

# Multi Criteria Decision Making based Approach to Assist Marketers for Targeting BoPs Regarding Packaging Influenced Purchase during Covid-19

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**Abstract:** This study has a novel approach to capture the attitude of Bottom of the Pyramid (BoP) consumers towards Packaging Influenced Purchase (PIP) during the Covid-19 crisis. Over the years, BoPs consumers have established themselves as an emerging market with ample growth and opportunities. The authors suggested a Multiple-Criteria Decision-Making (MCDM) based framework to assist marketers in targeting both urban and rural BoP consumers regarding PIP. Packaging elements and influence of family, extended family, peers have been included in the framework for gaining in-depth understanding. With a sample size of 100 from West Bengal, this focus group-based study can fulfil the BoP literature's existing prominent research gap. Results indicate the difference in attitude for urban and rural BoPs towards PIP during this crisis. The fusion of MCDM based approach and relevant machine learning-based technique aims to assist marketers in identifying, formulating, and redefining an action plan.

**Index Terms:** Bottom of the Pyramid (BoP), Emerging markets, MCDM, West Bengal, India, Covid-19.

## **1. Introduction**

The "subsistence market" refers to people who earn a per-capita income of less than \$2 a day [1]. It accounts for two-thirds of the world population living on an annual per capita income below \$1500, the minimum amount required to lead a decent life [2]. In recent times, this definition has further expanded to per-capita income of less than

\$2.50 a day [3]. As per [4], these are the consumers surviving on less than \$2 to \$8 a day or \$3,000 annual per capita income. This huge subsistence market suffers from a lack of resources, basic amenities, and limited access to the available resource, education, low quality of life [5]. Due to its huge size, this segment has been perceived as an opportunity by the marketers as a potential consumer base. The main idea has originated from the concept of inclusive capitalism, where businesses can offer exclusive solutions to this segment which can improve their lifestyle, reduce poverty levels along with causing profitability for businesses. Ultimately it aims to create a mutually beneficial situation for both business and consumers [6] has highlighted the growth rate of this emerging market by stating that the GDP of the emerging markets would surpass all developed markets by 2035. India, the largest home of BoP consumers, has become one of the leading emerging markets with the world's third-largest market based on purchasing power parity index. This has further gained the attention of researchers and marketers, which leads to further research in this domain.

As a result, the BoP domain is getting recognition in terms of growing number of publications [7, 8, 9, 10]. When the discussion is going on regarding the initiatives of companies for serving this consumer segment, packaging plays a significant role. This is because packaging acts as the first interaction point between a product (indirectly, brand and company who offers it) and consumers. Literature has also supported the fact that packaging influences purchase [11, 12, 13]. Moreover, packaging can create awareness, confidence (by highlighting price, benefits, usage guide, brand name and so on), and promote hygiene among BoPs. In contradiction to this, packaging generally adds extra cost [14] to products for which is problematic for price-sensitive BoP consumers. Packaged products generally demand bulk purchase (apart from sachets), a genuine constraint for every BoP consumer. But there is no point denying that through packaging, the marketers or brands can get the opportunity to introduce their offering to the BoPs. This is the reason why we adopt PIP as our focus area in this current study. Few studies [15] have been conducted focusing on PIP in the BoP domain.

The outbreak of the Covid-19 pandemic has left none of the single countries unaffected. A substantial change has been observed in the area of consumer's behaviour and operational performance of the business. Confusing and unpredictable behaviour has been observed in economic, behavioural, or societal platforms [16]. This is the reason why an increasing number of studies have selected this timespan. Hardly any studies have focused on exploring the attitude of BoPs towards PIP during the Covid-19 pandemic. This is the prime motivation behind this study. The novelty of this paper lies below:

1. Attitude towards PIP decisions of BoP consumers of West Bengal, India during Covid-19.
2. Application of both machine learning and MCDM based approach to propose a framework.
3. Application of three different MCDM based approaches to promote quantitative techniques in the BoP consumer behaviour domain.
4. Comparison of the attitudes between urban and rural BoP consumers towards PIP during Covid-19.

