Paper 18

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Current trends in Rice Consumption : a Greek perspective

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Abstract

The aim of this paper is to examine recent developments in the perceptions and preferences regarding rice and its consumption in Greece. An overview of the main impacts influencing Greek rice market in comparison to other European countries is outlined. Current alterations in rice consumption patterns driven by changes in eating habits are discussed. Links between the use of rice and the traditional cuisine, which probably demonstrates the way rice innovations (new types) can be accepted, is taken under consideration. Consumers' perceptual position of rice, food and cooking is presented in terms of different eating situations and courses.

In order to find out Greek consumers' attitudes to rice, a survey with 150 personal interviews was carried out. The survey was divided in two parts: firstly, six different rice types were selected to be tested by eighty consumers (group A). The latest were asked to choose the most suitable one in different situations and meals. Secondly, a 'typical' consumer questionnaire was provided, including consumption and purchase patterns, rice variety and brand knowledge and sensitivity. Descriptive statistics were used to present the main results regarding different consumption situations and purchase decisions.

The analysis of the results indicates the rice - consumer relationship, which contributes to foresee the future of rice market in Greece, as well as to imply the most adequate policy in the order the potential problems to be confronted.

Keywords

- Rice, descriptive analysis

- Greece.

Introduction

Rice market in Greece is highly influenced by E.U. trade policy and its regulations and restrictions. During the last decade, a remarkable increase in production indices has been noticed (82,000 tons in 1983 to 184,000 tons in 1995, Avgoulas, 1997), mainly caused by the Indica variety production raise, while Japonica rice production has not altered considerably at the same period (Mattas and Tsakiridou, 1995). This can be probably enrolled to E.U's agricultural policy, in an attempt to increase Indica rice production in order to satisfy the Community demands (Yap, 1994).

An overview in European rice consumption indicates that Greece is ordered amongst the first countries in rice consumption, deviating significantly from the average E.U. patterns (Mattas and Tsakiridou, 1995). Moreover, rice consumption patterns seem to be oriented to quality direction. Strong consumer preferences for particular rice types are based primarily on cooking and taste characteristics. Moreover, quality preferences are typically correlated with income levels; higher quality rice commands a higher price and is strongly preferred by upper income consumers (Cramer et al, 1993).

E.U.'s recent regulations are expected to influence sharply rice market in Greece. Cultivated area has to be decreased and standardized at an area of 21891 hectares. Simultaneously, producers; prices will be subjected to a gradual decrease until the year 2000 (from 351 ECU/MT in 1997 to 298,35 ECU/MT in 2000). Greece's policy aim is to be conformed to these regulations in order to protect the crop and producers' income as well (Hellenic Ministry of Agriculture, 1997)

A thorough examination of rice consumption patterns in Greece gives a more global information about consumers' real preferences and attitudes regarding rice. Moreover, product differentiation in rice is considered a critical factor in understanding rice trade flows (Cramer et al, 1993).

In order to examine the current trends in rice consumption, as well as to develop the appropriate production and marketing decisions, rice consumers' preferences should be determined. Hence, rice product characteristics demanded by Greek consumers have to be identified to facilitate development of appropriate varieties and technology processes necessary for satisfying the domestic needs. Moreover, rice consumption habits in relation to other supplementary foods and products (i.e. pasta, potatoes, etc.) must be taken under consideration.

Therefore, the objectives of this paper are :

- to identify key rice quality attributes and potential differences among people with various demographic and socio-economic characteristics
- to examine rice position among different food categories in relation to a variety of dishes or occasions
- to determine the major criteria which influence buying behaviour of Greek consumers.

The paper is organized as follows : in the next section the methodology used is outlined. Research design is covered in the following section. Data used and how they were collected is also explained in this section. The main core of the paper is devoted to an explanation of the empirical results. Finally the main conclusions are summarized.

Methodology

Primary information data were gathered specifically for the research project (*1). Personal interviews' method was used in this survey which took place in Thessaloniki from March to May 1997. This method seems to be more flexible compared to other survey approaches (*2) and gives the most detailed and reliable answers. However, as with any other technique, the personal interviews subjected to certain weakness as the high cost, because the additional planning and supervision is required, and the greater possibility of response error exists, because it depends on the interviewer's ability (Tull and Hawkins).

