Consumer expectancies and acceptance of novel foods

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Abstract
Experiments were conducted to examine factors affecting the consumer acceptance of newly introduced soybean products – milk, yoghurt, porridge and infant food. Twenty eight male and 28 female volunteer, untrained panellists, were selected and a nine-point labelled hedonic scale was used to make all judgements. The results showed that acceptance of soybean products was diversely affected by the preparation variables, product name, brand name and label, availability of product information, nature and quantity of product information, and familiarity of the user with the product. Consumer acceptance of soybean products was influenced by the extent to which expectancies about the food were congruent with subsequent experiences.

Introduction
World-wide efforts to mitigate the effects of protein-energy malnutrition have led to the introduction of food crops into cultures which are not familiar with them. Soybean is one of such crops which occupies a premier position as a world crop because of its high protein (38-42%) and fat (18-20%) content (Tandon & Singh, 1987). The people most familiar with the crop have been the Asians, but the largest commercial cultivation of soybeans is currently in the USA. Soybean production is deterred in tropical Africa primarily because of biological constraints on the crop and lack of markets. Recent advances in the improvement of soybeans have addressed and, at least partially, resolved some of the major deterrents to the production of the crop in the lowland tropics (Singh & Rachie, 1987).

Although the primary factors controlling the purchase and consumption of most foods are availability, cost and preference. Additional factors that may increase the likelihood of self-exposure to novel foods include advertising, product name, packaging, nutritional information, usage information, and presentation of the product in an appealing form or recipe (Kotler, 1991). For consumers who avoid soybean foods due to lack of familiarity with them, exposure to new products will confirm or disconfirm their expectancies (Festinger, 1957; Day, 1984). The objectives of the study were, therefore, to examine factors affecting the consumer acceptance of soybean foods among Ghanaian consumers by assessing the effects of preparation variables, product name, brand name and label, availability of product information, nature and quantity of product information, and familiarity of the user with the product.

Materials and methods
Six experiments were conducted using 28 male and 28 female volunteer, untrained panellists selected from the staff of the Crops Research Institute. No attempt was made to screen panellists on the basis of prior use or familiarity with the test items. However, it was presumed that the choice of test samples would show a large variation in familiarity. In this way, any observed effects could be generalized beyond a restricted user population. For each experiement, panellists were given explanations on what they were expected to do. They were then given random samples to judge. After each sample test, panellists were given distilled water to rinse their mouths. A nine-point, labelled hedonic scale was used to make all judgements (Larmond, 1977). A usage survey was

also conducted.

Preparation variables

Two samples of soy milk were prepared according to procedures described by Singh & Rachie (1987). The soy products were chosen to maximize sensory differences among the samples. Flavour character was manipulated by the use of vanilla essence. The control sample was fresh cow milk bought from the dairy station of the Kwame Nkrumah University of Science and Technology, Kumasi. Panellists were asked to evaluate the 'milk' products which included the test and control samples. The order of presentation of samples was random. Panellists were asked to judge their overall acceptance of the milk products.

Product name

Samples consisted of commercial milk and soy-based joghurt. Samples were put in cups which were then labelled. Soy products were named differently as Sogot and Soyghurt and the milk product, UST yoghurt.

Brand name and label

Soy-based products used in the study were 'Cerelac' produced by Nestle, Ghana and 'Nutrend' produced by Nestle, Nigeria. The information on the products was the same. The control sample was milk-based 'Cerelac' produced by Nestle, Ghana. The products were prepared according to the manufacturer's instructions. The order of presentation of samples was random. The packages were presented, placed label-side up. They were accompanied by the prepared foods. Panellists rated the samples for taste and overall acceptance after reading the names and labels of the products.

Availability of product information

Two samples of the same soymilk products were given to the panellists. One of the test samples was evaluated as soymilk while the other was named milk. The control sample was fresh cow milk, and panellists were asked to evaluate milk samples. Panellists rated the samples for overall acceptance.

Nature and quantity of product information

Soybean-based maize porridge, "koko", was the test product. Dough preparation followed procedures described by Ahenkora *et al.* (1995). Four similar products were given to the panellists. Conditions differed only with regard to the nature and quantity of the information presented to panellists. The information was included with the product labelling. The first product was presented as 'Koko'. The second product labelling included fermented maize meal with soybean. In the third condition nutritional information was added. The last condition consisted of all three information paragraphs and cost of the product. The panellists were requested to taste and judge the sample for overall acceptance. They were also requested to read the information on the packaged products, accompanied by the prepared foods.

Familiarity with the product

Before the evaluation of the test samples panellists were given a short usage survey of selected products which included soybean foods to complete. The survey asked whether the panellist had ever tried a product and when was the last time (three category choices ranging from 'within the past month' to 'within the past 6 months'). After the taste sessions, they were given another survey forms which asked whether panellists would buy some selected products and when. The effects of exposure, prior use or non-use on the acceptance score were then evaluated.

The results of the experiments were analyzed by Analysis of Variance Techniques (Davies, 1963).

