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Processing companies' preferences for attributes of beef in Switzerland

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ABSTRACT

The aim of this work was to assess processing companies' preferences for attributes of Swiss beef. To this end, qualitative interviews were used to derive product attributes that determine the buying decision. Through an adaptive-choice based conjoint analysis survey and latent class analysis of choice data, we compute class preferences. Results show that there are two distinct classes. A smaller class emphasizes traceability back to the birth farm and low producer price, a larger class focuses on environmental effects and origin. Additionally we see that larger companies are more price-sensitive and smaller companies are more sensitive to origin of the animals. The results outlined in this paper may be used to target market segments and to derive differentiation strategies based on product characteristics.

1. Introduction

According to the Swiss Federal Office of Agriculture, 12% of the production value of Swiss agriculture is produced through beef farming (BLW, 2011), thus being the 3rd most important agricultural production sector. In 2010, 110,000 tons of beef (slaughtering weight) were produced and 13,000 tons were imported (Proviande, 2011). Swiss beef consumption per capita amounts to 11 kg per year (Proviande, 2011) and has slightly increased in the past 10 years. However, as further trade liberalization steps are discussed within Switzerland and price differences to overseas beef remain high, price pressure on farmers is increasing. On the other hand, production cost remains high, mainly due to structural costs. 76% of Swiss farms rely on less than 25 ha of land (BLW, 2010; SMP, 2011). The Swiss topography and a direct payment system fostering extensive farming make it unlikely for farms to increase in size. Therefore farmers often focus on production efficiency to improve performance.

In small farms with less than 250 cattle (thus virtually all Swiss farms), economies of scale are often not present (Short, 2001) and therefore low cost strategies might not succeed. Farmers require more information about the preferences of their customers, the processing companies, and the final consumers (Micheels & Gow, 2011). Hult and Ketchen (2001) indicate that firms that have an appropriate market orientation and leverage the development of a market-oriented culture through a positional advantage can achieve superior performance compared to their competitors.

The novelty of our research lies in the fact that we aim to assess processing companies' preferences for beef attributes instead of consumer preferences. This information is of use to producers and producer associations attempting to design strategies to ensure future sales and revenues. There are three main research objectives: (i) Through qualitative interviews at different stages of the value chain, product attributes that drive the buying decisions of processors with regards to beef are collected. (ii) We then proceed to an adaptive choice-based conjoint analysis survey at the business-to-business interface of the beef market, i.e. we ask processors about their preferences. (iii) Latent class analysis is conducted to detect market segments and to analyze preferences of the found segments.

To our knowledge, there are no empirical studies on the relevance of beef attributes to European processing companies. However, there is a literature on business-to-business decision making (Ashnai et al., 2009; Bech-Larsen, 2001; Skytte & Blunch, 2001, 2008). These studies show that long-term relationships within the value chain, traceability, presence on different markets and, especially for smaller companies, sufficiently large quantities for the whole chain, gain importance. Additionally, several studies indicate that producer prices paid are a key criterion to processors (Bastian & Menkhaus, 1997; Boesch, 2012; Gong, Parton, Zhou, & Cox, 2007).

2. Data and methods

Researchers generally investigate preferences through revealed- and stated-preference methods. While revealed-preference approaches are essentially an ex-post analysis of actual buyer behavior, data about actual buyer behavior is hard to get within business-to-business markets. Stated-preference approaches overcome this shortcoming by showing respondents hypothetical, but realistic choice situations in order to elicit preferences. Additionally, stated-preference data allows assessing generic products, i.e. combinations of attributes (Carson & Louviere, 2011; DeShazo & Fermo, 2002; Fischhoff, Karl-Göran, & Jeffrey, 2005).

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Table 1
Sample characteristics.

	Number of employees		
	1–15	15–100	More than 100
First processing stage	0	0	1
Second processing stage	11	4	2
Both processing stages	4	1	2
Total	*15*	*5*	*5*

Conjoint analysis as a stated-preference method has been developed by Luce and Tukey (1964), and was brought into marketing by Green and Rao (1971), as well as by Green and Srinivasan (1978) and McFadden (1974). There are a number of different approaches (Teichert & Shehu, 2009). The present study is conducted using adaptive choice-based conjoint analysis (ACBC). In an ACBC setting, respondents are asked to simultaneously judge all attributes of the choice alternatives. Additionally, ACBC is path-dependent, i.e. the answers to a question determine the next choice set. ACBC is preferred because of its realistic approach, resulting in a comparably large return of questionnaires (Orme, 2009b).