*1 : there are three data collection approaches in marketing research : secondary data, surveys data and experimental data (Tull and Hawkins)

*2 : when conducting a survey, three basic methods of communication with respondents are commonly used : personal interviews, telephone interviews and mail questionnaire interviews

In order the needed information to be gathered, depth interviews were applied. This method is used to reveal respondents' attitudes or motives in a more complete and detailed way.

The sampling plan was also taken into consideration, so as to represent the population being surveyed. According to Tull and Hawkins seven primary decisions have to be made in designing the sampling procedure : the population, the sample frame, the sampling unit, the sampling method, the sample size, the sample plan and the execution.

The population of Thessaloniki aged 18 years and over comprised the sampling unit. The size of the sample was one hundred and fifty consumers. The whole sample was divided in two separate groups (group A and group B). Group A consisted of eighty people, whereas seventy respondents were included in group B. The difference between these groups was that in the first one, aside from the general questionnaire, people took part in a tasting test, in order to identify some key rice quality attributes for the proposed varieties.

In order to determine the sampling method, two types of procedure were taken under consideration : probability and non probability sampling (*3). The first type was applied in this research and finally the sample was selected.

*3 : in a probability sample, each member of the population is selected by chance and there is a known chance of each unit being selected. Non probability samples rely on the basis of convenience and judgement or by some other means rather than chance

Questionnaire design

The majority of the questions of the present survey were closed direct questions, so the data can be easily tabulated and analyzed. The questionnaire was divided in two sections. Section A contained questions regarding the tasting attributes of six rice types, in which 80 respondents participated.

Section B included questions about consumers' attitudes and knowledge of rice types and products. Demographic and socio-economic characteristics are summarized at the end of section B of the questionnaire. It must be referred that the responses in the questionnaires were anonymous, which encourage respondents to be honest in their answers (Tull and Hawkins).

Statistical analysis

The data that were collected from the rice survey were edited and coded with the use of the statistical program SPSS. Specific analysis techniques were properly used in order to obtain the needed information concerning the profile of rice consumer behaviour purchasing. Procedures used for the present data are descriptive statistics.

In descriptive statistics, the simplest way to analyze data is to tabulate the responses of the questions. The calculations involved are the frequency distribution and proportions, as well as mode, median and mean values for each variable. Thus, measures of dispersion (i.e. standard deviation, variance) are required - *4 - (Mahaira and Senta, 1993).

*4 : in non-metric scale data frequency and mode are calculated, while in metric scale data frequency, mode, mean and standard deviation are calculated.

Results and Discussion

Descriptive statistics

In this section, results from frequency distribution are presented. Frequency distribution by sex, age, level of education, occupation and income is presented in Table 1; Table 2 presents the frequency distribution by family size and frequency of cooking.

Table 1: Frequency distribution by sex, age, level of education, occupation and income

SEX	%	AGE	%	EDUCATION	%	OCCUPATION	%	INCOME	%
female	81.3	18-24	12.7	elementary school	20.0	housekeeping	11.3	low	52.7
male	18.7	25-35	40.0	junior high school	10.0	physical worker/farmer	26.7	medium low	34.0
		36-44	17.3	high school	25.3	white collar worker	44.7	medium high	6.7
		45-60	12.0	university	44.7	un. student	2.7	high	6.6
		> 61	18.0			retired	14.6		
Total	100.0		100.0		100.0		100.0		100.0

Table 2 : Frequency distribution by family size and frequency of cooking

FAMILY MEMBERS	%	FREQUENCY OF COOKING	%
1 person	11.3	most of the time	68.0
2 people	16.0	occasionally	20.7
3 people	21.3	never	11.3
4 people	32.7		
5 people	11.3		
6 or more people	7.4		

As it can be easily concluded, the majority of the respondents (81.3 percent) were women, while men represented the 18.7 percent. Their age ranging from 18 to over 61 years old, with those between 25 and 35 gathering the forty percent of the sample. Most of the respondents have a high education level (university and high school), whereas the dominant occupation categories are white collar workers (44.7%) and physical workers/farmers (26.7%). Hence, 52.7 percent of the sample has a low income level, followed by those with a medium income level (34.0 percent).

