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Consumer Potato Demand*

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Abstract

Changes in consumer demographics, socioeconomic conditions, lifestyles, food tastes, and health and nutrition concerns have been associated with shifting food purchase patterns. This article focuses on potato purchase decisions and consumption, using a sample of Washington households. The results suggest that potato purchases are affected by factors such as product quality and price but not availability of point-of-purchase information. Reported changes in fresh and processed potato consumption appeared to be related to concerns with health and nutrition and demand for convenience. These findings have implications for the potato industry in developing new products and marketing strategies.

Consumer Potato Demand

Statement of Problem

Total U.S. consumption of potatoes has increased steadily for the past thirty-five years and dramatic changes have occurred in the type of potato products consumed. Between the periods 1955-59 and 1980-84, total annual per capita potato consumption (farm-weight basis) increased 9.9 percent (from 106.6 to 117.2 lbs.). During the same period, per capita consumption of fresh potatoes declined 42.3 percent (from 86.1 to 49.6 lbs.), while processed potato con-

sumption (especially frozen products) increased 382.7 percent (from 5.2 to 25.1 lbs.). By 1987, the fresh potato market share of total U.S. potato consumption fell to 38 percent, with Americans consuming about 47 pounds annually (Figure 1).

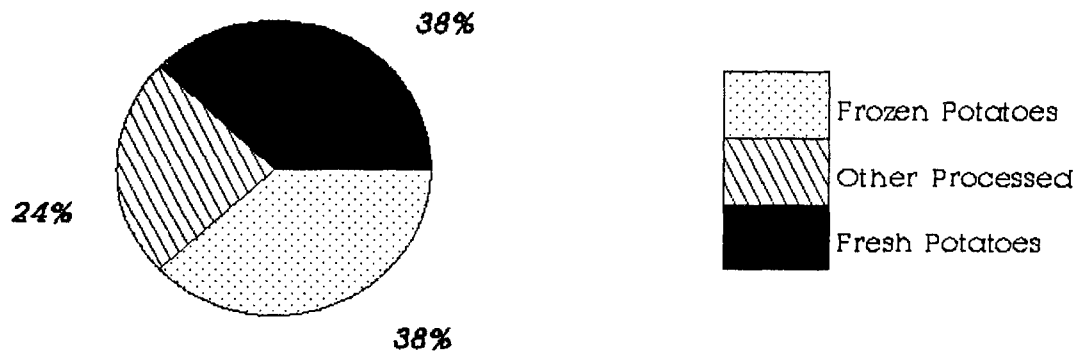
Many factors have been related to the upward spiraling of processed potato consumption. For one, there has been an increase in the number of married women in the paid work force. These households tend to substitute partially or totally prepared convenience foods, including processed potato products, for foods prepared from scratch. Changes in the composition of the population, particularly increases in the number of teenagers and young adults, along with more household members in the work force, have caused the fast-food industry, and hence processed potato demand, to escalate. Finally, the spread of fast-food restaurants abroad has stimulated the demand for U.S. frozen potato products for exports.

More recent changes in consumer demographics, socioeconomic conditions, lifestyles, and food tastes, however, could cause a shift from processed potato consumption back to the fresh product. Today's consumers are more informed about health and nutrition and demand more convenience, quality, value, variety, and nutrition than their counterparts from a few years ago. They typically consider the

*Work was conducted under project 4720.

Figure 1.

U.S. POTATO CONSUMPTION BY PRODUCT FORM, 1987 *



** Consumption is measured on a farm-weight basis.*

**SOURCE: Compiled from statistics published by
USDA Economic Research Service**

fresh product as more nutritious and healthy than its processed counterpart. An increase in the number of health-conscious consumers could also conceivably reduce patronage at fast-food outlets. Fast-food establishments are, however, responding to changing consumer attitudes by modifying their menus and focusing advertising efforts toward the health-conscious consumer. Since the major french-fry consumers have tended to be teenagers and young adults, maturation of the U.S. population has the potential of reducing processed potato demand. However, it is possible that the habits that these maturing consumers formed in their earlier years may carry over into their adult years.

