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A Study on Opinion of Buyers, Retailers and Producers on Price of Eggs

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Abstract—*Academicians across several disciplines have studied numerous aspects about the opinion of buyers, retailers and producers on price of eggs. This study attempted to define, measure, and interpret the significance about the opinion of buyers, retailers and producers on price of eggs by taking various substances. While a significant body of literature has been created concerning about the opinion of buyers, retailers and producers in the field of marketing sector, marketing based companies seem somewhat more reluctant than professionals of other fields to turn their research upon themselves and study what makes them tick. This study covers 100 buyers, retailers and producers of eggs each across several districts of TamilNadu. Their attitude towards price charged on eggs is studied by providing appropriate questionnaire to collect the necessary data. The Kendall's coefficient of concordance is adopted to test the data collected and to test the hypothesis framed. For analysis purpose, to understand about the opinion of buyers, retailers and producers, which are classified into buyer's opinion, retailer's opinion and producer's opinion the price of eggs.*

Keywords used*: Eggs, Buyers Opinion, Retailers Opinion, Producers Opinion, Price of Eggs, Egg Content.*

1. INTRODUCTION

Eggs are considered as one of the most familiar and acknowledged foods by consumers. It is a natural quality food which can be consumed on its own or used as constituent for cooking and baking. An egg is also a food that has a natural good shelf-life and is extremely nutritious for all age groups. Considering the unbelievable increases in the egg production and consumption, it is interesting to reconsider the attitudes, perceptions and behaviors of consumers, retailer and producers towards eggs and egg products. Consumers have the benefit of eggs because they are healthy, tasty, safe to eat, easy to prepare and reasonably cheap compared to other sources of animal proteins. Consumers recognized more and more the health benefits provided by the amount and quality of proteins, vitamins and minerals in the eggs.

Consumption of eggs forms an essential part of non-vegetarian diet. Eggs add proteins to diet as well as other important nutrients. Eggs supply all necessary amino acids for humans and provide several vitamins and minerals, including vitamin A, riboflavin, folic acid, vitamin B6, vitamin B12, choline, iron, calcium, phosphorus and potassium. Eggs are also an economical single-food source of protein. Normally sale of eggs in India have been perceived as commodity produce, with modest or no inequality in terms of quality. Eggs have been purchased from the unorganized retail sector or the organized retail sector, with no packaging that certifies that the egg reaches the destination of the end consumer undamaged. However within increase in household incomes and changing lifestyles, branded eggs have arrived in India and are all warning is here to stay. In spite of its higher price tag, many producers that produce branded eggs have seen a growth in demand and feel there is still a huge untapped market for the eggs. Retailers are not much favor about sale of branded eggs because of higher price, just selling it like other commodities. Besides egg producers are not eager to adapt sale of their production through a brand label

2. OVERVIEW OF EGG MARKET

Pricing of egg is alluring a new milestone in terms of growth and profit potential. The prime factor behind the growth of the eggs market are increasing health consciousness, growing levels of income, explosion of recent retail formats, and acceptance of packaged and processed foods by the Indian consumer. Eggs are selling in ways, such as branded eggs and ordinary eggs. Even though branded eggs are costlier than ordinary eggs, it is expected to become the next big market in the food and beverage segment. Marketers claim that these eggs are richer in proteins, contain less fat and are picked from bio-layer farms. With beautiful packaging and guarantee of a healthier proposition these eggs command a premium over ordinary eggs. These protein-rich and low fat branded eggs are gradually becoming the affixed choice of many households as income levels and health awareness growth. The market for branded eggs in India, compared to that of the normal eggs, could be said in a budding stage, but it is definitely growing.