Regarding family size, 81.3 percent of the respondents belongs to a rather small family (1 to 4 people), followed by medium size (11.3 percent), while just the 7.4 percent of the sample are coming from large families (6 or more people).

Evaluation of rice samples

Three Indica long grain rice types (A, B, C), one aromatic Basmati type (D), one Japonica medium grain (E) and one Japonica long grain rice (F) were used to study and to relate their attributes to respondents' preferences. Consumers were asked to evaluate them using a scale from 1 (=absolutely dislike) to 10 (=like very much) and to describe their positive or negative characteristics as well (Table 3).

A: long grain Indica rice (Thaibonnet) cooked 15 min., B : long grain Indica rice cooked 17 min., C : long grain Indica rice cooked 10 min., D : Basmati rice cooked 12 min., E : medium grain Japonica rice cooked 13 min., F : long grain Japonica rice (Uncle Ben's) cooked 10 min.

Table 3 : Positive & Negative opinions about tested rices

Rice	Positive	Negative	Pos.&Neg.	Mode
A	21 (26.3)[a]	34 (42.5)	25 (31.3)	Negative
B	49 (61.3)	24 (30)	7 (8.8)	Positive
C	34 (42.5)	23 (28.8)	23 (28.8)	Positive
D	44 (55)	14 (17.5)	22 (27.5)	Positive
E	24 (30)	48 (60)	8 (10)	Negative
F	56 (70)	11 (13.8)	13 (16.3)	Positive

[a]: Figures in parentheses indicate percentages %

Results indicate that rice F is obviously the most likeable sample (70.0 percent positive points), followed by rice B (61.3 percent) and D (55.0 percent). Regarding the less preferable rice samples, rice E received the most negative comments (60.0 percent), followed by rice A (42.5 percent) and B (30.0 percent). Mode values also indicate that rice A and rice E are not likeable enough, as the negative points overweigh the positive ones.

Considering consumers' perceptions and positioning about each rice sample, nine different expressions which can characterize rice were used in a Likert scale (Table 4). Table 5 presents the mean and mode values of expressions for each type of rice. Scaling indicates that the most special, exotic, modern and sophisticated is rice D, probably because it is a new rice for the Greek market with special attributes. The latest may also be proved taking into

account that there are not significant variations in values among all the remained rice samples.

Table 4 : Definitions for Maximum and Minimum Values of rice attributes

Attribute	Value = 1	Value = 7
Specialness	Imaginative/Special	Common/Ordinary
Nutritiousness	Nourishing	Not nourishing
Exotic	Not exotic	Exotic
Naturalness	Natural	Artificial
Cook	Difficult to cook	Easy to cook
Modern	Modern	Old type
Sophisticated	Sophisticated	Not sophisticated
Healthy, Dietetic	Healthy/dietetic	Not healthy
Digestible	Very digestible	Difficult to digest

Note : Attribute values were ranked on a Likert scale of 1-7.

Table 5 : Mode Values Rice Attributes for Six Types

Attribute	Rice type					
	A	B	C	D	E	F
Specialness	**7.000**	**7.000**	**7.000**	**1.000**	**7.000**	**6.000**
Nutritiousness	**1.000**	**1.000**	**2.000**	**1.000**	**1.000**	**1.000**
Exotic	**1.000**	**1.000**	**1.000**	**7.000**	**1.000**	**1.000**
Naturalness	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**
Cook	**6.000**	**4.000**	**4.000**	**3.000**	**7.000**	**5.000**
Modern	**7.000**	**7.000**	**7.000**	**1.000**	**7.000**	**7.000**
Sophisticated	**7.000**	**7.000**	**7.000**	**1.000**	**7.000**	**7.000**
Healthy, Dietetic	**2.000**	**2.000**	**2.000**	**1.000**	**1.000**	**2.000**
Digestible	**2.000**	**1.000**	**2.000**	**3.000**	**1.000**	**1.000**
No. Observations	80	80	80	80	80	80

Rice consumption in relation to rice types, situations, meals and foods

Frequency distribution of current consumption of several rice types in Greece is presented in Table 7. The majority of the respondents eat rice one to three times per week. According to the results, the most frequently consumed rice type is long grain (33.3 percent), followed by medium/round grain (21.3 percent) and parboiled (12.0 percent). Contrarily, coloured, prepared, brown and aromatic rice are rarely used.