The research aims to check the influence of packaging attributes on BoPs during the COVID-19 crisis. The framework ranks the packaging attributes for both daily needs and snacks-beverages. The layout of the paper is as follows: section 2 denotes the relevant literature for this study. Section 3 represents the research objective. Next section highlights the research methodology. Analysis, Findings, and discussions have been discussed in section 5. Finally, section 6 concludes the paper with implications for marketers. The future scope has been mentioned in the last section (i.e., Section 7).

## 2. Literature Review

Based on the research objective the literature review has been subdivided into four subsections.

### 2.1. The BoP Market

The Bottom of the Pyramid (BoP) market is composed of the social classes like C, D and E [2] which are creating the largest market in India with approximately 925 million consumer base with Purchasing Power Parity (PPP) of \$1.2 trillion [2007]. According to literature surveys [17, 18, 15], there are two categories of BoP, for instance, urban and rural. In the case of rural BoP, we often come across challenges related to very low income, limited spending power, very limited accessibility of products, very narrow employment opportunities (as unskilled and semi-skilled workers) and so on. On the contrary to the rural BoPs, people in urban BoPs have much stable income, better spending power, better employment opportunities (as unskilled and semi-skilled workers), greater accessibility of products and so on [19]. This makes us motivated to look after both scenarios of urban and rural BoP populations in our study.

### 2.2. Studies related to the effect of packaging on the BoP consumers

[15] showed the importance of packaging elements behind the segmentation of the whole BoP market into 4 clusters i.e. urban, rural, diluted urban and rural BoP migrated to urban areas. A total of seven factors related to packaging, have been considered for this study. Each cluster had been observed getting influenced by separate packaging elements. An efficient LSTM-based deep neural network model has been proposed by [20] to classify consumer preferences while visualizing advertisements for BoP consumers. The results indicated how factors like price, size (packaging elements) segregated four types (i.e., most like, like, dislike, most dislike) consumer preferences. Research conducted by [21] showed the visual stimuli as the most influencing packaging element. This study had selected 103 low-income group consumers [22] conducted a study on 600 rural South-African BoP consumers and showed that there is a tendency of buying products with larger packets, reusable containers, and packets. [23] discussed the importance of packaging elements in case of adopting new innovative products in the BoP markets. A weak association between packaging elements and brand experience has been observed by [24] for the low-income group consumers. Here it is quite evident that the studies on BoP consumers are clearly showing the distinctive attitude towards various packaging elements. In line with this another study conducted by [25] showed the influence of both visual and informational packaging elements on urban and rural BoPs separately. Result indicated the influence of both

the type of packaging elements on urban BoPs and visual elements on rural BoPs. From the above-mentioned studies it is clear that packaging elements create an impact on BoP consumers. This is the motivation behind selecting packaging elements as criteria for this current study.

### 2.3. Influence of family in making purchase decision

In case of consumer decision making, family members are playing a pivotal role [26, 27]). Among the BoP families, the role of extended family members is quite dominant [28]. Selection of products in rural BoP families is significantly driven by the consent of other family members, especially when the product is of a "family utility" nature [28]. Further study on literature survey shows that there are some social economic constraints faced by family members [29] in case of making purchase decisions on food and personal hygiene [28]. For these two types of products husband and wives have been seen to assume similar responsibility [30]. As women are entering the workforce, husbands are now taking vital decisions on purchase of products [31]. The change of roles among family members of BoP families focusing on conflict avoidance have been captured by [32]. Children play a significant role in purchasing in a family. There are research studies on how children make the purchase decision upon family in western markets [33]. The immense research gap compared to western market motivates us to look at the purchasing angle of children which influences the overall purchasing nature of a family in the Indian market. Both in family as well as children influence for making purchase decisions especially PIP, BoP literature requires rigorous research. This is the reason this study has selected three sub-criteria "family", "extended family" and "children" to contribute in the literature as well as to fulfil the existing research gap.

### 2.4. Consumer behaviour during the Covid-19 pandemic

Lengthy lockdown created impact upon the change in purchase behavior of consumers [34, 35] which leads to buying most of the products via online platforms. There is an increase in buying healthy foods for boosting the immunity which also includes extra protections during the packaging of the products [36]. There is more demand for buying organic, affordable and local, national goods among low-income people during the Covid-19 crisis [37]. Therefore, there is a common tendency of cutting down the expenses by only focusing on purchasing essential items like groceries. Undoubtedly, consumer behavior turned into a better shape of sustainable consumer behavior during this time [38]. Needless to say, research work related to BoP consumer behavior during this Covid-19 pandemic has novelty as well as to fulfil the existing research gap.

