
Ordinal to Cardinal positional transformation of need hierarchy

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Abstract

The drive to get an action accomplished is motivation. The combination of needs, drives and outcomes gets the action to move and this consolidated action is called motivation. Motivation helps judge the attractiveness of a stimulus. The knowledge of the determinants of motivation is very important for the study of motivation. The study of motivation reaches its proper significance when the works of Abraham Maslow is studied. The theory of needs answers variety of questions when motivation is to be studied. The significance of need accomplishment according to the hierarchy ladder of need as propounded by Maslow when studied in connection with consumer's want for buying a house under the parameters of ordinal scale, receives a new paradigm when converted to the cardinal scale. The present research paper studies the consumer motivation factors according to the categories of consumers based on demography and converts the data from ordinal form to cardinal form. The conversion of data type helps the understanding and study of the data better. Where constituents of the respondent type unwrap the need hierarchy and carry the study of motivation to an elevated level.

Keywords: Motivation, Hierarchy, Ordinal Scale, Cardinal Scale, Demography.

INTRODUCTION:

A building for human habitation and in which people meet for a particular activity is called a house. A house may be a residential building ranging from a simple hut to a complex structure of wood, concrete and other material along with plumbing, electrical fittings, roofing, ventilation, heating, air conditioning system, doors, locks etc. for easy sustenance of the inhabitants. A house may be of different types and sizes with separate or integrated rooms for living, eating, recreation, cooking, sleeping, studying, washing and lavatory uses, depending on the requirement and demand. Houses may also be accompanied by a backyard or front yard for parking of personal vehicles. In agriculture-oriented societies, domestic animals also share a part of the house.

Houses can be of different types ranging from stand-alone single houses consisting of a small family with a few essential rooms to larger houses called townhouse or row houses that may have numerous family dwelling in the same structure.

Though it falls under the basic need of humans, the want and desire for a house ranges from the physiological need to the highest level of esteem and self-actualization need. Motivation stands to be the reason that makes one move towards the desired outcome. Motivation is thus an assembled form of drives, incentives and need. Need is the want associated with necessity which fills the gap of deficiency. This deficiency causes need, which in turn arouses motivation.

An American psychologist Abraham Maslow, in his paper Theory of Human Motivation (1943), categorized needs according to its order of importance in a human life. The hierarchy of needs according to Maslow is a five-tier model, where

- Physiological needs sit at the bottom of the pyramid. This is a very basic need considered vital for survival.
- Safety needs come thereafter when people want order and control of their lives with respect to finance, health, wellness and security.
- Love and Belonging needs stand above safety needs. The social need also drives human behavior.
- Esteem needs is the second last need to be fulfilled. This is a need where feeling of accomplishment, prestige motivates behavior of an individual.
- Self-Actualization need is the last need to be fulfilled. It is the desire to accomplish goals by developing talents and abilities.

The fulfillment of a need exhausts the productivity of the need and the drive towards it. Studying consumers and their deficiencies, which creates needs helps to understand the hierarchy level their need is situated in. Understanding consumer behavior makes the knowledge of needs and level it is in very significant, for better interpretation of consumer demand.

Consumer behavior on the other hand analyses and studies market to find the answers to when, why, how, and where people do or do not buy a product is thus studied under such

consumer behavior. Elements of psychology, sociology, socio-anthropology and economics find a beautiful blend here. Buyer decision making process is analyzed here.. Characteristics of individual consumers, such as demographics and behavioral variables are studied under this head.

Thurstone's method of pair comparisons can be considered a prototype of a normal distribution-based method for scaling-dominance matrices. Even though the theory behind this method is quite complex (Thurstone, 1927a), the algorithm itself is straightforward. For the basic Case V, the frequency dominance matrix is translated into proportions and interfaced with the standard scores. The scale is then obtained as a left-adjusted column marginal average of this standard score matrix (Thurstone, 1927b). The underlying rationale for the method and basis for the measurement of the "psychological scale separation between any two stimuli" derives from Thurstone's Law of comparative judgment (Thurstone, 1928).

The principal difficulty with this algorithm is its indeterminacy with respect to one-zero proportions, which return z values as plus or minus infinity, respectively. The inability of the pair comparisons algorithm to handle these cases imposes considerable limits on the applicability of the method.

Guilford (1954, p. 163) has recommended not using proportions more extreme than .977 or .023, and Edwards (1957, pp. 41–42) has suggested that "if the number of judges is large, say 200 or more, then we might use p_{ij} values of .99 and .01, but with less than 200 judges, it is probably better to disregard all comparative judgments for which p_{ij} is greater than .98 or less than .02." Since the omission of such extreme values leaves empty cells in the Z matrix, the averaging procedure for arriving at the scale values cannot be applied, and an elaborate procedure for the estimation of unknown parameters is usually employed (Edwards, 1957, pp. 42–46). An alternative solution of this problem was suggested by Krus and Kennedy (1977).

With later developments in psychometric theory, it has become possible to employ direct methods of scaling such as application of the Rasch model or unfolding models such as the Hyperbolic Cosine Model (HCM) (Andrich & Luo, 1993). The Rasch model has a close conceptual relationship to Thurstone's law of comparative judgment (Andrich, 1978), the principal difference being that it directly incorporates a person parameter. Also, the Rasch model takes the form of a logistic function rather than a cumulative normal function.

