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Research Article

CONSUMER PREFERENCE TOWARDS INSTANT MIX FOOD PRODUCTS

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Abstract: Purchasing *nitty-gritty* is a common phenomenon in every human being. The consumer preference chances in each and every person's .The paper bring into focus consumer preference of instant mix food products. Instant mix food products per seis emerging in the fastest world and simplifying the cooking process. An analysis was conducted on a sample of consumers in Madurai district involving 135 respondents. The respondents are divided by rural group and Low, Middle and High income group and working women's group among urban consumers. The conjoint analysis, Percentage analysis, Multilog linear model, Dummy variable model, ANNOVA with two qualitative variable model and Garrett ranking technique were used to analyze the variants.

Keywords: *Consumer Preference, Income Groups, Conjoint Analysis, Garrett Ranking Technique*

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Introduction

Food is the major part of human life's and necessary for human life existence. Food habits and cooking trends are changes in every 25 years. In 19th century, Tamil Nadu peoples were mostly consuming cumbu meals, ragi mudde and millets koozh. In 20th century, they were mostly consuming Rice meals. The factors influencing cooking trends include, economic policy changes, increasing number of working peoples in a house, people's lifestyle, based on who are migrating to cities for job, education, media proliferation *etc*. As might be expected the style of cooking changes in every states of India. The population ipso facto move to fastest ways of cooking for the reason of work burden and non-availability of raw materials at the time of cooking. There is paradigm shift especially among urban communities find the instant mix food products to time consuming of cooking. The instant mix food products are very comfortable for cooking. The instant mix food products available in Tamil Nadu are dosa mix, pongal mix, idiyappam mix, health mix, gulab juman mix *etc*. The cooking styles differ from based on the income of consumer, Low and middle income groups spend fewer amounts for cooking by purchasing smaller quantities of fresh vegetables and cooking ingredients. High income groups spend higher amount for cooking and purchasing optimum quantities of fresh vegetables and cooking ingredients. Nowadays many try to reducing cost of cooking for selecting instant mix food products, ready to use food products and fast foods to save the money. Many food processing firms changes the production of products based on cooking trends and they earn more profit of the products. The instant mix food products provide hygienic products of standard and uniform quality with good shelf life. The traditional food products are very popular in the form of instant mix like dosa mix, idiyappam mix *etc*. The traditional food products are rich in nutrients which help in reducing diseases like diabetes, obesity, blood pressure. Hence, the peoples purchasing behavior is moderately changing towards traditional food products. The instant mix food products provide traditional food items and reducing time for cooking.

Materials and Methods

Madurai city of Tamil Nadu is purposively selected for this study. Madurai is one of the cultural cities in Tamil Nadu. The consumers were randomly selected across the city from different income groups *viz*., low, middle and high in urban areas and from villages to represent rural communities. About 30 rural consumers were selected from three taluks of Madurai district *viz*., Melur, Thirumangalam and Vadipatti, in each taluk 10 consumers were selected randomly. Another 90 consumers to represent three income groups (each 30) from urban pockets were selected randomly, and fifteen working women's were selected from urban areas.

Tools used for analysis

The conjoint analysis, Multi log linear model, Dummy variable model, ANNOVA with two qualitative variable model, Garrett ranking technique, tabular and percentage analysis were used for this study

Descriptive Analysis

The percentage analysis was used to calculate current state of instant mix food products consumption and preference towards instant mix food products.

Conjoint Analysis

Conjoint analysis is a marketing research technique that can provide valuable information for new product development and forecasting, market segmentation, pricing decisions, advertising, distribution, competitive analysis and repositioning. Consumers are forced to make trade-offs as they decide which products to purchase. Conjoint analysis as new technique in decision making [1] and advanced conjoint analysis models were developed [2,3]. Conjoint analysis decomposes the judgment data into components, based on qualitative attributes of the products. A numerical part-worth utility value is computed for each level of each attribute. Large part-worth utilities are assigned to the most preferred levels, and small part-worth utilities are assigned to the least preferred levels. The attributes with the largest part-worth utility range are considered the most important in predicting preference. Conjoint analysis is a statistical model with an error term and a loss function [4]. Nonmetric conjoint analysis finds a monotonic transformation of the preference judgments. The model, which follows directly from conjoint measurement, iteratively fits the ANOVA model until the Consumer transformation stabilizes. The R square increases during every iteration until convergence, when the change in R square is essentially zero.