These changes in population characteristics have posed new problems for market analysts. Research using traditional quantitative demand determinants (i.e., income, prices, quantities) has satisfactorily predicted the quantities of goods demanded by consumers where the good is broadly defined (e.g., fruits, vegetables, etc.). However, this research does not adequately account for the qualitative changes taking place in consumer lifestyles and

attitudes, nor how consumers perceive the food they consume. Accordingly, the objective of this study was to determine how consumers' demographic characteristics, lifestyles, and nutrition and health concerns affect their reported potato purchase decisions and consumption.

Methodology

Data for this study were collected using a consumer questionnaire, which was sent by mail to a random sample of 750 Washington households. There were 180 questionnaires, or 24 percent, which were returned as undeliverable. Of those which were deliverable, 339 questionnaires, or 59 percent, were completed and returned. The individual in the household who indicated being most responsible for planning the meals eaten at home was asked to complete the questionnaire. These primary meal planners were questioned about the characteristics of the potatoes they buy and how these characteristics affect their purchasing decisions; their concerns toward the food they consume; and factors associated with their lifestyles.

The responses to the questions were analyzed separately and then cross-tabulated to determine if there were important differences in responses among different subgroups in the population. The statistical significance of differences in responses by demographic groups was determined by the Chi Square (X^2) test of association. Relationships that are statistically significant are identified by an asterisk (*) in the tables and are referred to simply as significant relationships.

Factor analysis, a statistical technique often used in marketing research to summarize a large number of variables into a smaller set of factors, was used to identify common themes for a group of statements concerning consumer lifestyles, health, and nutrition. Basically factor analysis involves calculating a matrix of correlations between all pairs of the original variables and generating a set of new variables, each of which is a linear combination of the original variables. The new variables are the factors, and the coefficients or weights in each linear combination are the factor loadings. The larger the loading of a variable for a given factor, the greater the influence that variable has on that factor. For details on factor analysis, the interested reader should consult a specialized treatment of the subject (e.g., Weiers, 1988).

Results and Conclusions

Respondent Characteristics

The demographic characteristics of the responding households are summarized in Table 1. These responding households and the overall Washington population was fairly well matched in terms of demographics. For example, 72 percent of the responding households were urban residents, comparable to Washington's total population where 74 percent is located in urban centers (Washington State Office of Financial Management, 1985). Racially, 94 percent of Washington's inhabitants as compared to 97 percent of the respondents were white.

Given the broad educational opportunity in Washington State, 32 percent of the respondents and 26 percent of the other adults in the household had at least attended college. Moreover, for the meal planners 15 percent were college graduates and 17 percent had done post graduate work. Concerning employment, 39 percent of the responding meal planners reported that they were employed full-time, 10 percent were employed part-time, 33 percent indicated that they were retired, and 17 percent considered themselves to be full-time home-

makers. In regards to other household adults, 47 percent were employed full-time, 6 percent were employed part-time, 20 percent were retired, 5 percent were homemakers, and 20 percent had no other adult living in the household.

The average age of respondents in this sample of Washington households was 51 years, with ages ranging from 23 to 89 years. Thirty-two percent of the sampled households contained only two people (e.g., a husband and wife, a single parent with a child, or two persons sharing a household). Furthermore, 17 percent of the respondents were living alone, and 21 percent had three persons, 18 percent had four, and 12 percent had five or more persons living in the households. Finally, two-thirds of the responding meal planners were female and 75 percent of the respondents had access to a microwave oven.

Potato Consumption, Purchase Influences, and Methods of Preparation

Potatoes were purchased by 99 percent of the responding households for consumption at home. Of the fresh potatoes purchased, russets were the most popular, as indicated by 55 percent of the respondents. White potatoes followed in popularity with 18 percent of the respondents liking them the best, 9 percent preferred red potatoes, and 18 percent had no preference among potato types. Most respondents were satisfied with the package containing the potatoes they purchase. Fifty-four percent liked the poly (plastic) bag the best, followed by 39 percent preferring bulk, and 7 percent not indicating their preference.