Louis L. Thurstone was a pioneer in psychometric theory and measurement of attitudes, interests, and abilities. Among his many contributions was a systematic analysis of the process of comparative judgment (Thurstone, 1927). He considered the case of asking subjects to successively compare pairs of objects. If the same subject does this repeatedly, or if subjects act as random replicates of each other, their judgments can be thought of as sampled from a normal distribution of underlying (latent) scale scores for each object,

Thurstone proposed that the comparison between the value of two objects could be represented as representing the differences of the average value for each object compared to the standard deviation of the differences between objects. The basic model is that each item has a normal distribution of response strength and that choice represents the stronger of the two response strengths. A justification for the normality assumption is that each decision represents the sum of many independent inputs and thus, through the central limit theorem, is normally distributed.

Thurstone considered five different sets of assumptions about the equality and independence of the variances for each item (Thurston, 1927). Torgerson expanded this analysis slightly by considering three classes of data collection (with individuals, between individuals and mixes of within and between) crossed with three sets of assumptions (equal covariance of decision process, equal correlations and small differences in variance, equal variances).

The data may be either a square matrix of data-frame of preferences (as proportions with the probability of the column variable being chosen over the row variable) or a matrix or data-frame of rank orders (1 being preferred to 2, etc.)

The second example creates 100 random permutations of ranks 1-5. These data are then converted to a matrix of choices and then scaled. The goodness of fit is practically perfect, even though the data are meaningless. This suggests a better goodness of fit test should be applied.

Summary of the paper:

This paper comprises of six sections. Following this Introduction is a brief synopsis of literature review on the impact of motivation levels on consumer behavior. Followed by the literature review is the research methodology describing the objective of carrying out the work, the design of research and jurisdiction of the work, sources of data, different tools to be used for the analysis of the data. After the research methodology, a detailed description of the data analysis explained through tables and figures. This is followed by findings from the data and conclusion drawn. The next two sections are references of the data used for the study and the appendix thereof.

Literature Review

J.B Coheni and Charles Areni (1991) in their paper titled Affect and consumer behavior concluded that psychological functioning and behavior have a role to play in the cognitive mechanisms of a consumer (Hudson, S.,1999). In his paper Consumer behavior related to tourism, studied motivational factors that involve tourism. Need hierarchy theory of Maslow is used to explain the different motivational aspects considering the needs of the tourist consumers (McLeod, S.,2007). In his paper Maslow's hierarchy of needs explains the concept of needs being aroused due to deficiency and unmet deprivation of wants which helps the building of motivation (Lee, J. M., & Hanna, S.

D.,2015). In the paper Savings goals and saving behavior from a perspective of Maslow's hierarchy of needs studied consumer finance datasets to understand the hierarchical need structure of consumers according to their life cycle stages and career goals. Seeley, E. (1992). In the paper Human needs and consumer economics: the implications of Maslow's theory of motivation for consumer expenditure patterns, analyses the use of Maslow theory of needs for consumer economic analysis and consumption pattern. Oleson, M. (2004) in the paper Exploring the relationship between money attitudes and Maslow's hierarchy of needs explains the relationship between attitude towards money and need or basic need fulfillment, and concludes that there is an existing form of relationship between need and want of money(Barber, N., Almanza, B. A., & Donovan, J. R.,2006). In their paper Motivational factors of gender, income and age on selecting a bottle of wine analyses the characteristics of consumers on the basis of gender, income, location and age while buying wine bottles and studies the pattern of buying behavior, too accelerating the consumer research process. Thus, studies in the past did find a definite relation between consumer needs and consumer buying behavior, but no studies did try to convert the rules of definitions under ordinal scale into cardinal one. The present paper is a novel attempt to do the same, for better understanding and fulfillment of consumers and their need pattern.

Research Methodology

- **Objectives of the Work**

(1) To study the factors that help consumer motivation across different categories of age groups, gender, qualification, location etc.

(2) Conversion of Ordinal to Cardinal Score for the five types of motivation towards honey as per Maslow's hierarchy of needs across the categories of age groups, gender, qualification, location.

- **The Design of the Research and Jurisdiction of Work**

Usually a research has three variants, Exploratory, Descriptive and Causal. The causal design shows the association between the variables, the dependent and independent relationship in terms of cause and effect. This study therefore gives a causal design, having its jurisdictional boundaries within West Bengal.

- **Source of Data**

The source of data has been primary and secondary. The secondary data has been collected from List of Apartment Owners' Association, Registered under The West Bengal Apartment Ownership Act 1972 in the year 2016. The primary data was collected through personal interview using questionnaire. A sample was taken using random sampling method. 126 respondents had been considered from residents in apartments in Kolkata. The list was drawn from List of Apartment Owners' Association, Registered under The West Bengal Apartment Ownership Act 1972. Random number table was used

to identify these apartments.. Tools used for collecting data included structured questionnaire where questions were all close-ended. Questions on Consumer Motivation had the frame work of Maslow's hierarchy of need. The scale used to understand the data was ordinal scale, where rank 1 was the most preferred and rank 5 was the least preferred.

- **Tool used for Analysis**

Descriptive Statistics worked out as an analysis of the responses and it is in given in terms of percentages. The mean and standard deviation has been taken into consideration for making inferences. The ordinal data has been transformed into cardinal type using Thurstone Scale V.