## 3. Research Methodology

This study aims to show how the MCDM based approaches can assist the PIP decisions of BoP consumers during the Covid-19 period. This study provides a rank-based frame- work that can provide the guidelines for the marketers to prioritize various packaging elements along with some features extracted from BoP consumers purchase behavior during this crisis situation. The study aims to investigate the following research questions (RQ):

1. RQ1: What are top priorities of urban and rural BoPs in terms of the combination between packaging element and people influence PIP purchase for daily needs and snacks beverages during Covid-19?
2. RQ2: What type of features can be extracted from the purchase behavior of urban and rural BoPs during Covid-19?
3. RQ3: How these features impact the elements of packaging for urban and rural BoPs for daily needs and snacks beverages during Covid-19?

## 4. Research Methodology

This section communicates the detailed methodology adopted for this study along with supporting reasons. The flow of this study has been presented in the Figure 1.

### 4.1. Research context

Our choice of research context, i.e., India, is the largest home for the BoP consumers where the majority, i.e., one-third of the total population, live in slums [39]. Almost every slum lacks basic infrastructure facilities, which is one of the leading residential qualifiers for subsistence communities [40]. We have selected North-24-Pgs and Kolkata to select our respondents. From North-24-Pgs, we have mainly selected rural BoP consumers and from Kolkata urban BoP consumers have been identified. Kolkata is mainly a place for huge rural migrant workers from West Bengal [41]. West Bengal has reported more than 1.6 million Covid cases. Both of the districts mentioned above are in the list of top ten most affected districts [42].