Table 7 : Current Frequency of Consumption

	1 to several times a day	Almost every day	1 to 3 times per week	1 to 3 times per month	Less than once a month
Long-grain rice	3 (2.0)[a]	4 (2.7)	50 (33.30)	45 (30.0)	48 (32.0)
Round-grain rice	2 (1.3)	4 (2.7)	32 (21.3)	43 (28.7)	69 (46.0)
Brown rice	1 (0.7)	0 (0.0)	3 (2.0)	17 (11.3)	129 (86.0)
Basmati rice	1 (0.7)	1 (0.7)	8 (5.3)	9 (6.0)	131 (87.3)
Parboiled rice	0 (0.0)	0 (0.0)	18 (12.0)	19 (12.7)	113 (75.3)
Packet rice	3 (2.0)	1 (0.7)	13 (8.7)	25 (16.7)	108 (72.0)
Fast cooking rice	4 (2.7)	8 (5.3)	12 (8.0)	16 (10.7)	110 (73.3)
Coloured rice	0 (0.0)	0 (0.0)	1 (0.7)	4 (2.7)	145 (96.7)
Prepared rice	0 (0.0)	2 (1.3)	3 (2.0)	9 (6.0)	136 (90.7)
Other	0 (0.0)	0 (0.0)	2 (1.3)	0 (0.0)	148 (98.7)

[a] : Figures in parentheses indicate percentages %

In order to get more information about different consumption situations in relation to rice types, a frequency distribution table is demonstrated (Table 8). Rice types with the higher consumption in every concrete situation are obviously long and medium/round grain. In more details, long grain rice may generally be combined with situations like a main meal at home (46.0 percent), children's parties (45.3 percent), picnics (38.0 percent), sports (34.0 percent) and meals with friends at home (31.3 percent). Medium/round grain rice seems to be the most adequate for illnesses (42.7 percent), meals at home (38.0 percent), picnics (36.7 percent), sport activities (36.0 percent) and meals with friends at home as well (31.3 percent).

Table 8 : Consumption situations and related rice types

Consumption Situations	long grain	medium/round grain	brown	aromatic	parboiled	fast cooking
For a main meal at home	46.0	35.3	13.3	6.0	14.7	15.3
For a special meal at home with no guests	26.0	38.0	17.3	4.7	13.3	12.7
When I invite friends or family at home	31.3	34.7	10.7	7.3	14.7	12.0
When I go to the restaurant with friends or family	28.0	32.0	11.3	11.3	14.7	9.3
For a meal or lunch with many guests	28.0	31.3	7.3	10.7	14.7	11.3
When I am on my own	24.7	33.3	14.0	4.7	12.0	14.0
When unexpected friends arrive to have dinner	26.0	28.0	8.0	2.0	16.7	23.3
For a picnic	38.0	36.7	6.0	2.7	11.3	10.0
When I am engaged in sports activities	34.0	36.0	8.7	0.7	8.7	11.3
When I feel a little sick	9.3	42.7	34.7	1.3	4.0	10.7
When I do not have much time to cook	17.3	19.3	10.0	1.3	9.3	31.3
For a party or birthday with children	45.3	33.3	10.0	11.3	15.3	6.0

[a] : figures are the percentages of the total sample

Rice can be used as a supplement or trimming for a variety of meals and dishes. However, its position among other foods is of great importance. Tables 9 and 10 indicate rice's place in different consumption situations (Table 9) and dishes (Table 10).

Specifically, rice is the most preferable food in cases like a special meal at home with no guests (55.3 percent) and for illnesses (81.3 percent). It can also be a tasteful dish (possessed in the second order) in a meal with friends at home, in sport activities and in children's parties.