The meal planners were asked whether they were currently consuming more, the same, or less potatoes in different product forms than they did a year ago. The results indicate that Washington households are changing their purchasing patterns for fresh and processed potatoes (Table 2). Twenty-four percent of the households were purchasing more fresh potatoes at the time of the survey than the previous year. Only 13 percent of the respondents indicated that they increased their purchases of frozen and dehydrated potatoes, but 43 and 50 percent of the households decreased their purchase of frozen and dehydrated potatoes, respectively. These potato consumption changes are likely due to a combination of factors such as changes in demographics, socioeconomic conditions, lifestyles, and tastes of consumers.

Table 1
Characteristics of Washington Sample

(expressed as % of sample)

Sex of Respondent (Meal Planner)		Geographic Area of Residence	
Female	66.6	Farm Region or Open Country	18.3
Male	33.4	Small Town, < 2500	9.9
		Town, 2500 - 50,000	32.0
		Small City, 50,000 - 100,000	17.4
		Large City, > 100,000	22.4
Age of Respondent		Race of Respondent	
< 30 years	7.8	White	97.2
30-39	17.9	Hispanic	1.5
40-49	21.3	Native-American	0.3
50-59	15.7	Other	0.9
60-69	20.1		
≥ 70	17.2		
Employment Status		<u>Respondent</u>	<u>Other Adult Partner</u>
Full-Time		39.0	47.4
Part-Time		9.6	6.2
Retired		32.8	20.4
Not Employed and Seeking		1.5	0.9
Full-Time Homemaker		17.0	5.3
No Other Adult Partner		-	19.8
Educational Attainment		<u>Respondent</u>	<u>Other Adult Partner</u>
Some High School or Less		9.3	14.4
Completed High School		26.9	25.2
Some College		32.2	26.0
College Graduate		15.2	17.1
Post Graduate Work		16.4	17.5
Annual Income of Household		Access to Microwave Oven	
< \$10,000	8.3	Yes	75.1
\$10,000 - \$19,999	18.2	No	24.9
\$20,000 - \$29,999	22.2		
\$30,000 - \$39,999	18.9		
\$40,000 - \$49,999	14.2		
≥ \$50,000	18.2		

Table 2
Changes in Household Potato Purchase from Previous Year

Potato Type	More (%)	Same (%)	Less (%)	Not Sure (%)	Total (%)
Fresh	24	60	15	1	100
Frozen	13	41	43	3	100
Dehydrated	13	34	50	3	100

Baked potatoes were the most popular way to serve potatoes for consumption at home, with 47 percent of the respondents ranking baked as their favorite serving method. Thirty percent of the sample indicated that mashed potatoes were their second favorite serving method, and 16 percent identified french fries as being their third favorite serving method. Twenty-four percent liked potato casserole the least.

Forty-two percent of the respondents chose rice as the food they served most often in addition to or instead of potatoes. Pasta, beans, and bread were also popular additions to a meal. The reasons cited by respondents for serving something other than potatoes were convenience, variety in the diet, and that potatoes do not go well with oriental cuisine.

Respondent Characteristics and Factors Affecting Potato Purchase Decisions

Other studies reveal that product quality, store appearance, and point-of-purchase information have an impact on food shoppers' behavior (Zind, 1987). Furthermore, the nutritional value of foods and in-store displays and demonstrations play an important role in stimulating purchases of fresh fruits and vegetables. Little is known about how demographics affect the decision process of the consumer.

Answers to survey questions concerning indicated level of interest/concern about the potato's characteristics and other factors related to the purchase decisions were classified by selected demographic variables (Table 3). The potato's appearance and its physical quality were two factors that were reported to affect potato purchase decisions. These effects were fairly similar across demographic groups. When asked specifically about the kind and condition of fresh potatoes that they find in their favorite store, most respondents did not feel that there were usually problems with the potatoes' firmness, nor with them being rotten or green or

dirty. The respondents also appeared to be satisfied with the size of the potatoes available. They did, however, indicate concern with the condition of the potato because of the presence of cuts, blemishes, and eyes. Most respondents (irrespective of their demographic group) reported that where the potato was grown had little effect on their purchase decisions. Males and females and urban and rural respondents differed in their concern with being able to buy the exact amount of potatoes to meet their household needs, with females and urban respondents expressing greater concern.