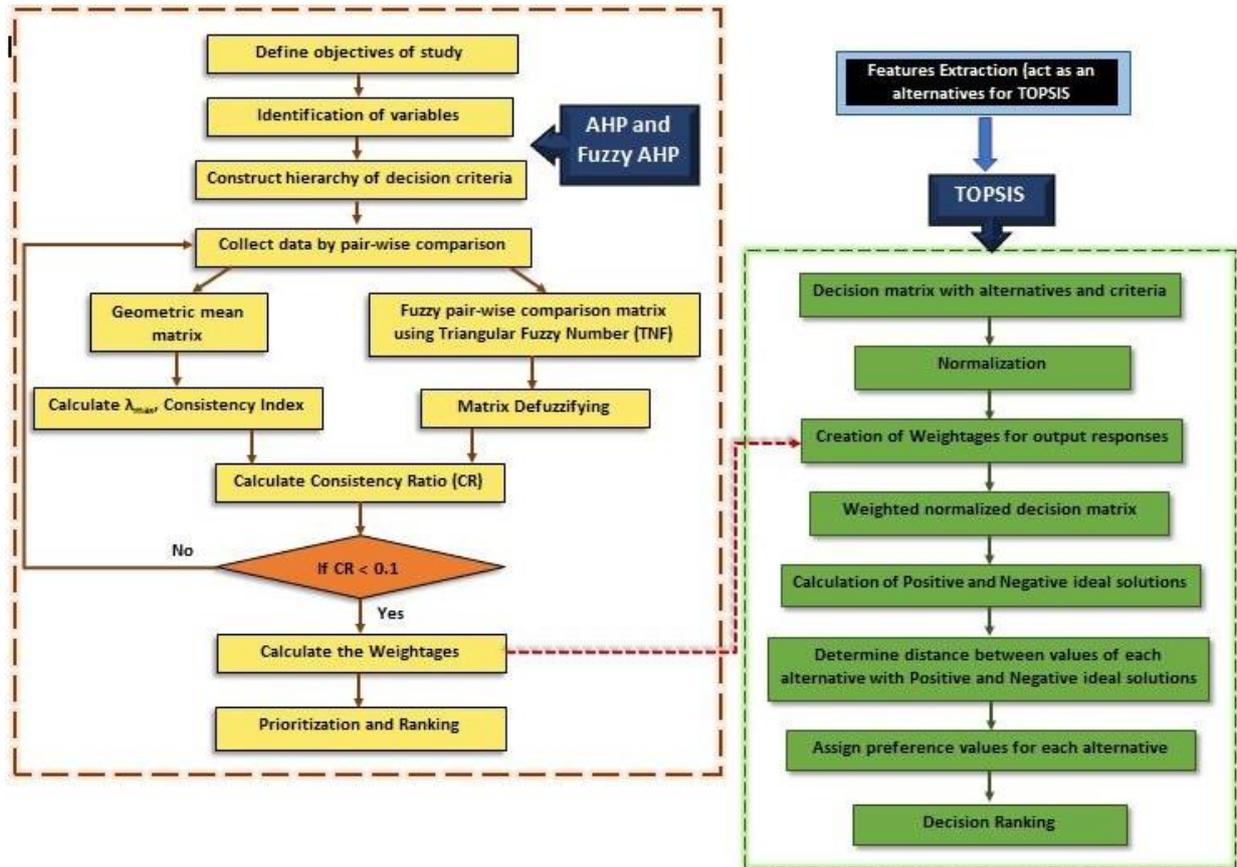


Fig.1. Flow chart of this study

#### 4.2. Selection of variables

Based on the literature reviews, we have selected the criteria as well as the sub-criteria. Figure 2 represents diagrammatic representations. For criteria and sub-criteria, we have kept packaging elements and influencing factors, respectively. For making PIP-related decisions, each element (criteria) can be influenced by any of the influencers (sub-criteria). This is the motivation why levels have been arranged like this. Table 2 highlights the brief descriptions of the packaging elements. In the table, we only include those elements which have received some rating from the respondents.

#### 4.3. Selection of the Product

The consumers of subsistence marketplace generally spend the major share of their income for purchasing necessities, particularly convenience products and groceries [43]. The BoP consumers spend as much as 72% of their income on daily needs or foods [44]. As per the latest report released by Kantar, during this pandemic situation, most of the purchase has been made for essential products, immunity-boosting foods, drinks beverages, health hygiene and home-care skin cleansing products [45]. These are the reasons why we have selected the FMCG sector for this current study. We have divided the whole FMCG sector into two parts i.e., daily needs and snacks beverage. Given the limited income and other constraints, the concept of low involvement is not present among the BoP consumers. Every purchase decision is important regardless of the price and nature of the product [46].

#### 4.4. Sampling and data collection

Keeping the phenomenological approach in mind, we recruited the respondents using the purposive sampling [47]. We tracked all the female BoP consumers through the Self-Help Groups (SHGs) or the Health and Wellness Centres (HWCs). With the help of local clubs, few male respondents also took part. Among SHGs, HWCs, and local clubs, the sample recruitment screener has been distributed to test if the tracked consumers fall under the BoP category, though the study's purpose has not been mentioned. Income and their area of residence have been used as the screening questions to identify BoP consumers and their type (urban or rural), respectively. We conducted interviews using a simple and understandable questionnaire to collect data. The questionnaire has been translated to the regional language, for instance, English to Bengali, to make them comfortable. To avoid the problems like indicating opinions, thoughts, attitudes, we avoided the survey-based approach by interviewing the respondents. To fasten the data collection procedure, a team of ten Accredited Social Health Activists (ASHA) and ten club members have formed five groups. A total of 100 respondents have been interviewed for five days, followed by completing the guided AHP for the

participants. The profile of the respondents has been given in Table 1. Finally, the calculated individual weights (priorities of each criterion) were aggregated when the answers were consistent.