Results and discussion

Preparation variable

The result of the acceptance score for milk products is shown in Table 1. There was significant difference in the acceptability of the

TABLE 1

Effect of Preparation Variable, Product Name, Brand Name and Label, Product Information and Nature of Information on Overall Acceptance of Soybean Products

Product	Overall acceptance*
Preparation variable	
Soymilk	6.47b
Fresh cow milk	5.20c
Soymilk (vanilla flavoured)	7.38a
Product name	
Soyghurt	6.19b
Sogot	6.49b
KNUST Yoghurt	7.43a
Brand name and label	
Nutrend	6.20b
Cerelac (with soy)	6.37b
Cerelac (with milk powder)	7.85a
Availability of product information	
Soymilk (labeled)	7.40a
Fresh cow milk (labeled)	5.15c
Soymilk (not labeled)	7.19ab
Nature of product information	
Koko	7.35a
Koko (+ maize meal, soybean)	7.20a
Koko (+ maize meal, soybean, nutritional information)	7.35a
Koko (+ maize meal, soybean, nutritional information, cost)	7.15ab

* Mean score for 56 panelists

[a-c] Mean with different letters differ significantly (P < 0.05).

soymilk, fresh cow milk and vanilla flavoured soymilk. The results show that panellists preferred soymilk to the fresh cow milk and that manipulation of the flavour by the addition of artificial essence significantly increased the acceptability. While consumers accept soymilk as a good milk substitute, they expect the product to be devoid of the beany flavour. Soymilk is one of the popular traditional products of soybeans and has

been consumed widely in Asia as a nutritious and economicl protein food. However, the soymilk manufactured by the traditional process has not been accepted even in Japan, because of its off-flavour which is characterised by a beany flavour and objectionable aftertaste (Matsuura *et al.*, 1989). Preparation of soymilk products should give special attention to the preparation variables, especially the beany flavour.

Product name

Overall acceptance of yoghurt is shown in Table 1. The score for KNUST yoghurt was significantly greater than the scores for the soy products (*P* < 0.05). Acceptance score for soyghurt was greater than but not significantly different from Sogot. About 10 per cent more panellists intended to buy Soyghurt than Sogot (Table 2). The results seem to indicate that acceptable names for soy-based products should make the "yoghurt" component distinct, so consumers could relate to it as a yoghurt product.

Brand name and label

All the three products used in the experiment were Nestle brand but with different names and labels. Consumers liked very much the "Cerelac"-with milk powder product and the score for this

TABLE 2

Percentage of Users and Non-users of Selected Foods Before and After Sensory Evaluation

Product	Before sensory evaluation		After sensory evaluation	
	Non-users	Users	Non-users	Users
Fresh cow milk	36.2	63.8	29.8	70.2 (+6.4)
Soymilk	42.6	57.4	10.6	89.4 (+32.0**)
Yoghurt	17.0	83.0	-	-
Soyghurt	-	-	19.1	80.9
Sogot	-	-	29.8	70.2
Cerelac	29.8	70.2	-	-
Koko	8.5	91.5	12.8	87.2 (-4.3)

Figures in parenthesis show percentage increase +, or decrease -, of users after experiment and values with asteriks ** show a significant t-test value at the 5% level.

product was significantly higher than the scores for the other products (Table 1). Nutrend is a Nestle product from Nigeria while Cerelac with soy is a similar product by Nestle, Ghana. The result of this experiment suggests that the closer a brand comes to the ideal (in this case Cerelac-with milk) the better the acceptance. The control sample was the ideal product for the panellists.

Availability of product information

The result of the availability of product information on acceptance of milk products is shown in Table 1. Significant mean differences in overall acceptance were observed for the fresh cow milk and soymilk. Although there were differences in the scores for soymilk presented to the panellists and labelled, and soymilk not labelled, this was not significant. There were mixed feelings as shown by the comments of the panellists. While some were enthusiastic to try it, others indicated their bitter experiences with the beany flavour of some soymilk products. When consumers experience dissonance that stems from noticing certain disquieting or favourable features, they are alert to more information that might justify their decision to reduce the dissonance (Kotler, 1991).

Nature and quantity of product information

The overall acceptance of "koko"-porridge products used to analyse the nature and quantity of product information shows that irrespective of the level of information that was given, the scores were not significantly different and the products were moderately liked by panellists (Table 1). This result seems to indicate that the Ghanaian panellists for this study are less likely to be guided by the nutritional value of a product in making choices. Because regulations on nutrition label are virtually not enforced in Ghana, consumers are generally not aware of the nutrient content of the foods they eat. Under such circumstances, overall acceptance is influenced predominantly by the taste of the food. Therefore, irrespective of whatever information is included in the label,

consumers would expect the product to perform similar to existent or familiar products.

Familiarity with the product

Panellists'· responses on the use and non-use of selected products before and after the experiments are shown in Table 2. The results indicate that panellists had diverse experiences with the use of the products selected for evaluation. More than 70 per cent of panellists intent to purchase for future use the soy-based products milk, yoghurt and 'koko'. Quite a lot more panellists (19.20%) prefer for future use the purchase of soymilk to fresh cow milk. After the experiments, a significant ($P < 0.05$) percentage of panellists, who were previously not familiar with soymilk, intended to buy and use it. Changes in usage of fresh cow milk and 'koko' after exposure were not significantly different. Panellists who were familiar with soymilk significantly ($P < 0.05$) preferred it to those who were not familiar with the product (Table 3). The above results imply that panellists' response to the soybean products is related to the degree of familiarity or non-familiarity of the user with the product.

TABLE 3

Effect of Prior Use or Non-use on Overall Acceptance of Soymilk

Product	Overall acceptance	
	Users	Non-users
Soymilk	7.14a	6.32b

Means with different letters are significantly different ($P < 0.05$).

Conclusion

Results of this research indicate that consumer acceptance was determined by the extent to which perception of the products performance matched expectations. Hedonic response was influenced by the degree of familiarity with soymilk products, and high satisfaction derived from exposure to soy products influenced consumer intention to buy the product. The study, therefore, proposes

that the acceptance of soybean products can be interpreted on the basis that hedonic response to the products was a function of the degree to which expectancies were matched by subsequent experiences with it.

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