Analysis of Data

Analyzing of the data included the use of descriptive statistics, where the calculation of mean, standard deviation was performed. The ordinal scale transformation to cardinal scale has been done using Thurstone Scale V. The analysis is based on Consumer Motivation provided in categories as shown in Table 1. It can be observed that in category of age group less than or equal to 25 years safety need is ranked first followed by basic need, self-actualization need, social need and esteem need respectively. However, in case of age group more than 25 years the ranking changes in diminishing order as stated. Safety need is followed by basic, social; self-actualization and esteem need respectively.

TABLE 1

Thurstone scale Case V analysis on various age groups of consumers

| Case no | Group (≤25yrs:gr1) | Motivation rank (1-most preferred,5-least preferred) | | | | |
|---------|-----------------------|--|-------------|-------------|-------------|---------------|
| | | Basic need | Safety need | Social need | Esteem need | Self-act need |
| | | m1 | m2 | m3 | m4 | m5 |
| 1 | 1 | 3 | 5 | 2 | 1 | 4 |
| 2 | 1 | 3 | 5 | 2 | 1 | 4 |
| 4 | 1 | 4 | 5 | 3 | 1 | 2 |
| 5 | 1 | 4 | 5 | 2 | 1 | 3 |
| 6 | 1 | 4 | 5 | 1 | 3 | 2 |
| 7 | 1 | 5 | 3 | 4 | 2 | 1 |
| 9 | 1 | 1 | 2 | 5 | 4 | 3 |
| 10 | 1 | 3 | 1 | 4 | 5 | 2 |
| 11 | 1 | 1 | 4 | 3 | 5 | 2 |
| 12 | 1 | 3 | 1 | 2 | 5 | 4 |
| 13 | 1 | 2 | 1 | 3 | 4 | 5 |
| 16 | 1 | 2 | 1 | 3 | 4 | 5 |

| | | | | | | |
|-----|-------|---|---|---|---|---|
| 19 | 1 | 3 | 1 | 2 | 5 | 4 |
| 22 | 1 | 2 | 1 | 3 | 5 | 4 |
| 33 | 1 | 2 | 1 | 5 | 4 | 3 |
| 38 | 1 | 2 | 1 | 5 | 4 | 3 |
| 41 | 1 | 2 | 1 | 4 | 5 | 3 |
| 46 | 1 | 3 | 1 | 5 | 4 | 2 |
| 51 | 1 | 2 | 1 | 3 | 5 | 4 |
| 52 | 1 | 3 | 1 | 4 | 5 | 2 |
| 55 | 1 | 2 | 1 | 3 | 5 | 4 |
| 56 | 1 | 2 | 1 | 3 | 4 | 5 |
| 59 | 1 | 2 | 1 | 4 | 5 | 3 |
| 60 | 1 | 3 | 1 | 2 | 5 | 4 |
| 62 | 1 | 2 | 1 | 3 | 5 | 4 |
| 67 | 1 | 2 | 1 | 4 | 5 | 3 |
| 75 | 1 | 2 | 1 | 4 | 5 | 3 |
| 76 | 1 | 2 | 1 | 3 | 5 | 4 |
| 81 | 1 | 3 | 1 | 4 | 5 | 2 |
| 84 | 1 | 3 | 1 | 4 | 5 | 2 |
| 86 | 1 | 2 | 1 | 3 | 5 | 4 |
| 98 | 1 | 2 | 1 | 3 | 4 | 5 |
| 101 | 1 | 3 | 1 | 2 | 5 | 4 |
| 102 | 1 | 5 | 4 | 2 | 1 | 3 |
| 103 | 1 | 4 | 5 | 1 | 3 | 2 |
| 104 | 1 | 4 | 5 | 1 | 2 | 3 |
| 106 | 1 | 2 | 5 | 3 | 1 | 4 |
| 107 | 1 | 3 | 5 | 2 | 4 | 1 |
| 109 | 1 | 4 | 2 | 5 | 1 | 3 |
| 110 | 1 | 3 | 1 | 5 | 4 | 2 |
| 111 | 1 | 2 | 5 | 4 | 3 | 1 |
| 114 | 1 | 4 | 3 | 2 | 5 | 1 |
| 115 | 1 | 5 | 3 | 4 | 1 | 2 |
| 116 | 1 | 1 | 3 | 2 | 4 | 5 |
| 119 | 1 | 4 | 2 | 5 | 3 | 1 |
| 120 | 1 | 3 | 1 | 5 | 2 | 4 |
| 122 | 1 | 1 | 2 | 4 | 3 | 5 |
| 47 | cases | | | | | |

| MOTIVE | THURSTONE SCALE V | | | | |
|--|---------------------|----------------------|----------------------|----------------------|------------------------|
| | PREFERRED MOTIVE | | | | |
| | M1 | M2 | M3 | M4 | M5 |
| M1 | 0.5 | 0.70 | 0.34 | 0.30 | 0.40 |
| M2 | 0.30 | 0.5 | 0.30 | 0.30 | 0.34 |
| M3 | 0.66 | 0.70 | 0.5 | 0.38 | 0.49 |
| M4 | 0.70 | 0.70 | 0.62 | 0.5 | 0.66 |
| M5 | 0.60 | 0.66 | 0.51 | 0.34 | 0.50 |
| ROW MOTIVE PREFERRED TO COLUMN MOTIVE | MOTIVE | | | | |
| | Basic need M1 | Safety need M2 | Social need M3 | Esteem need M4 | Self-act need M5 |
| M1 | 0 | 0.53 | -0.41 | -0.53 | -0.24 |
| M2 | -0.53 | 0 | -0.53 | -0.53 | -0.41 |
| M3 | 0.41 | 0.53 | 0 | -0.30 | -0.03 |
| M4 | 0.53 | 0.53 | 0.30 | 0 | 0.41 |
| M5 | 0.24 | 0.41 | 0.03 | -0.41 | 0 |
| TOTAL | 0.65 | 2.00 | -0.62 | -1.77 | -0.27 |
| MEAN (\bar{z}) | 0.13 | 0.40 | -0.12 | -0.35 | -0.05 |
| R* | 0.48 | 1 | 0.23 | 0.00 | 0.30 |

| | | | | |
|-------|--------|--------|--------|----------|
| Basic | safety | social | esteem | self-act |
| Need | need | need | need | need |
| m1 | m2 | m3 | m4 | m5 |