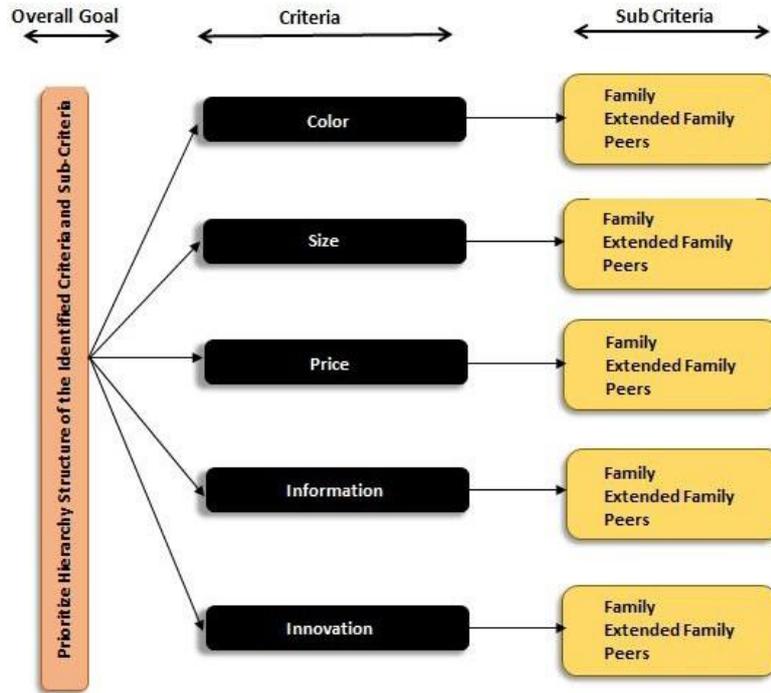


Fig.2. Research Framework: Arrangement of criteria and sub-criteria

Table 1. Profile of the BoP respondents

| Factor   | Urban     | Rural     |
|--|-----------|-----------|
| <b>Age groups</b>  |           |           |
| 20-25  | 20 (40%)  | 24 (48%)  |
| 26-40  | 20 (40%)  | 21 (42%)  |
| above 40   | 10 (20%)  | 5 (10%)   |
| <b>Total</b>   | <b>50</b> | <b>50</b> |
| <b>Qualification</b>   |           |           |
| Completed school education   | 7 (14%)   | 24 (48%)  |
| Graduation (pursuing or completed)   | 34 (68%)  | 26 (52%)  |
| Post-graduation (pursuing or completed)  | 9 (18%)   | -         |
| <b>Total</b>   | <b>50</b> | <b>50</b> |
| <b>Gender</b>  |           |           |
| Male   | 19 (38%)  | 11 (22%)  |
| Female   | 31 (62%)  | 39 (78%)  |
| <b>Total</b>   | <b>50</b> | <b>50</b> |
| <b>Monthly Income (in Rs.)</b>   |           |           |
| Less than 10,000   | 12 (24%)  | 22 (44%)  |
| 11,000-20,000  | 31 (62%)  | 28 (56%)  |
| More than 20,000   | 7 (14%)   | -         |
| <b>Total</b>   | <b>50</b> | <b>50</b> |
| <b>Occupation</b>  |           |           |
| Service  | 22 (44%)  | 9 (18%)   |
| Variable payment-based work (Mason, Carpenter, Electrician, Shopkeeper, Household Helper etc.) | 28 (56%)  | 19(38%)   |
| Agriculture  | -         | 22(44%)   |
| <b>Total</b>   | <b>50</b> | <b>50</b> |

The same AHP questionnaire was used for the face-to-face group discussions by holding the group meetings at SHGs/HWCs and local clubs. Same team members assisted the data collection procedure and the individual judgments (on a 9-point scale) were gathered and displayed anonymously on a screen. Finally, for each pairwise comparison, a common group decision (consensus) was reached. The face-to-face group discussions have been conducted by maintaining all the safety measurements or Covid-19 protocols. As most of them lack basic infrastructural facilities, virtual group discussions are not possible.

Table 2. Descriptions of criteria

| Criteria    | Description  |
|-------------|--|
| Color       | Known to be the one of the most important parts of packaging that can subconsciously reflect the brand personality. Helps to create high recall value [48, 49]   |
| Size        | Size/shape is one of the most important parts of packaging elements. It specifies the quantity of product it can accommodate. Bigger packages were found to reflect better value. [50]   |
| Price       | Price comes under the informational element. But due to its huge importance we have used it as a separate element. Consumers like BoP are significantly getting impacted by this element as with their extreme limited income they have to make purchase [51, 46]  |
| Information | Helps to display product characteristics like expiry date, usage instruction, ingredients, name of manufacturer, country of origin, logo etc. It significantly affects purchase intention [52, 50]. Precise information on packets helps to reduce information overload leads to decision paralysis [53] |
| Innovation  | Development of new and innovative packing as well as packaging technologies without compromising food quality and safety issues. It makes the product more attractive and create a positive impact on potential buyers [54]  |

