THE TASTE OF MILK: EXPERIMENTAL EVIDENCE FROM GERMANY

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Abstract

Differentiation of drinking milk according to product and process characteristics is on the rise. Therefore, consumer preferences for four different milk types were studied using package-blind- and non-blind experiments. The taste of long-life milk, conventional fresh whole milk, pasture-based milk, and organic milk was assessed from 138 randomly selected respondents. The average taste of milk from package-blind versus non-blind milk types was statistically significantly different for each of the four milk types. Apparently, consumers tend to be influenced by the package and related credence good attributes of milk. Noteworthy, the taste of organic milk was under the blind tasting rated lower while the taste of long shelf life (UHT) was rated higher than when respective milk types were known to respondents. Under blind and non-blind tasting of almost all milk types from all studied factors, such factors as the taste, total assessment and income influence the buying decisions the most.

Keywords

milk tasting, preferences, credence good attributes, differentiation.

1 Introduction

In the German retail market for fresh milk, it is increasingly observed that dairy processors market drinking milk according to certain product and process characteristics. For farmers, this can imply on the one hand higher revenues, as long as certain consumer groups pay more for certain milk types. On the other hand, the provision of certain process characteristics may increase the cost of production. In particular, this is known to be the case for organically produced milk versus conventional milk. Furthermore, conventional milk is increasingly distinguished within the German market according to the question of whether cows had for a predefined number of days access to pasture, or were primarily kept indoors. Food preference testings investigate preferences regarding the attractiveness of product characteristics among different consumers, including milk and dairy products (LIMING, 1966; CHUNG, 2009; COLONNA et al., 2011; MURRAY and DELAHUNTY, 2000; BARCENAS et al., 2001). The potential influence of the product package was considered in many studies (MURRAY and DELAHUNTY, 2000; VAN DAM and VAN TRIJP, 1994; JOUBERT and POALSES, 2012; ARES and DELIZA, 2010).

The present paper, therefore, takes UHT milk as the base and compares it to conventional pasteurized drinking milk, pasture-based conventional milk, and organically produced milk. The aim of the present paper is to analyze if and to what extent a sample of randomly selected consumers will distinguish these four types of milk according to their taste and overall appearance only, and if the additional presence of the corresponding milk package will alter their preference assessments. This will improve our understanding of the German fresh milk market: are the price differentials primarily driven by credits good attributes such as organic or pasture-based versus conventional, or is there any evidence that experience-related product attributes may also explain price differentials to some extent.

2 Methodology

Four different types of whole milk were presented to randomly selected respondents in walked by experiments: long-life milk (UHT), pasture-based milk, organic ("bio")-milk, and conventional fresh whole milk. All milk samples were whole milk types with the fat content 3,5% – 3,9% (long-life milk from "Weihenstephan" - 3,5% fat, pasture milk from "Hansano" - 3,9% fat, bio-milk from "Hamfelder Hof" – 3,8% fat and fresh whole milk from "Horst" – 3,5% fat). The brands of the studied milk types were selected randomly from typical supermarket

product portfolios in the metropolitan area of the city of Kiel in northern Germany; the brands were kept the same for all tastings. For the walked-by interviewing approach, a two-page questionnaire with 18 questions was used. These questions were divided into five sections: personal milk consumption habits and milk preferences of the respondent, paired on-site preference tests, blind tasting, non-blind tasting, and questions about the respondent's socioeconomic situation.

3 Results

In the question "Which milk brands do you prefer?" the majority of consumers (60,2%) answered: "Hamfelder Hof", followed by "Ja" (11,8%) and "Hansano" (8,6%). "Nestle", "Hemme Milch", "Arla", "Milsani", "Welde", "Demeter", "Öko Melkburen" and "Bärenmarke" were chosen by each 1,1% of consumers. In the question: "How do you use the milk", 63,63% of consumers gave the answer, that they very frequently and frequently use the milk for coffee; 53,98% of consumers use milk with cereals; 35,18% of consumers use milk directly for drinking; 33,33% of consumers use milk for cooking; 30,69% of consumers buy milk for the nutrition of their children; 27,68% of consumers use it for cacao and 12% of consumers for refining of other meals. The following criteria were very important and rather important for buying decision of milk by the consumers: "freshness" (93,6%), "quality" (93,33%), "taste" (89,76%), "animal welfare" (89,31%) and "regionality" (87%). Around 15% of participants found the criterion "package design" and 5% of participants found the criterion "lactose-free" very important and rather important.

From the results of paired t-tests can be concluded that the taste of pairs of long-life milk under the blind tasting and long-life milk under non-blind tasting is statistically significantly different from each other. The taste of long-life milk, under blind and non-blind tasting, pasture-based milk according to blind and non-blind tasting, bio-milk under the blind and non-blind tasting and fresh whole milk under the blind and non-blind tasting are statistically significantly different from each other. The results indicate that the respondents were influenced by the image and packaging of different milk types and evaluated the taste of milk differently depending on blind versus non-blind tastings.

In order to find out which factors influence respondents' buying decisions, we use multilevel mixed-effects logistic regression models. The buying decision of long-life milk under blind tasting depends on total assessment and income and the buying decision of long-life milk under non-blind tasting is influenced by taste and income. The buying decision of pasture milk under blind tasting depends on the taste and total assessment and under non-blind tasting on the same factors and also income. The buying decision of bio-milk under blind tasting is influenced by taste, total assessment and gender, while under non-blind tasting it depends on taste and, somewhat surprisingly, on gender. In addition, the buying decision of fresh whole milk depends on taste, total assessment and income as well as under blind, as under non-blind tasting.

4 Discussion and Conclusion

From all milk types, the most preferred milk was bio-milk from the brand "Hamfelder Hof". The respondents use milk mostly for coffee and the important criteria for buying decisions of milk are "freshness", "quality" and "taste". When tasting the milk samples blind in comparison to non-blind, all evaluations were significantly different from each other. This can mean that the consumers were influenced by the package or image of the milk and gave different grades for the same type of milk under the blind versus non-blind tasting, respectively. The taste of long-life milk was evaluated much better under blind, than non-blind and the taste of bio-milk was evaluated much better non-blind than blind. For pasture milk and fresh whole milk, the evaluations of the taste under non-blind tasting were more positive than under blind tasting.

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