In India, 5200 crores eggs produced in 2012-13, which constitutes India is the 4th largest producer of eggs in the world. The total egg industry size was Rs.12969 crores in 2012. The industry is highly fragmented with no national level player. This industry was largely relied with the local or state

level producers only. According to National Egg Co-ordination Committee (NECC) traders and industry experts, the market is slated to grow at 8%-10% per annum for the next 4-5 years. This growth would be driven by the expected increase in number of layers to 30 crores by 2015. Rise of middle class, increase in urbanization and shift towards non-vegetarianism are the other factors. Urban areas, which accommodate 28% of the total population, account for 75% of the total egg consumption. Though India is the 4th largest egg producer in the world the annual per capita consumption of eggs stood at a measly 47 eggs in comparison to 230 eggs in America and 345 eggs in Mexico. The NECC aims to achieve a per capital consumption of 180 eggs by the year 2015. The branded eggs segment with a total market size of Rs. 70 crores accounts for 0.54% of the total eggs market. Though at a budding stage, the branded eggs segment proves tremendous promise and prospective with a growth rate of 20-25% per annum.

3. REVIEW OF LITERATURE

Wan Den Brandt et al. (2004) it is more difficult to maintain constant quality of eggs in the outdoor rearing system than in the cage rearing system. This study examined the effect of two rearing systems on indicators such as egg weight, egg white, egg yolk, the content of the egg shell, the level and the pH of the white and dry matter content of the white and the yolk. The egg yolk weight was improved in the cage system. The highest colour intensity of egg yolk was found in the outdoor rearing system with LSLs and in the cage rearing system with LTs (Leyendecker et al. 2001). Mohan et al. (1991), the egg weight and the shell thickness in the eggs laid by layers reared in cages were greater compared to the eggs from the layers kept on deep litter. Individual eggs in the retail pack were visually examined for cleanliness. Samples were described as clean, trace or dirty (Wilson et al. 1998). In order to increase the sensitivity of the test, pooled samples were pre-incubated before enrichment (Downes and Ito 2001). Enrichments were supplemented with iron to further enhance growth of isolates (Gast 1993).

Private labelling of organic eggs, however, seems to be growing (Levondoski, 2006). In addition, the egg sector seems to be increasing its use of the natural label, which in this case typically refers to eggs from hens that are fed a vegetarian diet (Sheats, 2006). The attributes like price, shell colour, production method, feed and pasteurization are mainly involved in consumers' egg purchasing decisions (Goddard et al. 2007; Romanowska 2009; Bejaei 2009). Wallston et al. (1978) were used to measure respondents' attitudes towards a health locus of control. It is expected that there might exist a correlation between consumers' health attitudes and their inclination and willingness to pay for health attributes of specialty eggs, such as omega-3 enhanced eggs and vitamin-enhanced eggs. Egg knowledge questions arose from consumers' unfamiliarity with types of eggs in terms of production method and nutrition information in previous egg studies (Fearne and Lavelle 1996; Goddard et al. 2007; Bejaei 2009).

Kjærnes and Lavik (2007) showed that 26 per cent of the Norwegian consumers agree that the animal welfare is higher in organic production than in conventional. Therefore, consumers seem to have an opinion that organic farming is more animal welfare friendly than conventional farming. Andersen (2011) estimates revealed that willingness to pay for animal welfare in egg production using a consumer panel in combination with a survey. From the panel, this study registered the price of purchased eggs, and from the survey, they have attitudes towards animal welfare. Gerhardy and Ness (1995) made an experiment about eggs. They conducted their experiment in United Kingdom, which is of special interest since it has been plagued by several food scandals, for example salmonella in eggs. Burrel and Vrieze (2003) analysed a representative sample of Dutch egg consumers in order to discover to which extent ethical motives were important when buying eggs. More precisely, they wanted to discover why so few in their sample claim to purchase eggs from high animal welfare systems when so many of their respondents state that hen welfare was important.

4. OBJECTIVES OF THE STUDY

This study makes an effort in this way with the following objectives.

1. To check the overview of prevailing egg market in Tamil Nadu.
2. To understand the buyers opinion towards price of eggs from different outlets.
3. To investigate the different retailers' opinion towards price of eggs.
4. To assess the producers' opinion towards price of eggs.