Table 1 shows results of Consumer Motivation based on age wherein R* values obtained from Thurstone Scale V Analysis is compiled based on Consumer Motivation considering categories as shown in Table 1. It can be observed that in category of age group less than or equal to 25 years safety need is ranked first followed by basic need, self-actualization need, social need and esteem need respectively. However, in case of age group more than 25 years the ranking changes in diminishing order as stated. Safety need is followed by basic, social; self-actualization and esteem need respectively.

Figure – 1
*Scatter diagram depicting Z values v/s Proportions
 for age group less than or equal to 25 years*

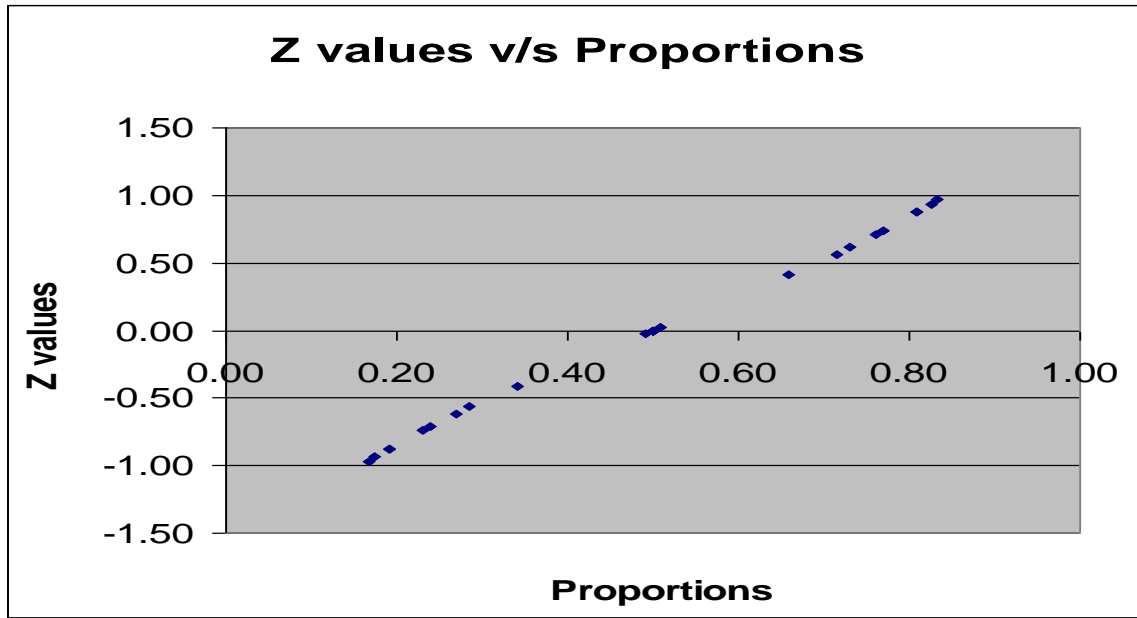


Figure 1 represents a scatter plot where Z values are plotted against the proportions as per the Thurstone Scale Case V

TABLE 2
Showing result of Consumer Motivation
(On basis of age)

| Segments | Factors | | | | | No of cases |
|--------------------------------|-----------------------|------------------------|------------------------|------------------------|-------------------------------------|-------------|
| | m1 (basic need) | m2 (safety need) | m3 (social need) | m4 (esteem need) | m5(self- actualizatio n need) | |
| GR1(Age<=25 yrs) | 0.48 | 1 | 0.23 | 0 | 0.30 | 47 |
| | Rank II | Rank I | Rank IV | Rank V | Rank III | |
| GR2(Age>25 yrs) | 1.14 | 2 | 0.46 | 0 | 0.56 | 79 |
| | Rank II | Rank I | Rank III | Rank V | Rank IV | |

(R values obtained from Thurstone Scale V analysis for different segments and factors referred as per Appendix 1), Ranking varies from Rank I (Most Preferred) to Rank V (Least Preferred)*

Table 2 shows results of Consumer Motivation based on qualification wherein R* values obtained from Thurstone Scale V Analysis is compiled based on Consumer Motivation

considering categories as shown in Table 2. It can be observed that in more qualified category safety need is ranked first followed by basic need, self-actualization need, social need and esteem need respectively. However in case of less qualified group the ranking changes in diminishing order as stated. Safety need is followed by basic, social, self-actualization and esteem needs respectively.

