and brand of foreign packers in three marketing groups. We conducted an extensive survey interview study in South Korea in the beginning of 2001. The respondents of the survey study are major buyers in three different marketing groups: retail, wholesale and importing sectors. Korean wholesalers and importers reveal a strong preference for Canadian origin compared to US origin in purchasing imported beef, while retailers had a reverse preference between these two origins. Korean beef wholesalers and importers were more inclined to search out for new opportunities. The wholesalers and importers perceive Canada as a supplier of different products and specialty cuts, thus their interest in marketing new products by developing niche markets may be reflected in their preference of Canadian origin. This desire by the wholesalers and importers is associated with a willingness to explore for future potential.

Preference of Korean retailers appears to be driven by consumer preference. Korean consumers' knowledge on brand of foreign beef packers is at a premature stage (Interview, 2001). Thus, the mandatory labeling of country of origin plays a critical role in influencing perception of Korean consumers and retailers towards imported beef. Korean meat retailers and major supermarkets are emphasizing quality attributes of imported and promoting store-branded imported beef by forming vertical integration with foreign packers. Brand attribute is anticipated to play more significant role as the Korean consumers have more knowledge on brand of foreign packers. Regardless of the group, the empirical model showed that physical quality attribute (i.e. meat texture) would make a significant difference in buyers' purchasing behavior.

Results from the analysis have several interesting implications. First, it appears that the COO labeling attribute plays an important role in affecting perceptions of buyers in the Korean beef supply chain. Second, the brand labeling is considered more seriously at the wholesalers and importers level than in the retail sector. These two types of informational labeling influenced attitudes, perception, purchasing patterns and marketing practices in different ways. Thus, how effectively informational labeling of imported beef is communicated throughout the marketing chain will determine the future success of beef exporters in South Korea.

Tables and Figure

Figure 1. Example of stated preference method (SPM) question

Scenario: Purchasing for imported beef: Frozen, Chuck roll or Short ribs

Assume that the following alternatives are the only ones on your next order for medium wheat. Would you choose A or B or would you choose neither?

Product Attribute	**Alternative A**	**Alternative B**	**Alternative C**
Price	5% less than previous price paid	Same price as previous price paid	Neither alternative A nor B
Country of origin	Canada	Australia	
Recognition of Brand of Packer	High	Low	
Quality of meat texture	Average	Excellent	
I would choose			

Table 1. Variable Definitions specified for Multinomial Logit Model for Korean Beef Market /a

Type of Variable	Variable	Range of Attribute
Price	Price 1	4852 won
	Price 2	4500 won
	Price 3	4352 won
	Price 4	4100 won
Country of Origin	COO1	Canada
	COO2	New Zealand
	COO3	Australia
	COO4	The U.S.
Recognition for Brand of Foreign Packer	Brand 1	Poor
	Brand2	Average
	Brand3	Good
	Brand4	Excellent
Quality of Meat Texture	MT1	Poor
	MT2	Average
	MT3	Good
	MT4	Excellent

/a selection of quality attributes was determined based on the preliminary interviews with the industry representatives prior to survey interviews.

Table 2. Multinomial Logit Estimates for *Korea's Beef Market* [1]

	Retailers		**Wholesalers**		**Importers**	
Attribute	Coefficient Estimates (β_{mkt})	Coefficient S.E.	Coefficient Estimates (β_{mkt})	Coefficient S.E.	Coefficient Estimates (β_{mkt})	Coefficient S.E.
Price 1*	-0.40	0.18	-0.87	0.19	-0.60	0.18
Price 2	0.19	0.16	0.19	0.15	0.14	0.15
Price 3	0.50	0.17	0.59	0.17	0.75	0.17
Price 4	-0.29	0.16	0.01	0.15	-0.29	0.15
COO1	0.36	0.17	0.63	0.17	0.68	0.17
COO2	-0.59	0.19	-0.42	0.19	-0.57	0.19
COO3	-0.31	0.17	-0.29	0.17	-0.33	0.16
COO4	0.55	0.21	0.01	0.20	0.22	0.17
Brand 1	-0.19	0.17	-0.78	0.18	-0.54	0.17
Brand2	0.30	0.16	0.37	0.17	0.24	0.16
Brand3	0.27	0.17	0.60	0.16	0.57	0.16
Brand4	-0.38	0.16	-0.19	0.15	-0.28	0.15
MT1	-0.73	0.19	-0.69	0.18	-0.72	0.18
MT2	0.31	0.17	0.32	0.17	0.21	0.16
MT3	0.80	0.17	0.73	0.17	0.83	0.16
MT4	-0.38	0.16	-0.36	0.15	-0.32	0.14
Pseudo R^2			0.19			
N (respondent number)		33		36		36

Likelihood ratio tests indicated the models were statistically significant at 5% level.

* Descriptions of variables can be found in Table 1.

S.E.= standard error

Table 3. Scenario for comparison of US vs. Canadian origins

Scenario (**Retail level**)	Alternative A	Alternative B
Price	4352 won	4352 won
Origin	Canada	The U.S.
Brand of Packer	Average	Average
Meat Texture	Good	Good
Probability of choice	45%	55%
Price change required for indifference	**-6.9%**	-
Scenario (**Wholesale level**)	Alternative A	Alternative B
Price	4352 won	4352 won
Origin	Canada	The U.S.
Brand of Packer	Average	Average
Meat Texture	Good	Good
Probability of choice	65%	45%
Price change required for indifference	-	**-17%**
Scenario (**Importer level**)	Alternative A	Alternative B
Price	4352 won	4352 won
Origin	Canada	The U.S.
Brand of Packer	Average	Average
Meat Texture	Good	Good
Probability of choice	61%	39%
Price change required for indifference	-	**-10%**

Table 4. Scenario for comparison of Australian vs. New Zealand origins

Scenario (**Retail level**)	Alternative A	Alternative B
Price	4352 won	4352 won
Origin	Australia	New Zealand
Brand of Packer	Average	Average
Meat Texture	Good	Good
Probability of choice	43%	57%
Price change required for indifference	**-9.9%**	-
Scenario (**Wholesale level**)	Alternative A	Alternative B
Price	4352 won	4352 won
Origin	Australia	New Zealand
Brand of Packer	Average	Average
Meat Texture	Good	Good
Probability of choice	47%	53%
Price change required for indifference	**-4.1%**	-
Scenario (**Importer level**)	Alternative A	Alternative B
Price	4352 won	4352 won
Origin	Australia	New Zealand
Brand of Packer	Average	Average
Meat Texture	Good	Good
Probability of choice	44%	56%
Price change required for indifference	**-5.9%**	-

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