The following formula shows a nonmetric conjoint analysis model for three factors:

Table-1 *Products and attributes*

Class	Four products	1 = 'Dosa mix'
		2 = 'Idiyappam mix'
		3 = 'Pongal mix'
		4 = 'Health mix '
Attributes	Taste	1 = 'poor'
		2 = 'moderate'
		3 = 'good'
	Flavour	1 = 'low'
		2 = 'Medium'
		3 = 'high'
	Price	1 = 'low'
		2 = 'medium'
		3 = 'high'
	Availability	1 = 'low'
		2 = 'medium'
		3 = 'high'
	Shelf life	1 = 'low'
		2 = 'medium'
		3 = 'high'
	Time consuming	1 = 'yes'
		2 = 'no'

The model could be used for different types of instant mix food products with different attributes and prices. The Y_{ijk} term is subject's stated preference for instant mix food products with i and j^{th} level attributes and k^{th} level price. The grand mean is μ and error is εijk. Nonmetritc conjoint analysis finds a monotonic transformation of the preference judgments. The model which follows directly from conjoint measurement iteratively fits the ANOVA model until the transformation stabilizes. The R square increases during every iteration until convergence, when the change in R square is essentially zero [5]. The following formula shows a nonmetric conjoint analysis model for three factors;

$$\Phi(yijk) = \mu + \beta 1i + \beta\ 2j + \beta\ 3k + \beta\ ijk$$

Where Φ (yijk) designates a monotonic transformation of the variable y.
Details of the six classes and six attributes considered for the consumers preference towards instant mix food products by conjoint analysis are given below. Details of the six classes and six attributes considered for the consumers preference towards instant mix food products by conjoint analysis are given in [Table-2].

Garrett Ranking technique

This technique was used to evaluate the problems faced by the researchers. The orders of merit given by the respondents were converted in to rank by suing the formula. To find out the most significant factor which influences the respondent, Garrett's ranking technique was used. As per this method, respondents have been asked to assign the rank for all factors and the outcomes of such ranking have been converted into score value with the help of the following formula:

$$\text{Percent position} = 100\ (Rij - 0.5)\ Nj$$

Where Rij = Rank given for the i^{th} variable by j^{th} respondents
Nj = Number of variable ranked by j^{th} respondents
With the help of Garrett's Table, the percent position estimated is converted into scores. Then for each factor, the scores of each individual are added and then total value of scores and mean values of score is calculated. The factors having highest mean value is considered to be the most important factor [6].

Multi-log linear regression function

For examining the factors influencing the consumption of selected instant mix food product, multi-log linear regression function is used. The function used is as follow:

$$\text{Log } Y = f(X_1, X_2, X_3, D_1)$$

Where,

Y = monthly consumption of instant mix food products
X_1 = monthly income of consumers
X_2 = number of family members (family size)
X_3 = monthly instant mix food products expenditure (*i.e.* amount spent on instant mix food products)
D_1 = food habit (veg or non-veg) Dummy variable