5. RESEARCH METHODOLOGY

5.1. Sample and Data

A sample of 100 respondents each from consumers, retailers and producers are selected. The sample selection and data collection was completed with the help of experienced enumerators; the detailed questionnaires were presented to the respondents to collect the required data. The questionnaire used for the sample survey is a structured and non-disguised and consisted of three major sections. The first section intended to collect the opinion of egg buyers' towards price of eggs; the second section intended to collect the opinion of retailers towards price of eggs; and third section attempted to obtain the opinion of egg producers' towards price of eggs. The sample survey takes a period of 3 months from October 2015 to December 2015. The enumerators appointed to collect the data from various parts of Tamilnadu. Then the factors are analyzed with due diligence. In order to test its worthiness of data collected, the Kendall's Co-efficient of Concordance is employed and necessary hypothesis framed and tested.

5.2. Testing of Hypothesis

Kendall's coefficient of concordance is followed to test the validity of the data collected and analyzed. Kendall's coefficient of concordance, represented by the symbol *W*, is an important non-parametric measure of relationship between many factors. It is used for determining the degree of association among several (*k*) sets of ranking of *N* object or factors. When the ranking or *N* objects or factors exceed two set, we generally work out Kendall's coefficient instead of Spearman's coefficient correlation. Kendall's method is considered an appropriate measure of studying the degree of association among three or more sets of rankings. This descriptive measure of the agreement has special applications in providing a standard method of ordering objects according to consensus when we do not have an objective order of the objects. The procedure for computing and interpreting Kendall's coefficient concordance (*W*) is as follows:

- All the object, *N*, should be ranked by all *k* sectors in the usual fashion and this information may be put in the form of a *k* by *N* matrix;
- For each factors determine the sum of ranks (R_j) assigned by all the *k* sectors.
- Determine $\bar{R}_j$ and then obtain the value of *s* as follows: $s = \Sigma(R_j - \bar{R}_j)^2$
- Work out the value of *W* using the following formula:

$$W = \frac{S}{1/12k^2 (N^3 - N)}$$

- If N is 7 or smaller Kendall's table adopted, if N exceeds 7, then χ^2 value to be worked out as: $\chi^2 = k\,(N-1).W$ with degrees of freedom = (N – 1) for judging W's significance at a given level in the usual way of using χ^2 values.

Where

$s = \Sigma (R_j - \bar{R}_j)^2$ [It is the sum total of $(R_j - \bar{R}_j)^2$]

k = no. of sets of ranking (different sectors)

N = number of objects or factors (10 factors listed in table 1 to 3)

$1/12k^2 (N^3 - N)$ = maximum possible sum of the squared deviations i.e. the sum *s* which would occur with perfect agreement among *k* rankings.

6. RESULTS & DISCUSSIONS

6.1. Buyers Opinion towards Price of Eggs

The following is the most important factors considered by the egg buyers while buying from different retail outlets.

Table1: Buyers Opinion towards Price of Eggs

S. No	Factors	Buying Opinion					Total
		Retail Shop	Departmental Store	Egg Shop	Farm	Intermediaries	
1.	Nutrition	19	16	17	15	16	83
2.	Freshness	14	16	16	16	18	80
3.	Appearance	13	15	16	19	16	79
4.	Date of production	10	13	16	17	17	73
5.	Cleanliness	18	14	13	10	12	67
6.	Size	12	12	14	16	12	66
7.	Health issues	8	7	10	12	9	46
8.	Physical fitness	7	4	3	2	3	19
9.	Child compulsion	5	3	2	2	3	15
10	Substitute for meat	2	2	3	4	2	13

Source: Primary Data

It is evident that in table-1, nutrition is the most important factor considered while buying egg. This is borne out by the fact that 83 out of 100 respondents took this factor into account while buying eggs from different sales outlets. Then freshness of egg continues to be a top consideration for buyers, the same is agreed by 80 respondents. Price of egg decisions often influenced by appearence, it is evident from the above table and ranked as third by 79 respondents. Date of production palying forth place to 73 respondents. At prsent scenerio most of the people are expecting clealiness of their food, which is fifth place according to 67 respondents. Middle class and lower middle class people are always price senstive customers, they are concerntrate on quandity than quality. So size of egg ranked as sixth to 66 repondents. As mentioned above below fifty percent of people are considered about their health issues, it has marked as seventh to 46 repondents. Only 19 respondents are willing to consider on their physical fitness, it is ranked eighth position. Even though India is the major child population, only fifteen respondents are mentioned about child compulsion, it is ranked ninth position. Due to rapid price hike in vegetable and meat price leads to consume egg as substitute it is in last position.