Table 9 : Consumption situations and related foods

Consumption Situations	Pasta	Potatoes	Dry vegetables	Semolina	Rice	Corn	Green vegetables
For a main meal at home	42.0	58.0	29.3	6.0	29.3	4.0	32.0
For a special meal at home with no guests	28.7	50.0	4.0	5.3	55.3	5.3	25.3
When I invite friends or family at home	42.0	78.7	2.0	2.7	46.0	6.7	12.0
When I go to the restaurant with friends or family	31.3	77.3	3.3	6.0	22.0	6.7	18.7
For a meal or lunch with many guests	47.3	57.3	4.0	2.7	52.0	12.7	29.3
When I am on my own	48.0	27.3	24.0	1.3	26.0	3.3	23.3
When unexpected friends arrive to have dinner	47.3	56.7	2.7	1.3	19.3	6.0	14.7
For a picnic	4.0	70.7	2.7	2.7	12.0	14.7	26.7
When I am engaged in sports activities	2.7	6.0	6.7	2.7	56.7	13.3	69.3
When I feel a little sick	13.3	4.0	0.7	6.7	81.3	0.0	9.3
When I do not have much time to cook	59.3	26.0	1.3	2.7	18.7	7.3	13.3
For a party or birthday with children	12.0	79.3	0.0	1.3	19.3	13.3	9.3

[a] : figures are the percentages of the total sample

It is obvious that the foods which may substitute rice in various situations are : potatoes, pasta and in a lower percentage green vegetables. On the contrary, semolina, corn and dry vegetables are not basic foods or supplements for these specific situations.

Rice seems to be the most adequate food served with fish and sauce (72.7 percent), poultry (82.0 percent), a traditional dish (77.3 percent), as well as an exotic dish (78.7 percent). Moreover, it is quite preferable (taking the second order) as a starter or salad (34.7 percent), served with grilled meat (28.0 percent) and with meat and sauce (58.7 percent). Green vegetables strongly preferred as a starter or salad (88.7 percent), while potatoes are consumed mainly with pork meat (55.3 percent), grilled fish (68.7 percent) and grilled meat (85.3 percent). Finally, pasta is served frequently with meat and sauce.

Table 10 : Various dishes related to several foods

Dishes	Pasta	Potatoes	Dry vegetables	Semolina	Rice	Corn	Green vegetables
As a starter or salad	13.3	10.0	10.0	0.0	34.7	16.0	88.7
Served with pork meat	20.0	55.3	1.3	6.0	41.3	2.7	48.7
Served with grilled fish	0.0	68.7	0.0	4.0	14.0	1.3	28.7
Served with fish and sauce	0.0	17.3	2.7	4.0	72.7	2.7	24.7
Served with grilled meat	14.0	85.3	0.0	4.0	28.0	5.3	13.3
Served with meat and sauce	67.3	56.7	1.3	5.3	58.7	4.0	24.7
Served with poultry	26.0	60.7	2.7	2.7	82.0	5.3	8.0
Served as a traditionally cooked dish	9.3	26.0	16.7	6.7	77.3	3.3	51.3
Served with an exotic dish	5.3	6.7	4.0	6.0	78.7	27.3	40.0

[a] : figures are the percentages of the total sample

Rice purchasing conditions

Place of purchase is not a significant factor which may influence consumers' purchase decision. The latest arises taking into consideration that many respondents do not prefer a specific place to buy rice from. Thus, it can be easily clarified that the place of rice purchase does not differ for the various rice types. However, the majority of those who bought rice from a particular place during the last year, normally prefer supermarkets (Table 11). Rice producers, usually at the open markets, seem also to be preferred in a lower percentage as a specific rice purchase place.