The respondents claimed the price of potatoes appeared to affect, at least partially, their potato purchase decisions. The importance of price differed depending upon the education and income level of the household. The least educated households and low and middle income households were more likely than other households to indicate that price affected their potato purchase decisions.

All demographic groups tended to agree that it was important to see the potatoes in the packaging, although the differences in agreement were only significant for the demographic groups defined by level of education of the respondents. The reported importance of in-store displays and advertising did not differ significantly by sex of the respondent, as indicated by the absence of an asterisk (*) by these entries in Table 3. There were significant differences in the claimed importance of this factor for the demographic groups defined by level of the respondent's income. The importance of in-store displays and advertising decreased as the level of household income increased. Given that the group of surveyed consumers live in an area where major production occurs, it is possible that they are more familiar with potatoes and less sensitive to displays and advertising than are consumers in other parts of the United States.

TABLE 3. FACTORS INFLUENCING POTATO PURCHASING DECISIONS BY DEMOGRAPHIC GROUP

Percent of Respondents Reported Being Influenced By:									
Demographic Variables	Potato Appearance (e.g., color, shape)	Where Potato is Grown (e.g., Idaho, locally)	Quality of the Potato (e.g., firmness, blemishes)	Ability to Purchase Exact Amount	Potato Price	Seeing the Potatoes in the Packaging	In-Store Displays & Advertising	Nutrition Information at the Purchase Point	
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
<u>Education</u>									
High School or Less	93	35	97	66	76*	87*	39	32*	
College Work or Degree	95	27	99	71	61*	89*	29	20*	
Graduate Work or Degree	92	24	96	80	69*	83*	25	14*	
<u>Respondent Sex</u>									
Female	95	30	99	75*	71	87	31	25	
Male	93	35	96	64*	61	83	34	20	
<u>Household Income</u>									
Up to \$19,000	99	29	99	73	70*	84	44*	28	
\$20,000 to \$39,000	91	22	98	65	74*	88	31*	23	
\$40,000 and Up	94	35	99	73	56*	84	24*	20	
<u>Residence Location</u>									
Farm Region	92	30	95	61*	72	84	29	24	
Urban Area	95	28	99	75*	66	86	32	23	

Note: An asterisk (*) indicates the differences in responses by demographic group (as defined by the levels of a specific demographic variable) are statistically significant at the 0.05 level, as indicated by the Chi Square (χ^2) test of association. For example, the * by the entries in the table in the rows labelled Respondent Sex Female and Male and in the column labelled Purchase Exact Amount indicates that there is a statistically significant difference of the reported influence on purchase decisions of males versus females of being able to purchase the exact amount.

Table 4

Important Considerations in Food Selection and Preparation Decisions

Considerations	Most Important (%)	Second Most Important (%)	Third Most Important (%)	Least Important (%)
Salt Content	15	22	15	11
Fat Content	25	26	23	6
Sugar Content	8	16	19	12
Vitamin Content	13	12	11	10
Cholesterol	17	11	16	14
Additives and Preservatives	18	9	8	22
Dietary Fiber	4	4	8	25
TOTAL	100	100	100	100

Other studies have revealed that older consumers, those with larger families, and those representing upper income households have greater concerns about their diet than do other groups (Hoyt, 1986). Thirty-two percent of the respondents in this study having a high school education indicated that nutritional information at the point of purchase affected their purchasing decisions. However, significantly fewer of the respondents with graduate work or a degree (14 percent) said this information affected their purchasing decisions. A plausible explanation for this finding is that the higher educated respondents already have good nutritional information and do not need additional information at the point of purchase.

Consumer Attitudes and Dietary Concerns

The buying public is quite interested in nutrition, and indicate a desire to add healthy foods to their diets while concurrently cutting down on foods that are believed to be unhealthy. The majority of the meal planners in this study reported that they were making specific efforts to decrease the calories in the food that they prepare.