TABLE 3
Showing result of Consumer Motivation
(On the basis of qualification)

| Segments | Factors | | | | | No of cases |
|---------------------------|--------------------------------|---------------------------------|---------------------------------|---------------------------------|---|-------------|
| | m1 (basic need) | m2 (safety need) | m3 (social need) | m4 (esteem need) | m5(self- actualization need) | |
| More Qualified | 0.37 | 1 | 0.1 | 0 | 0.33 | 61 |
| | Rank II | Rank I | Rank IV | Rank V | RankIII | |
| Less Qualified | 1.78 | 3 | 0.77 | 0 | 0.71 | 65 |
| | Rank II | Rank I | Rank III | Rank V | Rank IV | |

(R values obtained from Thurstone Scale V analysis for different segments and factors referred as per Appendix 2), Ranking varies from Rank I (Most Preferred) to Rank V (Least Preferred)*

Table 3 shows results of Consumer Motivation based on gender wherein R* values obtained from Thurstone Scale V Analysis is compiled based on Consumer Motivation considering categories as shown in Table 3. It can be observed that in male category safety need is ranked first followed by basic need, self-actualization need, social need and esteem need respectively. While one considers female category ranking follows a pattern wherein safety need is followed by basic, social, self-actualization and esteem needs respectively.

TABLE 4
Showing result of Consumer Motivation
(On the basis of gender)

| Segments | Factors | | | | | No of cases |
|-------------|--------------------------------|---------------------------------|---------------------------------|---------------------------------|---|-------------|
| | m1 (basic need) | m2 (safety need) | m3 (social need) | m4 (esteem need) | m5(self- actualization need) | |
| Male | 0.79 | 1 | 0.35 | 0 | 0.52 | 69 |
| | Rank II | Rank I | Rank IV | Rank V | Rank III | |

| | | | | | | |
|---------------|----------------|---------------|-----------------|---------------|----------------|----|
| Female | 0.97 | 1 | 0.39 | 0 | 0.39 | 57 |
| | Rank II | Rank I | Rank III | Rank V | Rank IV | |

(R* values obtained from Thurstone Scale V analysis for different segments and factors referred as per Appendix 3), Ranking varies from Rank I (Most Preferred) to Rank V (Least Preferred)

Table 4 shows results of Consumer Motivation based on location wherein R* values obtained from Thurstone Scale V Analysis is compiled based on Consumer Motivation considering categories as shown in Table 4. It can be observed that in urban category safety need is ranked first, followed by basic need, self-actualization need, social need and esteem need respectively. Referring to the rural category the ranking changes in diminishing order as stated. Safety need gets the first rank followed by basic, social, self-actualization and esteem needs respectively.

TABLE 5
Showing result of Consumer Motivation
(On the basis of location)

| Segments | Factors | | | | | No of cases |
|--------------|--------------------------------|---------------------------------|---------------------------------|---------------------------------|---|-------------|
| | m1 (basic need) | m2 (safety need) | m3 (social need) | m4 (esteem need) | m5(self- actualization need) | |
| Urban | 0.09 | 0.34 | 0 | 0.07 | 0.22 | 46 |
| | Rank II | Rank I | Rank IV | Rank V | Rank III | |
| Rural | 1.76 | 2 | 0.79 | 0 | 0.81 | 80 |
| | Rank II | Rank I | Rank III | Rank V | Rank IV | |

(R* values obtained from Thurstone Scale V analysis for different segments and factors referred as per Appendix 4), Ranking varies from Rank I (Most Preferred) to Rank V (Least Preferred)

Table 5 shows results of Consumer Motivation based on age wherein R* values obtained from Thurstone Scale V Analysis is compiled based on Consumer Motivation considering all consumers. It can be observed that in all consumers safety need is ranked first followed by basic need, self-actualization need, social need and esteem need respectively.

TABLE 6
Showing result of overall Consumer Motivation

| Segments | Factors | | | | | No of cases |
|----------------|--------------------------------|---------------------------------|---------------------------------|---------------------------------|---|-------------|
| | m1 (basic need) | m2 (safety need) | m3 (social need) | m4 (esteem need) | m5(self- actualization need) | |
| Overall | 0.86 | 1 | 0.36 | 0 | 0.45 | 126 |
| | Rank II | Rank I | Rank IV | Rank V | Rank III | |

(R values obtained from Thurstone Scale V analysis for different segments and factors referred as per Appendix 5), Ranking varies from Rank I (Most Preferred) to Rank V (Least Preferred)*

Table 6 shows the overall ranks of the five types of need as available from Thurstone Scale Case V

Findings and Conclusion:

The study of consumer motivation has been successfully done in variants of age, qualification, gender and location. The study provided that safety need is followed by basic need, self-actualization need, social need and esteem needs in descending order in groups of people whose age lies below 25 years. Again, for the consumers whose age is above 25 years has safety need first, followed by basic need, social need, self-actualization need and esteem need respectively. Therefore, it is found that consumer need changes according to age and life cycle what constitutes need in the early years is no longer yearned for later. Consumption is also predominated by family life cycle, stages. Like the family founding one has a completely different consumption pattern than the child bearing or the child launching one.

Marketers often select a definite target group to market the products, such groups might not follow any pattern of the family life cycle stages such pattern at times go beyond the traditional stages and may incorporate divorced households, gay households, co habitant households.

Again, intellect and education change the consumption pattern of consumers, where need hierarchy preferences also settle with a different equation. The qualified consumers place safety need at the top of the ladder followed with basic needs, self-actualization needs, social needs and esteem needs. Whereas, the less educated lot has the same pyramid formed in an upside-down manner, where safety needs sit at the bottom and top of the pyramid has esteem needs.