#### 4.5. Selection of Techniques

AHP is a mathematical tool used for multi-criteria decision making and was introduced by [55]. In this research, AHP has been used to provide integrated output by merging data from different sources. It can perform operations without the availability of legitimate datasets [56]. AHP handles the multi-indicator issue by establishing a hierarchical structure, quantifying the hierarchical decision-making process following the laws of thinking and psychology, by reasonably combining the qualitative and quantitative decisions [57, 58].

The fuzziness and uncertainty in MCDM cannot be handled with classical AHP, as human judgment and fuzzy environment are imprecise and incomplete information. Thus, Fuzzy AHP is an upgraded MCDM tool derived from the classical AHP. Fuzzy AHP is a highly efficient multi-criteria decision-making tool. It evaluates every attribute affected by a variety of elements, and whose characteristic is that its assessment results are not solely positive or negative but are defined in a fuzzy set [59, 60].

TOPSIS is an MCDM method developed by [61], is an approach for assessing the performance of alternatives through the similarity with the ideal solution. According to the TOPSIS approach, the best alternative should be closest to a positive ideal solution (PIS) and farthest from a negative ideal solution (NIS). The maximization of the benefit criteria and minimization of the cost criteria is carried out by PIS, and the reverse by NIS. Thus, it can be said that the PIS consists of all best values achievable of the attribute, and the NIS is composed of all the worst values achievable of attribute [62, 63]. The weightage of each of the criteria and sub-criteria has been determined by using both AHP and FAHP, and the results obtained were compared for accuracy. After that, the weightage is used in the TOPSIS decision matrix to rank the alternative FMCG brands used by the consumers. We conducted Exploratory Factor Analysis (EFA) as a dimension reduction and feature extraction technique. The results have been presented in subsection 5.4.

We perform AHP for obtaining the ranks by combining the packaging elements and influencers. To validate the results, FAHP has been used. Finally, the features extracted through EFA have served the purpose of alternatives for TOPSIS. Packaging elements have played the role of criteria. The weights for TOPSIS have been determined by observing the results of AHP.

## 5. Analysis, Findings and Discussions

### 5.1. AHP results for urban and rural BoPs daily need

The frameworks consist of ranks of top ten criteria for urban and rural BoP consumers obtained by AHP and further validated through FAHP has been presented in the Figure 3 and Figure 4 respectively. For urban BoPs daily needs, the first three ranks have been obtained by (price, family), (color, family) and (price, extended family). In the first ten ranks, in terms of occurrence price, color are the most frequent packaging elements followed by size. Innovation is not present among the top ten ranks. For influencing factors, family and peers have been observed as most frequent.

For rural BoPs daily needs, (price, extended family), (color, extended family) and (size, extended family) are the top three criteria. Price is the most frequent packaging element with frequency 3 time followed by color and size (for each element frequency is 2 times). Interestingly, information has also occurred twice at 7th and 9th positions. Regarding the influencers', extended family has been seen as most popular followed by family among rural BoPs. Peer influence has received least popularity in case of rural daily needs.

The results of AHP (including consistency ratio (CR) and rank of each criterion) for urban and rural BoPs for daily

needs have been presented in the Table 3.