One-fourth of the respondents claimed that fat content was the most important factor affecting their food selection and preparation decisions (Table 4). Furthermore, about one-fourth of the sample chose fat content as their second and third most important considerations. Hence, the fat content of a food appears to be a major factor for most of the surveyed meal planners. The level of cholesterol and the pre-

sence of additives and preservatives in foods were also identified as the most important consideration for a sizable portion of the sample. In contrast, a number of other meal planners (22 percent) listed the presence of additives and preservatives in foods as the least important factor. It appears that food additives and preservatives is an issue about which meal planners took a polar position--they were either very concerned or they were not very concerned. Dietary fiber was not a major factor in these meal planners' food selection and preparation decisions, as indicated by the low percentage (4 percent) of respondents indicating that it was the most important factor and the high percentage (25 percent) indicating that it was the least important factor.

Of those who are striving to decrease calories in the food they prepare, 50 percent identified fat and cholesterol as their most important food concern (Table 5). Of those not reducing calories, about one-half were most concerned with the salt, sugar, additives, and preservatives contained in the food they prepare. Seventy-nine percent of those restricting calories were concerned with the fat and cholesterol content of french fried potatoes, while only 65 percent of those not restricting calories were concerned (Table 6). Even though the respondents who are reducing calories are more aware than those not restricting calories of the nutritional benefits provided by the potato, the overall level of awareness (i.e., percentages) for both dietary fiber and vitamin C content was relatively low.

Table 5
Restricting Calorie Intake
By Most Important Food Concerns

Most Important Food Concerns	<u>Restricting Calorie Intake</u>	
	Yes (%)	No (%)
Fat and Cholesterol	50	28
Salt, Sugar, Additives, and Preservatives	37	51
Vitamins and Dietary Fiber	13	21
Total over all concerns	100	100

Table 6
Restricting Calorie Intake
By Agreement with Statements
Regarding Diets and Health

Agreement with Statements Regarding Diet and Health	<u>Restricting Calorie Intake</u>	
	Yes (%)	No (%)
Concern with fat/cholesterol in french fried potatoes	79	65
Potatoes contain Vitamin C	58	39
Potatoes are a source of dietary fiber	64	59
Read nutritional information and ingredients on package labels	76	57
Must control weight to be healthy	89	71

Consumer Lifestyles and Nutritional and Health Concerns and Changes in Potato Purchases

Changes in consumers' lifestyles and health and nutritional concerns are believed to be associated with changes which are taking place in the fruit and vegetable industry. The meal planners in this study were asked to indicate how strongly they agreed or disagreed with a series of statements depicting their lifestyles and nutritional and health concerns towards foods in general and potatoes in particular. A five-point scale was used, with 1 indicating strongly agree and 5 indicating strongly disagree with the statement. These responses for each meal planner were classified by that meal planner's response to the question concerning change in potato purchases (i.e., more, same, less) from the previous year. The Chi Square test of association was used to identify significant dif-

ferences in lifestyles and levels of concerns by changes in potato consumption. For this test, three categories of agreement were constructed: (1) agree; (2) neither agree nor disagree; and (3) disagree.

In general, the results (Table 7) suggest that consumers who reported purchasing more fresh potatoes this year than last year tended to agree more often (less often) with statements related to positive (negative) attitudes about health and nutrition. For example, 91 percent of the households who indicated that they were buying more fresh potatoes (compared to 71 percent who were buying fewer fresh potatoes) cited health as being more important than the cost of food in their food preparation and selection decisions. Focusing on statements concerning food ingredients, for those reporting purchasing more fresh potatoes, 72 percent agreed that they read package labels (compared to 57 percent for those purchasing fewer fresh potatoes) and 87 percent agreed that they must control their weight to be healthy (compared to 76 percent for those purchasing fewer fresh potatoes). Over three-fourths of the respondents indicated that they controlled their salt intake, but this interest in salt intake did not differ significantly by level of change in potato consumption.

Similarly, consumers who reported purchasing more fresh potatoes tended to agree significantly more than those purchasing fewer potatoes with statements concerning positive attributes of potatoes. For example, for households that reported purchasing more potatoes, 88 percent agreed that potatoes are an important part of a healthy diet; 72 percent thought that potatoes were a good source of dietary fiber; and 49 percent indicated that potatoes were more healthy than other food that they eat. Most of the sampled households appeared relatively unaware of the Vitamin C content of potatoes but disagreed that potato consumption must be decreased for weight control. The level of awareness or disagreement did not differ significantly by level of change in potato consumption. About three-fourths of the meal planners indicated concern with the fat/cholesterol content of french fried potatoes.