Results and Discussion

The result of conjoint analysis is furnished in [Table-2]. The conjoint analysis were done using SAS software .The part- worth of each attributes are calculated and translate the respondent's relative importance values or utilities. The most important attribute indicated by the consumer was instant mix food products. The importance utility range of the product was 41.61 percent. Among these attributes health mix was most preferred and the utility value was (6.31) and followed by dosa mix .The utility value of dosa mix was (6.28). The pongal mix was next in the order with the utility value of (3.87). The iddiappam mix was negative utility value of (-16.46). The next important attribute indicated by the consumer was self-life. The importance utility range of the self-life was 16.84 percent. Among the three attribute of low, medium, high self-life, the low self-life instant mix food product was utilized by the consumer and the utility value of low self-life was (5.16) and this was followed by medium and high shelf life. The next important attribute indicated by the consumer was time consumption. The instant mix food products are time consuming products the importance utility range was 15.90 and the utility value of 4.35. The next important attribute indicated by the consumer was availability. Among the three attribute of low, medium, high availability, the low availability of instant mix food products indicated by the consumers the importance of utility range was 9.06 and the utility value of low availability was (2.85). This attribute was followed by taste with 7.44 percent importance utility range and preference 6.54 percent importance utility range. The result of consumer preference was health mix and dosa mix are mostly preferred by the consumers and the instant mix food product has time consuming ability. Availability, taste and preference are impact on consumer preference.

Factors influencing the consumption of selected instant mix food product

The factors influencing the consumption of selected instant mix product is given in the [Table-3]. The multi log linear model was used to analyze the factors influencing the consumption of selected instant mix food products. The adjusted coefficient of multiple determination ($\bar{R}^2$) was 0.81 hints 81 percent of the variation in instant mix food product consumption was influenced by the explanatory variables. A close examination of the model reveals highly significant p-value at one percent level of significance at least two of the selected variables. The consumption responded significantly to income, family size and amount spent. The coefficient of income, food habit, amount spent were positive with the coefficient values of 2.45E-06, 0.09 and 0.001 respectively. This study strongly show that evidences of income, family size, amount spent on instant mix food product tour de force for preference by the consumers to make a purchase of instant mix food product.

The statistical significance difference among the different income groups

The statistical significance difference among the different income groups was given in the [Table-4]. The different income groups are analyzed through dummy variable model to prove the income difference among the consumers was statistically significant. The p value for intercept and higher income group are found to be highly significant at one percent level of significance. The other variable of low-income group and middle income group are significant at five percent level of significance. So we can infer from the intercept value, the mean value of rural group is 11703.33 from which the low, middle, high and working women income groups have an ascent of 2.09,2.91,5.72 and 3.60 times respectively.

Effected consumptive habits

The effected consumptive habits were analyzed using ANOVA model with two qualitative variables *viz.*

Table-2 *Consumer Preference towards instant mix food products: Conjoint Analysis of Ranks*

The TRANSREG Procedure		Monotone (Rank) – Algorithm converged	
Root MSE	4.73434	R-Square	0.9325
Dependent Mean	18.17391	Adj R-Sq	0.8143
Coeff Var	26.05019		

Utilities Table Based on the Usual Degrees of Freedom				
Label	Utility	Standard Error	Importance (% Utility Range)	Variable
Intercept	17.849	3.16866		Intercept
Products Dosa mix	6.275	2.22682	41.614	Class.ProductsDosa_mix
Products Iddiappam mix	-16.457	3.23743		Class.ProductsIddiappam mix
Products Pongal mix	3.869	2.92284		Class.ProductsPongal_mix
Products Health mix	6.314	2.9784		Class.ProductsHealth_mix
Taste Low	2.161	4.27217	7.437	Class.TasteLow
Taste Medium	-1.908	1.57333		Class.TasteMedium
Taste High	-0.254	4.05289		Class.TasteHigh
Preference Low	-1.801	3.70534	6.538	Class.PreferenceLow
Preference Medium	1.776	2.15021		Class.PreferenceMedium
Preference High	0.025	2.68076		Class.PreferenceHigh
Price Low	-0.621	2.20429	2.601	Class.PriceLow
Price Medium	-0.181	2.45939		Class.PriceMedium
Price High	0.802	1.93605		Class.PriceHigh
Available Low	2.85	2.43898	9.062	Class.AvailableLow
Available Medium	-0.74	2.10201		Class.AvailableMedium
Available High	-2.109	2.66388		Class.AvailableHigh
Shelf Low	5.163	6.27436	16.843	Class.ShelfLow
Shelf Medium	-1.109	3.1498		Class.ShelfMedium
Shelf High	-4.054	3.72769		Class.ShelfHigh
Time consuming Yes	4.352	2.35593	15.905	Class.TimeconsumingYes
Time consuming No	-4.352	2.35593		Class.TimeconsumingNo
The standard errors are not adjusted for the fact that the dependent variable was transformed and so are generally liberal (too small).				