Gender also plays its part to dominate the need hierarchy, where it is found that male consumers place safety need at the bottom followed by basic need, self-actualization need, social need and esteem need. And the female counterparts exhibit almost the same

setting except the social and self-actualization need, where social need ranks third and self-actualization stands fourth in the hierarchy of need for women.

Again, urban and rural consumers reflect the location category of the consumers. Where urban consumers have the safety need at the bottom followed by basic need, self-actualization need, social and esteem need, rural consumers have safety need, followed by basic need, social need, self-actualization need and esteem need respectively.

The overall understanding of consumer motivation concludes that safety need receives the most important position in the need hierarchy followed by basic need, self-actualization need, social need and self-esteem need. Thus, the hierarchy of need theory as propounded by Maslow is differed in places of self-actualization which in the theory stands to be in the fifth position and our study finds it in the third position, again social need and esteem need also finds different settings in our study, concluding that needs and its importance changes with age, gender, location etc. The study provides a broad scope of further research, where consumer preferences could be understood on the basis of other determining demographical factors.

The work of marketing is benefited when consumer research is done by clearing ambiguity, and vague understanding of consumer knowledge. Understanding consumers and their behavioral pattern helps the understanding of their buying behavior too, which helps fulfill the primary task of a marketer which is to satiate the needs and wants of customers.

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Appendix**LIST OF APARTMENT OWNERS ASSOCIATION REGISTERED UNDER THE WEST BENGAL APARTMENT OWNERSHIP ACT, 1972 IN THE YEAR OF 2016**

| Sl No. | Name and Address of the Apartment Owner's Association | Registered Certificate Number |
|--------|--|-------------------------------|
| 1 | Eden Tolly Green wood Apartment Owner's Association P.S. Thakurpukur Dist.: 24 Pgs (5) | 01A of 2016 |
| 2 | Eden Sterling Apartment Owners' Association 1848, Nayabad Purba Jadavpur | 02A of 2016 |
| 3 | Ambika Garden Apartment Owners' Association 23, Raja Santosh Road, Kal-27 | 03A of 2016 |
| 4 | Rishi Tech Park Apartment Owner's Association Premises No. 02-360, St. No. 360, AA-ID, Rajarhat New Town , Kolkata - 700156 | 04A of 2016 |
| 5 | Dhanshree Vihar Apartment Owner's Association Premises No. 60/1A, Hazra Road, P.S. Gariahat (Ballygunge) Kolkata - 700019 | 05 A of 2016 |
| 6 | Kailash Apartment Owners' Association, 284/2A, N.S.C. Bose Road, Kolkata - 700047 | 06 A of 2016 |
| 7 | Heritage Mayflair Owners' Association Premises No. 3, Mayfair Road Kolkata - 19 | 07 A of 2016 |
| 8 | South Dum Dum Enclave Residents Association, R.N. Guha Road, P.S. Dum Dum | 08 A of 2016 |
| 9 | AJC TOWER OWNER'S ASSOCIATION, Premises No. 204, A.J.C. Bose Road, Kolkata - 700017 | 09 A of 2016 |
| 10 | Skyline Residency Owners' Association at 476, Mahamayapur Road West, P.S. Sonar Pur, under Rajpur Sonarpur Municipality. | 10 A of 2016 |
| 11 | Eden Brookside Apartment Owners' Association 118, M.G. Road, P.S. Thakur Pukur , Kolkata -104 | 11 A of 2016 |
| 12 | Ujaas Apartment Owners' Association, Premises No. 69, S.K.D. Road P.S. Lake Town, Dist 24 Pgs. (North) Kolkata - 700048 | 12 A of 2016 |
| 13 | Angana Apartment Owners Association At, 490, M.B. Road Birati Kolkata - 700051 | 13 A of 2016 |
| 14 | NBCC Vibgyor Tower Owners Association, at New Town Rajarhat, Kal-56 | 14 A of 2016 |
| 15 | Sonar Bangla Flat Owners' Association, Mouza Arah, P.S. Kaksa, Malandighi Gram Panchayet, Dist. Burdwan | 15 A of 2016 |
| 16 | Kailash Apartment Owners' Association 23, Daws Temple Road, P.S. Bally Howrah. | 16 A of 2016 |