Respondents who consumed fewer fresh potatoes last year were much more likely than those who consumed more fresh potatoes to express interest in foods that are quick and easy to prepare and indicated that they did not spend large amounts of time in the kitchen cooking (62 percent versus 36 percent for interest in quick and easy foods and 73 percent versus 40

Table 7. POTATO CONSUMPTION AS RELATED TO AGREEMENT WITH LIFESTYLE AND NUTRITION STATEMENTS

Statement	Change in Consumption From Last Year									
	Fresh			Frozen			Dehydrated			(percent)
	More	Same	Less	More	Same	Less	More	Same	Less	
1. Potatoes are an important part of a healthy diet . . .	88*	85*	71*	76	87	83	71	79	82	
2. I reduce potato consumption for weight control . . .	19	24	35	10	24	28	29	26	27	
3. I strive to improve the quality of my life through what I eat . . .	75	79	68	65	75	70	79	79	78	
4. Potatoes are a good source of dietary fiber . . .	72*	62*	47*	62	61	53	54	62	62	
5. I am concerned about the fat/cholesterol content of French-fried potatoes . . .	70	78	71	62	79	61	71	76	80	
6. The food I buy depends on the speed and ease of preparation . . .	36*	42*	62*	52	46	51	64	47	52	
7. I do not spend large amounts of time in the kitchen cooking . . .	40*	42*	73*	38	42	50	64	47	57	
8. Potatoes are more healthy than other foods I eat . . .	49*	40*	36*	60*	51*	35*	50*	61*	27*	
9. Health is more important than the cost of food when making purchasing decisions . . .	91*	75*	71*	57	80	80	71	83	74	
10. To be healthy, I must control my weight . . .	87*	84*	76*	80	87	83	71	79	86	
11. I read nutritional information and ingredients on package labels . . .	72*	71*	57*	55	76	61	64	79	67	
12. Potatoes contain vitamin C . . .	51	33	41	41	54	43	45	42	54	
13. I control my intake of salt . . .	81	79	75	68	77	79	62	65	75	
14. Potatoes are a part of a quick and easy meal . . .	84	75	71	86	79	79	93	79	67	

NOTE: An asterisk (*) indicates the differences in responses by demographic group (as defined by the levels of a specific demographic variable) are statistically significant at the 0.05 level, as indicated by the Chi Square (χ^2) test of association. For this analysis, the five-point agreement scale was reduced to three categories: agree, neither agree nor disagree, and disagree.

percent for not spending time in kitchen, respectively). Most meal planners agreed that potatoes are part of a quick and easy meal. The difference in agreement with this statement did not differ significantly by level of change in potato consumption.

The responses to the same series of statements (concerning lifestyles and nutritional and health concerns) were also classified by reported changes in frozen and dehydrated potato consumption. Only for the statement, "Potatoes are more healthy than other foods that I eat," did the responses vary significantly by changes in potato consumption. In particular, 60 percent and 50 percent of those consuming more frozen potatoes and more dehydrated potatoes last year, respectively, agreed with this statement. Thirty-five percent and 27 percent of those consuming fewer frozen potatoes and fewer dehydrated potatoes, respectively, disagreed with this statement.

One interpretation of these findings is that health and dietary concerns are partially responsible for changes in consumer preferences, a finding that is consistent with other studies of fresh produce purchasing and consumption behavior. The results suggest that households who are consuming fewer potatoes are interested in convenience in the foods that they eat, but their recognition that serving fresh potatoes is not necessarily time consuming indicates that factors other than convenience influenced their decision to consume fewer fresh potatoes at home. It is possible that these households are eating more of all foods away from home, and less at home. The belief that potatoes are healthy food and not just the convenience aspect of processed potatoes appears to be associated with increased consumption of processed potato products.

Factor Analysis of Consumer Lifestyles and Health and Nutrition Concerns

Factor analysis was also used to analyze the set of 14 questions listed in Table 7. The goal of this analysis was to find common groups of variables which depict the lifestyles of these households and their concerns towards health, nutrition, and convenience. Using the rule-of-thumb method to determine the number of factors to extract from the original set of variables, four common factors were isolated (Kim and Mueller, 1978).