6.2. Analysis of Buyers Opinion towards Price of Eggs

Here five sets of rankings used to work out the coefficient of concordance for judging the significant difference in ranking by different retail outlet buyers. For checking this inference, the null hypothesis state there is no significance difference in ranking by the different retail outlet buyers as to price of eggs. For testing the worth of hypothesis, retail outlet wise the factors are scheduled as per the respondents' rankings. When

tied ranks occur, the average method of assigning ranks be adopted, that is, assign to each factor the average rank which the tied observations occupy. For this study, the factors noted under buyer's preference towards pricing of eggs in Table-1, for easy way to understand, the factors are numbered from 1 to 10 and provided in the following matrix.

Table 2: Analysis of Buyers Opinion towards Price of Eggs

K = 5	Factors										N = 10
	1	2	3	4	5	6	7	8	9	10	
Retail Shop	1.5	3.5	3.5	6	1.5	5	7	8	9	10	
Departmental Store	1	2	3.5	5.5	3.5	5.5	7	8	9	10	
Egg Shop	2.5	2.5	2.5	2.5	6	5	7	8.5	9	8.5	
Farm	5	2	1	3	7	4	6	9.5	9.5	8	
Intermediaries	2	2	2	1	5.5	5.5	7	8.5	8.5	10	
Sum of ranks (Rj)	12	12	12.5	18	23.5	25	34	42.5	45	46.5	**ΣRj = 271**
(Rj - R̄j)2	228.01	228.01	213.16	82.81	12.96	4.41	47.61	237.16	320.41	376.36	**s = 1750.9**

Source: Primary Data

$\bar{R}_j = \Sigma R_j / N = 271 / 10 = 27.1$

$s = 1750.9$

$= 1750.9 / 1/12(5^2) (10^3 - 10) = 1750.9 / 25/12(990)$

$= 1750.9 / 2062.5$

$= 0.8489$

As N is larger than 7, χ^2 worked out to determine the W's significance at 5% level.

$\chi^2 = k\,(N - 1).W$ with N – 1 degrees of freedom

$= 5\,(10 - 1)\,(0.8489)$

$= 38.2$

The table value of χ^2 at 5% level for N – 1 = 10 – 1 = 9 degrees of freedom is 16.919. Calculated value is 38.2, this is considerably higher than the table value. This does not support the null hypothesis of there is no significance difference in ranking by the different retail outlet buyers as to price of eggs and as such it is inferred that W is significant at 5% level.

6.3. Retailers Opinion towards Price of Eggs

Price of eggs is affected largely with the distributor's network. The retailers are asked to state which factors considered by them at the time of buying eggs for sales, it is presented in table-3.

Table 3: Retailers Opinion towards Price of Eggs

S. No	Factors	Retailers Opinion					Total
		Retail Shop	Departmental Store	Egg Shop	Farm	Intermediaries	
1.	Nutrition	13	16	12	7	12	60
2.	Cheap than meat	11	9	10	7	12	49
3.	Freshness	12	8	8	5	9	42
4.	Quality	10	7	7	5	7	36
5.	Continuous Supply	7	5	5	3	8	28
6.	Brand	7	4	4	3	6	24
7.	Date of production	7	3	3	5	5	23
8.	High profit margin	6	3	2	2	4	17
9.	Trade Discount	5	3	0	0	2	10
10	Cash Discount	2	1	1	0	1	5