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| Sl No. | Name and Address of the Apartment Owner's Association | Certificate Number |
|--------|---|--------------------|
| 17 | Mallika Malancha Housing Complex Apartment Owners' Association , at A.A. II B, New Town, Rajarhat | 17 A of 2016 |
| 18 | Golf Green Phase - IV B, Apartment Owner's Association , at Golf Green Urban Complex, Jadovpur, Kol-95 | 18 A of 2016 |
| 19 | Salboni Apartment Owners Association at 64/ 98 C Khudiram Bose Sarani, Kal-37 | 19 A of 2016 |
| 20 | Merlin Warden Lakeview Apartment Owners' Association at 104, Bidhannagar Road, Kal - 700067 | 20 A of 2016 |
| 21 | Dream Land Enclave Apartment Owners Association Kaikhali, Airport, Dum Dum. | 21A of 2016 |
| 22 | Mamomaya Apartment Owners Association 139, Bhattacharjee Para Road, P.S- Thakurpukur Kol-63 | 22A of 2016 |
| 23 | Orion Exotica Apartment Owner's Association at 167 and 168 B.B. Chatterjee Road, Kol-42 | 23A of 2016 |
| 24 | Shikharkunj Apartment Owners' Association at 3, Canel East Road, Kol-67 | 24A of 2016 |
| 25 | Merlin Regent Apartment Owners Association at 9, Shambhu Babu Lane, Kol-14 | 25A of 2016 |
| 26 | Mahendra Enclave Apartment Owners' Association at AA-32, Prafulla Kanan, Kol-101 | 26A of 2016 |
| 27 | Green Wood Element Apartment Owners' Association At AA-2D/Block-6, Rajarhat New Town | 27A of 2016 |
| 28 | One Sunny Park Apartment Owners Association At 1, Sunny Park, Kol-19 | 28A of 2016 |
| 29 | Merlin Trinoyoni H.I.G. Apartment Owners' Association at 222 Bag Pota Road, Sarsuna, Kol-61 | 29A of 2016 |
| 30 | New Shrachi Garden Apartment Owners' Association at 251/1 Nagendra Nath Road, Kol-28 | 30A of 2016 |
| 31 | Rawden Heights Apartment Owners' Association at 5 Sarojini Naidu Sarani, P.S, Shakepear Sarani. | 31A of 2016 |
| 32 | Omm Niketan Apartment Owners' Association at 30/2.M.L.B Road, Bally Hawrah | 32A of 2016 |
| 33 | Merlin Cambridge Apartment Owners' Association at 24 Prince Anwar Shah Road, Kol-33 | 33A of 2016 |
| 34 | Ballygunge Residency Owners' Association at 15 C, Anil Moitra Road, Kolkata - 19 | 34 A of 2016 |
| 35 | Wood Street Apartment Owners' Association at 4B, Wood Street, Kol-16 | 35 A of 2016 |


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| Sl No. | Name and Address of the Apartment Owner's Association | Certificate Number |
|--------|---|--------------------|
| 36 | Sunrise Symphony Apartment Owners' Association at Premises No. 05-06 24, AA-IIB/ Block 2 New Town, Rajarhat | 36 A of 2016 |
| 37 | Windsor Greens Apartment Owners' Association at 26 & 957 Mahamaya Tala Road, Garia Kol-84 | 37 A of 2016 |
| 38 | Isha Greens Apartment Owners Association at 184 A Raja Rammohan Road, Kol- 41 | 38 A of 2016 |
| 39 | Neelanjan Apartment Owners Association 18/2, Gariahat Road, Kol-700019 | 39 A of 2016 |
| 40 | Club Town Residency Apartment Owners Association at 57/3 M.M. Feder Road, Belghoria Kol-700056 | 40 A of 2016 |
| 41 | Tolly Twin Pabitra Garden Apartment Owners' Association, 327, Mahatma Gandhi Road, Kol-700014 | 41 A of 2016 |
| 42 | Ganapati Complex Apartment Owners' Association at Sanghat Bazar Midnapur | 42 A of 2016 |
| 43 | Lake Wood Apartment Owners Association at 106 D, Narkeldanga North Road, Kol-11 | 43 A of 2016 |
| 44 | Regent View Apartment Owners' Association at 22/1 Beer Para Lane, Chitpur , Kol-30 | 44 A of 2016 |
| 45 | Fortune City Apartment Owners' Association at 155, old Jassore Road, Madhyamgram , Kol-132 | 45 A of 2016 |
| 46 | Eden Tolly Lake Side Apartment Owners' Associaton at Joka 1 & 2 G.P. Horidevpur 24 Pgs (S) | 46 A of 2016 |

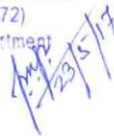

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LIST OF APARTMENT OWNERS ASSOCIATION REGISTERED UNDER THE WEST BENGAL APARTMENT OWNERSHIP ACT, 1972 IN THE YEAR OF 2017 (UP TO DATE)

| Sl No. | Name and Address of the Apartment Owner's Association | Certificate Number |
|--------|---|--------------------|
| 1 | Merlin Vasundhara Apartment Owners' Association at 380 H, Daskshin Behala Road, Kol-700061 | 01 A of 2017 |
| 2 | A.D. Tower Owners Association at 69, Nirmal Sengupta Sarani, Dum Dum Kol-79 | 02 A of 2017 |
| 3 | Sri Sri Niwas Apartment Owners' Association at 16, K.K. Majumder Road, Kol-75 | 03 A of 2017 |
| 4 | Merlin Crest Apartment Owners' Association at 7, Diamond Harbour Road, Kol-700008 | 04 A of 2017 |
| 5 | Amrita Garden Apartment Owners' Association at 148, N.S. Road, Kodalia Kol-146 | 05 A of 2017 |
| 6 | Subarna Bhoomi H.I.G. Apartment Owners' Association at 36, Gorakshabasi Road, Dum Dum | 06 A of 2017 |
| 7 | Rajat Enclave Apartment Owners' Association at 58, Manik Bandopadhyay Sarani, Tollygunj, Kol-4 | 07 A of 2017 |
| 8 | Moore Heights Apartment Owners' Association at 93, Manik Bandopadhyay Sarani, P.S. Regent Park, Kal-700040. | 08 A of 2017 |
| 9 | Shrachi Dakshin Apartment Owners' Association at 129, Nayabad, Panchasayar P.S. Purba Jadavpur, Kol-94 | 09 A of 2017 |
| 10 | Green Field Residency Apartment Owners' Association at City Centre, Durgapur, Burdwan, Pin - 713216 | 10 A of 2017 |
| 11 | Aditya Elegance Apartment Owners' Association at 5 K.B. Sarani Mall Road, Dumdum, Kol-700080 | 11 A of 2017 |
| 12 | Merlin Trinoyoni LIG Apartment Owners Association at 221 Bagpota Road, Sarsuna, Kol-61 | 12 A of 2017 |
| 13 | Nishita Complex Apartment Owners' Association at P.O. +P.S. Domjur, Makardah -I, Howrah | 13 A of 2017 |
| 14 | Animikha Apartment Owners Association at BI-AG, A.A-1A, New Town, 24 Pgs (N), Kol - 700156 | 14 A of 2017 |
| 15 | Unicorn Apartment Owners Association at 5, Haji Mohsin Road, Tollygunj, Kol-700026 | 15 A of 2017 |
| 16 | Prathama Dwitiya Apartment Owners' Association at Uttara Housing Complex of BDCL at Premises No. II D/3, A.A. IID, New Town, Rajarhat, Kol - 157 | 16 A of 2017 |
| 17 | Chatuskon Abasan Apartment Owners' Association at P-17/A, K.I.T. Scheme 118, Golf Garden, P.S. Jadavpur, Kol-700033 | 17 A of 2017 |


