

Consumer Preferences for New Food Technology: Apples Enriched with Antioxidant Coatings in Uzbekistan

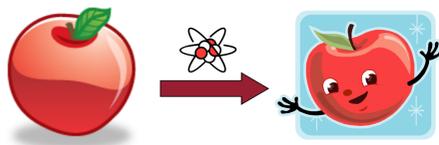
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Introduction

Food markets in developing countries are experiencing an expansion of new functional products. For example, orange juice enriched with calcium and pomegranate juice with antioxidants is available to consumers in Uzbekistan. Studies indicate that this phenomenon in developing countries is driven by growing consumer demand for non-price characteristics of food products - primarily convenience, quality, and product diversity. Due to global economy and modern grocery retailing, advanced food technology and products expansion has increased consumers demand for food production in developing countries.

Research Objectives

- Investigate consumer preferences from Uzbekistan toward new food technology on the example of apples enriched with antioxidant coating.
- Determine factors affecting consumers' willingness-to-pay (WTP)
- Estimate mean WTP
- Test consumer's response to provision of positive information



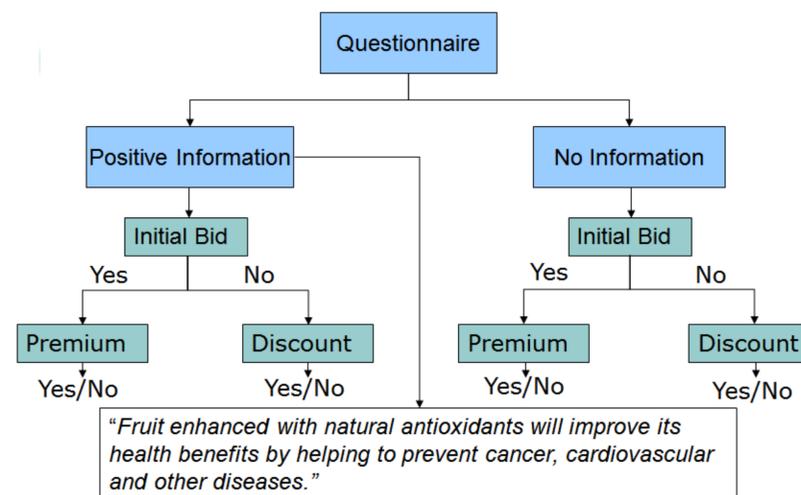
Research Questions

- What is the target market for fresh produce functional foods?
- Can apples enriched with antioxidants command any premium?
- Will local producers purchase antioxidant apples?
- Can we shift consumers preferences using information?



The Study Sample and Survey Design

- 400 consumer surveys were conducted in October 2011 in front of the grocery store located in new shopping and recreation center "Mega Planet" in Tashkent, Uzbekistan.
- The questionnaire focuses on awareness of antioxidants, attitudes toward nutritionally enriched foods and apples enriched with antioxidants, factors influencing apple purchases, and the choice of where to shop for food.
- Dichotomous choice contingent valuation questions with follow-up are included to determine consumers' WTP for apples with enriched coatings.
- Two types of questionnaires were distributed to determine the effect of information on consumer choice.



The Methodology

- A double-bounded dichotomous choice model is utilized to evaluate respondents' outcomes from our survey.
- The bidding mechanism results into the following discrete outcomes for WTP:

$$Y = \begin{cases} 1 & \text{if } WTP < B_D \\ 2 & \text{if } B_D \leq WTP < B_I \\ 3 & \text{if } B_I \leq WTP < B_P \\ 4 & \text{if } WTP \geq B_P \end{cases}$$

- WTP can be expressed as:

$$WTP = \alpha - \rho B + Z'X + \varepsilon$$

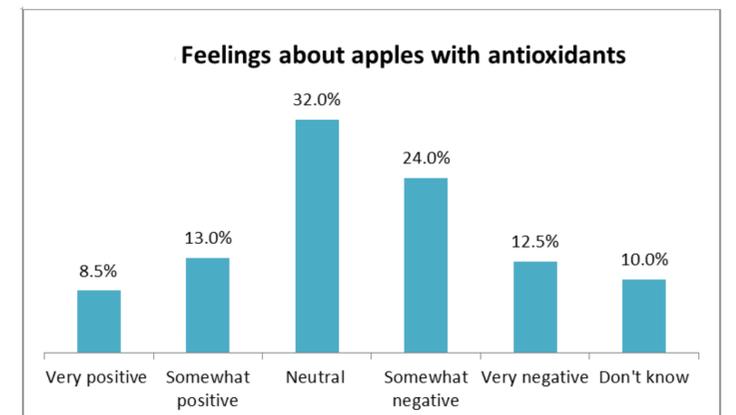
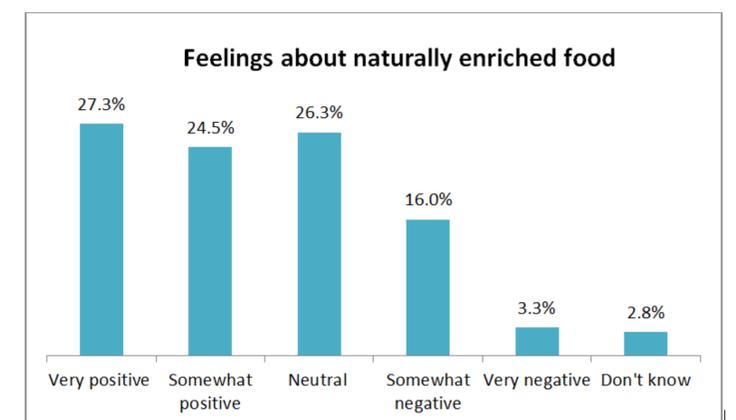
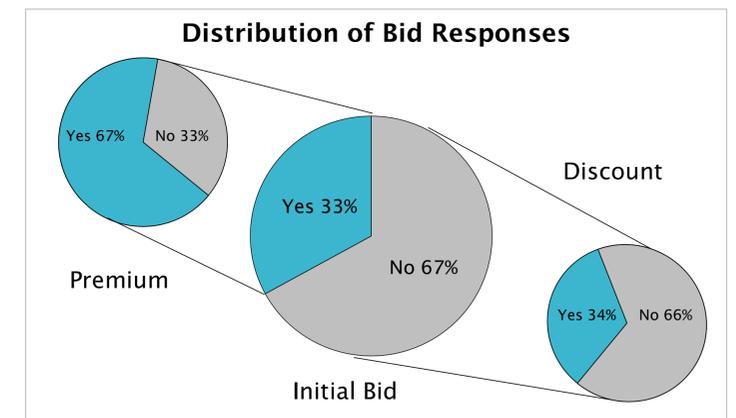
- Assuming the standard logistic distribution with mean 0 and variance $\sigma^2 = (\pi/\sqrt{3})^2$, the log-likelihood function is therefore structured as:

$$lnL = \sum_i \left\{ I_{Y_i=1} \ln \frac{e^{(\tilde{\alpha} - \tilde{\rho} B_D + \tilde{Z}'x)}}{1 + e^{(\tilde{\alpha} - \tilde{\rho} B_D + \tilde{Z}'x)}} + I_{Y_i=2} \ln \left(\frac{e^{(\tilde{\alpha} - \tilde{\rho} B_I + \tilde{Z}'x)}}{1 + e^{(\tilde{\alpha} - \tilde{\rho} B_I + \tilde{Z}'x)}} - \frac{e^{(\tilde{\alpha} - \tilde{\rho} B_D + \tilde{Z}'x)}}{1 + e^{(\tilde{\alpha} - \tilde{\rho} B_D + \tilde{Z}'x)}} \right) + I_{Y_i=3} \ln \left(\frac{e^{(\tilde{\alpha} - \tilde{\rho} B_P + \tilde{Z}'x)}}{1 + e^{(\tilde{\alpha} - \tilde{\rho} B_P + \tilde{Z}'x)}} - \frac{e^{(\tilde{\alpha} - \tilde{\rho} B_I + \tilde{Z}'x)}}{1 + e^{(\tilde{\alpha} - \tilde{\rho} B_I + \tilde{Z}'x)}} \right) + I_{Y_i=4} \ln \left(1 - \frac{e^{(\tilde{\alpha} - \tilde{\rho} B_P + \tilde{Z}'x)}}{1 + e^{(\tilde{\alpha} - \tilde{\rho} B_P + \tilde{Z}'x)}} \right) \right\}$$

- Method of estimation: Maximum likelihood.

Preliminary Results

The figures below display the distribution of bid responses and consumers' feelings toward naturally enriched food and apple enriched with antioxidant coating.



Conclusion

- The preliminary results suggest that only 33% of the surveyed consumers are willing to purchase apples enriched with antioxidants.
- In addition, information regarding the potential health benefits of antioxidants has a positive effect on consumers' choice.