A vegetarian/non-vegetarian and consumption/non-consumption with the income of the respondent consumers were studied and the result are discussed and presented below,

$$Y_i = 4664.166 + 3465.234\ D_{2i} + 26158.29\ D_{3i}$$
$$(0.0035)^{**} \quad (0.0367)^{*} \quad (0.0029)^{**}$$

Where

Y= monthly income

D1 = food habit (1= non-veg; 0 = veg)

D2 = consumption (1= consumers consumed instant mix food products; 0= not consumed)

** denotes p-value at one per cent level of significance

* denotes p-value at five per cent level of significance

The food habits and income has a strong effect on the consumption of instant mix food products. From the result, an increase of monthly income of Rs.3465 from the mean monthly income of Rs.4664 has a positive effect on the consumption of instant mix food products among non-vegetarian consumers and the average income was Rs.8129 (3465+4664). Similarly among vegetarians, a high income of Rs.26158from the mean level with Rs.30822 (4664+26158) has a positive effect on the consumption of instant mix food products. The percent of both working in middle and upper income group are found to be more. To them creation of time from cooking is more important than additional spending. However the same has lesser effect among low income and rural consumers due to the fact that either less aware or the felt of higher prices and resultant expenditure.

Table-3 *Factors influencing the consumption of selected instant mix food product*

SN	Variables	b-coefficient	p-value
1	Intercept	7.132409	1.963039
2	Income	2.45E-06	0.047539*
3	family size	-0.09771	0.002507**
4	food habit	0.093402	0.203062
5	amount spent	0.001013	0.004159**
6	R^2 value	0.808	

** - *one percent level of significance, *- five percent level of significance*

General reason for consumption of instant mix food products

The general reason for consumption of instant mix food products was given in the [Table-5]. Most of the consumers prefer for instant mix food product was easy to cook the score of 64.7 and followed by small family, healthy, large family, take time and no maid servant available with the score of 56.5, 54.6, 51.1, 50.2 and 23.0 respectively.

Table-4 *The statistical significance among different income groups*

SN	Variables	b-coefficient	Standard error	p-value
1	Intercept	11703.33	3862.985	0.004842**
2	Low income group	24503.33	5463.086	0.042314*
3	Middle income group	34080.00	5463.086	0.035555*
4	High income group	66996.67	5463.086	0.004698**
5	Working women	42163.33	6690.886	0.532145
6	R^2 value	0.724		

** - *one percent level of significance, *- five percent level of significance*

Table-5 *Garrett scoring of general reason for prefers instant mix*

SN	Particulars	Score	Rank
1	Take time	50.2	V
2	No maid servant	23.0	VI
3	Small family	56.5	II
4	Large family	51.1	IV
5	Easy to cook	64.7	I
6	Healthy	54.6	III

Conclusion

The results of the study conclusively showed that there is preference for instant mix food products among high- and middle-income group. The main factor being one and the other easy mode of cook or else to save time of cooking. However, the reason for low income and rural consumers are opposingly different. As time saving from cooking is not an important objective, price is the most important factor, in particular rural consumers where family size is comparatively higher due to the prevalence of joint family system leading to taller food budget. Hence to capture them within the net, cost effectiveness food mix alternatives mutatis mutandis with low price (small millets) at the same time maintaining the nutritive value is being in need of. Concomitantly awareness cum promotional program has to be introduced along the line of product distribution to ensure traditionality with shifts in tradition.

Application of research: Consumer preference towards instant mix food products

Research Category: Agricultural Economics

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