Source: Primary Data

It is evident that in table-3, 60 out of 100 respondents expressed that they buy based on nutrition factor connected in price of eggs. As per retailer's point of view, inflation is major issues in the price of all eatables. Inflation reflects in the price of all the necessary goods as like consumable goods and FMCG goods, it leads to consume more egg, because it is cheap than meat and ranked as second position according to 49 respondents. Freshness is marked as third to 42 respondents. Quality is the important one to market the eggs, hence it playing forth rank as per 36 respondent's opinion. Continuous supply is one of the major roles in place factor (4 P's concept), hence it is marked in fifth position. Due to rapid advertisement in TV media and it is impact on young generation brand ranked in sixth position. Date of production is necessary for few emergency goods like medicines and foods oriented items, those are playing seventh rank. Similarly, high profit margin, trade discount, and cash discount as placed as eighth, ninth and tenth position respectively.

6.4. Analysis of Retailers Opinion towards Price of Eggs

In order to analyze the retailer's opinion towards price of eggs, the null hypothesis state there is no significance difference in ranking by the different retailers as to price of eggs.

Table 4: Analysis of Retailers Opinion towards Price of Eggs

K = 5	Factors										N = 10
	1	2	3	4	5	6	7	8	9	10	
Retail Shop	1	3	2	4	6	6	6	8	9	10	
Departmental Store	1	2	3	4	5	6	7.5	7.5	9	10	

Egg Shop	1	2	3	4	5	6	7	8.5	0	8.5	
Farm	2	1	4	4	6.5	6.5	4	8	0	0	
Intermediaries	1.5	1.5	3	5	4	6	7	8	9	10	
Sum of ranks (Rj)	7.5	9.5	15	21	26.5	30.5	31.5	40	27	38.5	**Σ Rj = 247**
(Rj - R̄j)2	295.84	231.04	94.09	13.69	3.24	33.64	46.24	234.09	5.29	190.44	**s = 1147.6**

Source: Primary Data

$\bar{R}_j = \Sigma R_j / N = 247 / 10 = 24.7$

$s = 1147.6$

$= 1147.6 / 1/12(5^2) (10^3 - 10) = 1147.6 / 25/12(990)$,
$= 1147.6 / 2062.5$

$= 0.5564$

As N is larger than 7, χ^2 worked out to determine the W's significance at 5% level.

$\chi^2 = k\,(N - 1).W$ with N – 1 degrees of freedom

$= 5\,(10 - 1)\,(0.5564) = 25.038$

The table value of χ^2 at 5% level for N – 1 = 10 – 1 = 9 degrees of freedom is 16.919. Calculated value is 25.038, this is considerably higher than the table value. This does not hold the null hypothesis of there is no significance difference in ranking by the different retailers as to price of eggs and as such it is inferred that W is significant at 5% level.

6.5. Analysis of Producers Opinion towards Price of Eggs

Egg producers are the suppliers of eggs, the pricing process is largely involved with the manufacturing cost and the retailers connected with them. Hence producer's opinion is obtained in this regard and the factors are presented in table-5.

Table 5: Analysis of Producers Opinion towards Price of Eggs

S. No	Factor	Producers Opinion					Total
		Retail Shop	Departmental Store	Egg Shop	Farm	Intermediaries	
1.	Production cost	10	7	12	15	9	56
2.	Competition	7	8	7	6	13	41
3.	Own make feed to reduce price	9	9	5	5	9	37
4.	Marketing through different product line	7	6	7	6	8	34
5.	Supply as per Newspaper price	5	6	8	10	4	33
6.	Fresh Supply for high price	5	6	5	2	9	27
7.	Offering through different egg line	12	8	1	0	4	25
8.	Separate price for retailers	8	3	0	1	2	14
9.	Neat exterior of egg	6	1	1	0	2	10
10	Minimum support price	3	1	1	1	2	8

Source: Primary Data

It is found in table-5 that production cost is the significant factor involved in price of eggs.