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BENGAL APARTMENT OWNERSHIP ACT, 1972 IN THE YEAR OF 2017
(UP TO DATE)**

| Sl No. | Name and Address of the Apartment Owner's Association | Certificate Number |
|--------|---|--------------------|
| 18 | Green View Apartment Owners Association , at 27/1, B.T. Road, Kamarhati, Belghoria, Kol-58 | 18 A of 2017 |
| 19 | Ashoka Heights Apartment Owners Association at 264, N.S.C. Bose Road, Kol-47 | 19 A of 2017 |
| 20 | Rail - Vihar Apartment Owners Association at Premises No. 02-0064, Action Area -1, New Town, Kol-700156 | 20 A of 2017 |
| 21 | Atma - Chetna Apartment Owners Association at 58 A, N.C. Chowdhury Road, Kasba | 21 A of 2017 |
| 22 | Skyline Apartment Owners Association at 79, K.D. Mukherjee Road, Kol-60 | 22 A of 2017 |
| 23 | Jal Vayu Towers New Town Apartment Owners' Association at Plot No. DJ - 06, A.A. - 1 (D), New Town, P.S KLC, Kol-160 | 23 A of 2017 |
| 24 | Rashdip Apartment Owners' Association at 53-A, Dr Sureshch Banerjee Road, Beliaghata | 24 A of 2017 |
| 25 | Rajwadi Apartment Owners' Association at 19 & 21 Garcha 1st lane, Kol-19 | 25 A of 2017 |
| 26 | Diamond City West Apartment Owner's Association at 18, Ho-chi-minh-sarani, Kol-61. | 26 A of 2017 |
| 27 | Sherwood Estate Apartment Owners' Association at 169, N.S.C Bose Road, Narendrapur, P.S-Sonarapur, | 27 A of 2017 |
| 28 | S.P.Nest Apartment Owners' Association at 196, New Basudevapur Main Road, P.O Belghoria, Kol-56 | 28 A of 2017 |
| 29 | Raj kiran Apartment Owner's Association at 19A, Alipore Road, P.O + P.S- Alipore, Kol-27 | 29 A of 2017 |
| 30 | Surya Residency Apartment Owners' Association at 115A/1 & 115A/2, N.S.C Bose Road. P.S Regent Park, Kol-40 | 30 A of 2017 |
| 31 | Indralok Apartment Owners Association at 69, Banerjee Para Road PaschimPutiary, Kol-41 | 31 A of 2017 |
| 32 | Srikrishna Apartments Owners Association at 235/1, 235/2, 235/3 & 235/4, N.S.C Bose Road, P.S-Jadvpur, Now Netaji Nagar, Kol-40 | 32 A of 2017 |
| 33 | Merlin Uttara Apartment Owners' Association at 94/6K & 94/7K G.T. Road, Uttarpura, Katrurg Hooghly - 712233 | 33 A of 2017 |
| 34 | Merlin Ekta Apartment Owners' Association at 36, Abhedananda Road, Kol-70006 | 34 A of 2017 |

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| Sl No. | Name and Address of the Apartment Owner's Association | Certificate Number |
|--------|---|--------------------|
| 35 | The Meridan Apartment Owners' Association at 17/224, Kazi Narjul Islam Sarani, (V.I.P. Road), Raghunathpur, P.O. Deshbandu Nagar, P.S. Baguiati | 35 A of 2017 |
| 36 | Haute Street Apartment Owners' Association at 86 A, Topsia Road South Kolkata - 700046 | 36 A of 2017 |
| 37 | KusumKutir Apartment Owners' Association at Premises No. 19, Ram Ratan Bose Lane, P.S. Ultadanga, Kol-700004 | 37 A of 2017 |
| 38 | 11 BPR Apartment Owners' Association at Premises No. 11 Ballygunge Park Road, P.S. Ballygunge, Dist- 24 Pgs. (S), Kolkata - 700019 | 38 A of 2017 |
| 39 | Uma Apartment Owners' Association at premises No. 67 A/1, Khudiran Bose Sarani, P.S. Ultadanga, Kolkata -700037 | 39 A of 2017 |
| 40 | Ujjawala Apartment Owners' Association at Plot No. A.A.-II D/4, A.A.-II D, New Town, Rajarhat, Kol-157, P.S. Rajarhat. | 40 A of 2017 |


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