Attribute range and number-of-level issues are treated according to Backhaus, Erichson, Plinke, and Weiber (2003) in order to minimize possible biases.

2.1. Sample

The empirical analysis presented in this paper is based on data from an adaptive choice-based conjoint survey presented to Swiss beef processing companies. The survey was sent to 44 companies through email. Addresses have been provided by the Swiss Meat Processing Association. Additionally, two calls in specialized magazines were published. Among the respondents (see Table 1), there were 15 small, 5 medium and 5 large companies. The companies included in the sample represent over 75% of Swiss beef processing. The respondents held either the role of CEO in smaller companies or were responsible for the buying process within the company (Table 1).

2.2. Survey design

The survey was developed based on a literature research and six qualitative face-to-face interviews at different stages of the beef value chain, i.e. two interviews with producers, two with processors, and two with consumer associations. These interviews helped to thoroughly evaluate the market at hand and to determine the attributes and levels that would enter the survey. The survey was pre-tested by academics and practitioners and results were integrated into the final survey.

The qualitative interviews confirmed the important role of prices, technical aspects and the country of origin for processing companies. Environmental and societal effects are less mentioned, but are considered to be very important for smaller market segments. Based on these results, we chose seven attributes (see Table 2) for the adaptive choice-based conjoint analysis survey.

These attributes reflect key drivers of the buying decision. It is important to note that all levels refer to the respective level at the farm gate. The levels for the buyer–supplier relationship have been set according to Kotler (1982), Kotler and Armstrong (2010), and Jang and Olson (2010), who describe different stages of integration within the food value chain. The attributes are sorted according to the four spheres Technology, Economics, Society and Nature.

The survey was conducted using adaptive choice-based conjoint analysis. Adaptive choice-based conjoint analysis surveys have near-orthogonal designs (Orme, 2009a) and operate with four sections: In the first section of the online interview, the respondent answers a "Build Your Own" (BYO) question to introduce the attributes and levels, as well as to let the respondent indicate the preferred level for each attribute. In the second section of the interview, the respondent answers screening questions, where 3 product concepts are shown at a time. In the screening section, the respondent is not

Table 3
Zero-centered part worth utilities of classes.

Attribute	Level	Part-worth utility	
		Class 1	Class 2
Quality	Standard (T3)	**45.88**	0.33
	Below standard	−52.82	−43.77
	Above standard	6.94	**43.44**
Producer price	Standard price	**60.87**	1.04
	Standard price − 5%	22.21	−1.18
	Standard price + 5%	−33.41	−1.69
	Standard price + 10%	−49.67	**1.83**
Origin	Regional	**63.22**	**88.65**
	National	52.55	59.93
	EU	−93.12	−45.66
	Outside EU	−22.65	−102.92
Keeping of animals	Indoor stabling, mainly mixed fodder	−5.62	−7.38
	Indoor stabling, mainly silage fodder	−26.48	−19.65
	Indoor stabling with regular pasture grazing, mixed fodder	**33.40**	12.39
	Mainly pasture grazing, mainly grass fodder	−1.30	**14.65**
Traceability	Back to birth farm	**92.82**	**53.96**
	Back to processing unit	37.49	−7.36
	Not traceable	−130.31	−46.60
Environmental effect	Unknown	−19.22	0.25
	Neither animal nor feed is genetically modified	**49.61**	**55.89**
	Animal and/or feed is genetically modified	−30.40	−56.14
Societal effect	Unknown	−14.11	−26.73
	Secure food provision	**9.73**	−13.13
	Secure agricultural incomes	−4.88	**25.99**
	Preservation of natural resources	9.25	13.88

Bold writing indicates highest preference value per attribute per class.

Table 2
Attributes and levels.

Sphere	Attribute	Level			
E	Producer price	Standard price	Standard price + 5%	Standard price + 10%	Standard price − 5%
E	Traceability	Back to birth farm	Back to processing unit	Not traceable	
S	Origin of animal	Regional	National	EU	Outside EU
T	Keeping of animals	Indoor stabling, mainly indoor stabling, mainly mixed fodder	Indoor stabling, mainly silage fodder	Indoor stabling with regular pasture grazing, mixed fodder	Mainly pasture grazing, mainly grass fodder
T	Meat quality	Standard	Below standard	Above standard	
N	Environmental effect	Unknown	Neither animal nor feed is genetically modified	Animal and/or feed is genetically modified	
S	Societal effect	Unknown	Secure food provision	Secure agricultural incomes	Preservation of natural resources

Sphere: T = Technical, E = Economical, S = Societal, N = Natural.