It is clear from the above table, 56 respondents are agreed that they are focusing on cost of production, and it is fetched 1st position. Subsequently, competition plays a crucial role in deciding the price of egg, 41 respondents preferred to decide price of egg based on competition. Similarly own make feed played effective role in reduction of egg, which is in third place. Marketing is very important and most valuable strategy to sell any goods in this modern society. In this research marketing through different product line is ranked in fourth position, expressed by 34 respondents. While price fixation of egg NECC is the deciding authority to regulate price, this information has been published by the media, hence media positioned fifth with 33 respondents. Fresh supply is important for FMCG foods like egg and others. This is playing sixth place with 27 respondents. Marketing through different egg line played seventh position with 25 respondents. Remaining three factors such as, separate price for retailers, neat exterior of egg, minimum support price are playing last three places with minimum respondents.

6.6. Analysis of Producers Opinion towards Price of Eggs

The possible factors drawn separately and opinion of the egg producers obtained. In order to test it worthiness, the null hypothesis states there is no significant difference in ranking by the egg producers as to price of eggs.

Table 6: Analysis of Producers Opinion towards Price of Eggs

K = 5	Factors										N = 10
	1	2	3	4	5	6	7	8	9	10	
Retail Shop	2	5.5	3.5	5.5	7.5	7.5	1	3.5	9	10	
Departmental Store	4	2	2	6	6	6	2	8	9.5	9.5	
Egg Shop	1	3.5	5	3.5	2	6	8	0	8	8	
Farm	1	4	4	4	2	6	0	7.5	0	7.5	
Intermediaries	2.5	1	4.5	4.5	6.5	2.5	6.5	9	9	9	
Sum of ranks (Rj)	10.5	16	19	23.5	24	28	17.5	28	35.5	44	**ΣRj = 202**
(Rj - R̄j)2	94.09	17.64	1.44	10.89	14.44	60.84	7.29	60.84	234.09	566.44	**s = 1068**

Source: Primary Data

$\bar{R}_j = \Sigma R_j / N = 202 / 10 = 20.2$

$s = 1068$

$= 1068 / 1/12 (5^2) (10^3 - 10) = 1068 / 25/12(990)$

$= 1068 / 2062.5$

$= 0.5178$

As N is larger than 7, χ^2 worked out to determine the W's significance at 5% level.

$\chi^2 = k (N - 1).W$ with N – 1 degrees of freedom

$= 5(10 - 1) (0.5178)$

$= 23.301$

The table value of χ^2 at 5% level for N – 1 = 10 – 1 = 9 degrees of freedom is 16.919. Calculated value is 23.301, this is considerably higher than the table value. Cleary this doesn't support the null hypothesis; there is no significant difference in ranking by the egg producers as to price of eggs and as such it is inferred that W is significant at 5% level.

7. CONCLUSION

Price charged on eggs is mainly concerned with the opinion of buyers, retailers and producers of eggs. If the price charged on eggs satisfies the buyers, they will buy more or vice versa. Hence buyers are considering several factors while buying eggs for consumption purposes, which mainly include nutrition, freshness, and appearance, date of production, cleanliness, size, health issues, physical fitness, child compulsion and substitute for meat. It is evident that in the analysis, there is no significant different in ranking by the egg buyers as to price of eggs. Similarly, retailers are buying eggs for resale, if the egg price is below to the substitute eatables, they will show some hesitation to buy the eggs. Hence, this makes an attempt by taking the factors like, nutrition, cheap than meat, freshness, quality, continuous supply, brand, date of production, high profit margin, trade discount, and cash discount. Results of the study indicate that there is no significant difference in ranking by the retailers as to price of eggs. Producers are expecting price based on inputs given to the manufacturing eggs in poultry farms. Often producers considers the factors like production cost, competition, own make feed to reduce price, marketing through different product line, supply as per newspaper price, fresh supply for high price, offering through different egg line, separate price for retailers, neat exterior of egg, and minimum support price. Findings of the study revealed that there is no significant difference in ranking by the egg producers as to price of eggs. Hence, this study suggests that buyers, retailers, and producers should consider all the factors while buying, retailing and producing eggs.

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