The first factor is associated with statements 3, 5, 10, 11, and 13. This factor reinforces the notion that today's consumers are

concerned with what they eat and have an awareness of the ingredients and additives and preservatives in their food. This factor also appears to be related to consumers actively planning their diets. For example, note the words used--"I strive to improve" (statement 3), "I must control" (statement 10), "I read" (statement 11), and "I control" (statement 13).

The highest factor loadings for factor two are associated with statements 1, 4, and 12. This factor depicts consumers' appraisal of the potato's nutritional characteristics. These specific statements coincide with and justify the focus of the extensive work by The National Potato Promotion Board (The Potato Board) over the past few years. According to the Board, only in recent years have consumers altered their perception of the potato--from the belief that the potato is fattening and not as healthy as other foods, to realizing its health and dietary benefits (*The Potato Board Newsletter*, 1986). In fact, these three statements make up the major focus of advertising and consumer education by The Potato Board.

Factor three has two statements which have high factor loadings--statements 6 and 7. This factor describes the consumers who are most interested in the convenience aspects of foods. Many of these consumers are married women in the work force, who often have little time to perform the domestic tasks that they were traditionally responsible for. Anything associated with convenience or time savings is very popular among this group. This factor is consistent with previous literature which depicts the changes in the lifestyles of today's consumers.

Statement 8 was the only statement with a high loading for the fourth and final factor, and is therefore easy to interpret. It is believed that health conscious consumers consider the potato to be an important part of their diet and believe that it provides much of the essential nutrients required for good health.

Conclusions

This study provides an overview of how Washington consumers perceive the potato and their interests and concerns with health and nutrition. The respondents appeared to be sensitive to the quality of the potatoes that they find in supermarkets, specifically being concerned with the presence of cuts, blemishes, and eyes.

The ability to purchase the exact amount of potatoes and price influenced their purchase decisions. The importance of price as well as in-store advertising and displays and nutritional information depended upon the education and income level of the household.

These Washington consumers are changing their purchasing patterns for fresh and processed potatoes. Most of the responding meal planners reported that they were attempting to decrease calories in the foods that they prepared. The calorie-reducing households were most concerned about the fat and cholesterol content of their food while those households not concerned with reducing calories were more concerned with the salt, sugar, additives, and preservatives in their foods.

The results suggest that consumers who reported purchasing more fresh potatoes this year than last year tended to agree more often with statements related to positive attitudes about health and nutrition and concerning positive attributes of potatoes. Respondents consuming fewer fresh potatoes expressed relatively greater interest in the convenience aspects of foods. Factor analysis results suggest that the lifestyles and concerns of these consumers can be summarized by four common factors: (1) the consumers' concerns towards nutrition, diet, and the food they consume; (2) the potato's nutritional characteristics; (3) convenience; and (4) potatoes as a healthful addition to the consumers' diet.

Implications

This study provides an overview of how Washington consumers perceive the potato and their interest and concerns with health and nutrition. The reported changes in potato consumption are likely due to a combination of factors. These changes suggest that the processed potato products industry needs to increase its efforts in the area of product development to meet the changing demands in the marketplace. The results concerning desired methods of serving potatoes suggest areas of product development that firms might explore. For example, given the popularity of baked potatoes, consumers might be willing to pay for added convenience in potatoes prepared for baking in a microwave oven. In light of the relative unpopularity of potato casseroles, the industry might want to develop healthy and quick recipes for using potatoes in casseroles.

The results also suggest that consumers are interested in information about the health and nutritional attributes of specific foods. These findings have important implications for the potato industry, in particular, in developing effective marketing strategies and new products, and targeting nutritional education programs. For example, there may be positive benefits from intensifying efforts to market the nutritional attributes of the potato and to educate the consumer about these attributes, particularly its fiber and Vitamin C content.

The factor analysis suggests that the lifestyles and concerns of these consumers were summarized by four common factors: (1) consumers' concerns towards nutrition, diet, and the food they consume; (2) the potato's nutritional characteristics; (3) convenience; and (4) potatoes as a healthful addition to the diet. Advertising and consumer education programs can be effectively developed around these themes.

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