Table 11 : Place of purchase

	Supermarket	General grocer's store	Specialist grocer's store	Producer	
Long-grain rice	91 (84.4)	1 (0.9)	3 (2.7)	13 (12.0)	108[b]
Round-grain rice	56 (65.1)	2 (2.3)	9 (10.5)	19 (22.1)	86
Brown rice	19 (79.2)	2 (8.3)	0 (0.0)	3 (12.5)	24
Basmati rice	24 (92.3)	0 (0.0)	0 (0.0)	2 (7.7)	26
Parboiled rice	35 (83.4)	3 (7.1)	1 (2.4)	3 (7.1)	42
Packet rice	47 (98.0)	1 (2.0)	0 (0.0)	0 (0.0)	48
Fast cooking rice	39 (93.0)	1 (2.0)	2 (3.0)	0 (0.0)	42
Coloured rice	12 (92.3)	0 (0.0)	0 (0.0)	1 (7.7)	13
Prepared rice	12 (92.3)	1 (7.7)	0 (0.0)	0 (0.0)	13

[a] : Figures in parentheses indicate percentages %
[b] : number of respondents out of 150 who prefer a special place

Rice purchase decisions may also be influenced by the most important personal criteria for choosing a particular type. It is possible these criteria to vary among different situations and meals (Table 12). In order to make a choice about a type of rice to be purchased and used for an ordinary meal at home, price (76 percent), brand, (58.0 percent) and appearance (53.4 percent) are the major criteria. This order varies somehow in case of a special meal, where appearance (76.6 percent), price (66.0 percent) and cooking time (48.6 percent) are taken into consideration.

Another characteristic of Greek rice consumers is that most of them (60.0 percent of the total sample), do not insist on a specific rice brand. Nonetheless, for the remained forty percent of the respondents, frequency distribution table for the five big market share holding brands, led to the following results (Table 13): Uncle Ben's and 3Alpha are the most preferable brands (28.0 percent for each brand), followed by Agrino (17.0 percent).

Table 12 : Rice buying criteria

	Ordinary meal	Special meal
Familiar shop	32 (21.3)[a]	22 (14.6)
Brand	87 (58.0)	72 (48.0)
Origin	67 (44.6)	64 (42.6)
Price	114 (76.0)	99 (66.0)
Cooking time	71 (47.4)	73 (48.6)
Looks	80 (53.4)	115 (76.6)
Smell	49 (32.6)	41 (27.3)
Precooked	11 (7.4)	11 (7.4)

[a] : Figures in parentheses indicate percentages %

Table 13 : Five Big market share holding brands

Rice brands	
Agrino	10 (17.0)
Bali	4 (7.0)
Uncle Ben's	17 (28.0)
3Alpha	17 (28.0)
Seraiko	3 (5.0)
Other	9 (15.0)

": Figures in parentheses indicate percentages %

Conclusions

This paper dealt with the current trends in Greek rice market and recent changes in consumption patterns, since it is considered to be a staple food product. Although the aggregate rice consumption has not altered the latest years, rice quality patterns went through substantial changes. More precisely, Japonica rice seems to be the most preferable type by Greek consumers; nonetheless, Indica rice consumption represents about thirty five percent of the total domestic rice consumption (Mattas et al, 1997).

Six concrete rice types were included in the survey in order to determine their attributes. Regarding their attributes, results indicate no substantial difference among the rice samples. The exception was rice D, which turned up to be the most special, exotic and modern, particularly appropriate for a special meal or occasion. B and F rice samples were found adequate for a special occasion.

Descriptive statistics denoted that long grain (33.3 percent), medium/round grain (21.3 percent) and parboiled (12.0 percent) are the most frequently consumed rice types. Long and medium grain in particular, can be alternatively used in several occasions (Table 8).

Rice forms one of the main foods or supplement in a variety of situations and dishes. It is placed on the top of consumers' preferences, with potatoes, pasta and green vegetables as the main competitive supplementary foods; rice is reckoned as a nice trimming served with meat, fish and traditional dishes.

Although the place of purchase does not play an important role when buying rice, the majority of the respondents seems to prefer supermarkets and rice producers (Table 11). Regarding the most important criteria for choosing a specific rice type, price, appearance, brand and cooking time aggregate the higher percentages, either for an ordinary or for a special meal.

Conclusively, it should be underlined that rice-consumer relationship in Greece has been switched to a more qualitative consideration, always subjected to alternative attitudes and situations. Regarding the current trends in rice trade market, they are subjected to and determined by E.U.'s policy regulations, having strong direct impacts on rice producers' income.

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