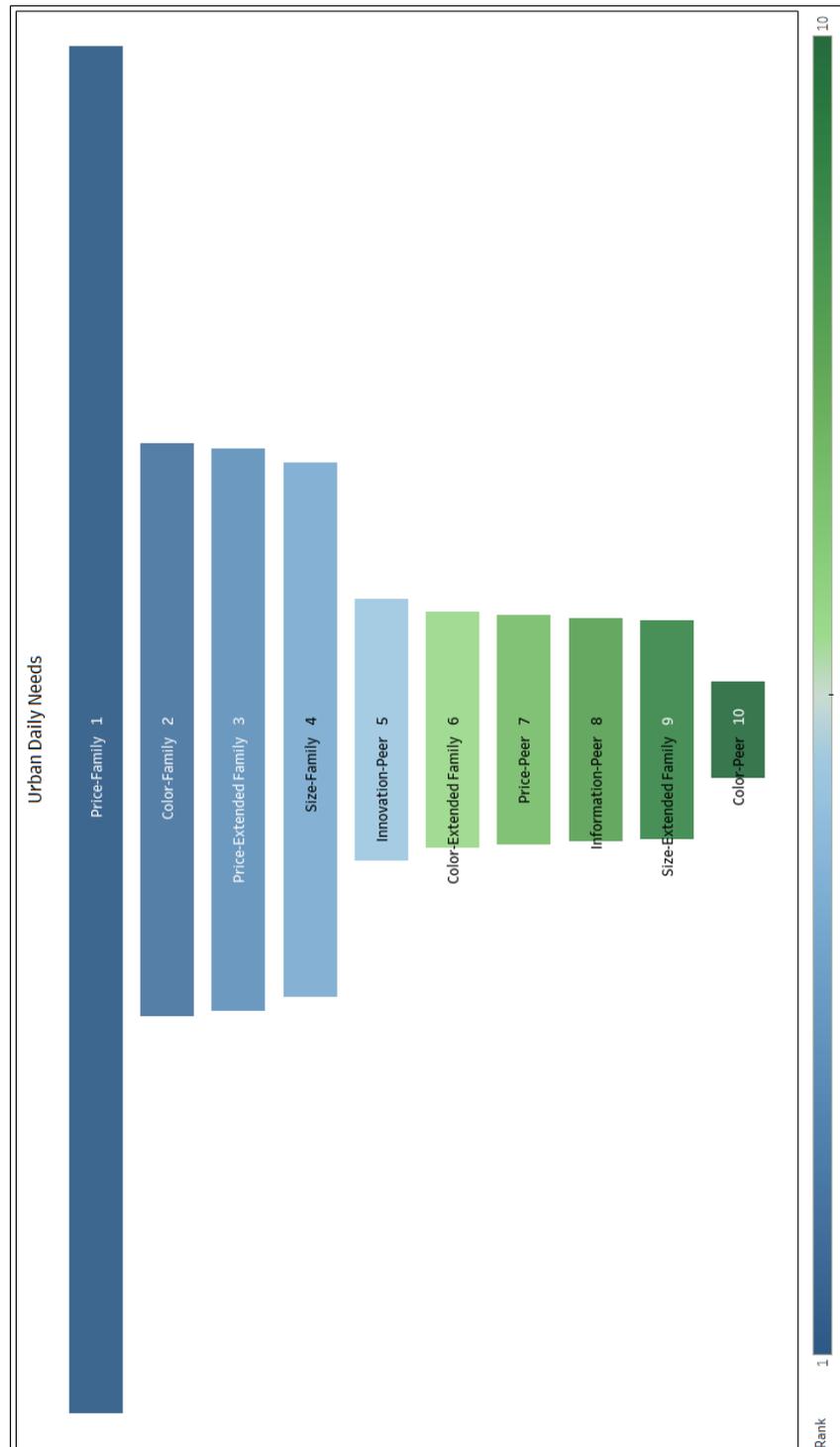


Fig.3. Ranks for daily needs for urban BoPs obtained by AHP and validated by Fuzzy AHP

### 5.2. AHP results for urban and rural BoP snacks beverages

The results for snacks and beverages of urban and rural BoP consumers obtained from AHP and validated through FAHP have been presented in the Figure 5 and Figure 6 respectively. For urban BoPs the first three criteria are (price, peer), (size, peer) and (color, family). Price is the most frequently occurring packing element with frequency 3 times. It is interesting to note that size, color, innovation has occurred with exact similar frequency i.e. 2 times. Peer is the most popular influencing factor (with 5 times frequency) followed by family (with 4 times frequency). Extended families have obtained the least popularity here.

For rural BoPs the first three criteria are (price, family), (color, family) and (price, extended family). Color is the

most frequent packaging element with frequency i.e. 3 times. Price and size have occurred with equal frequency i.e. 2 times.

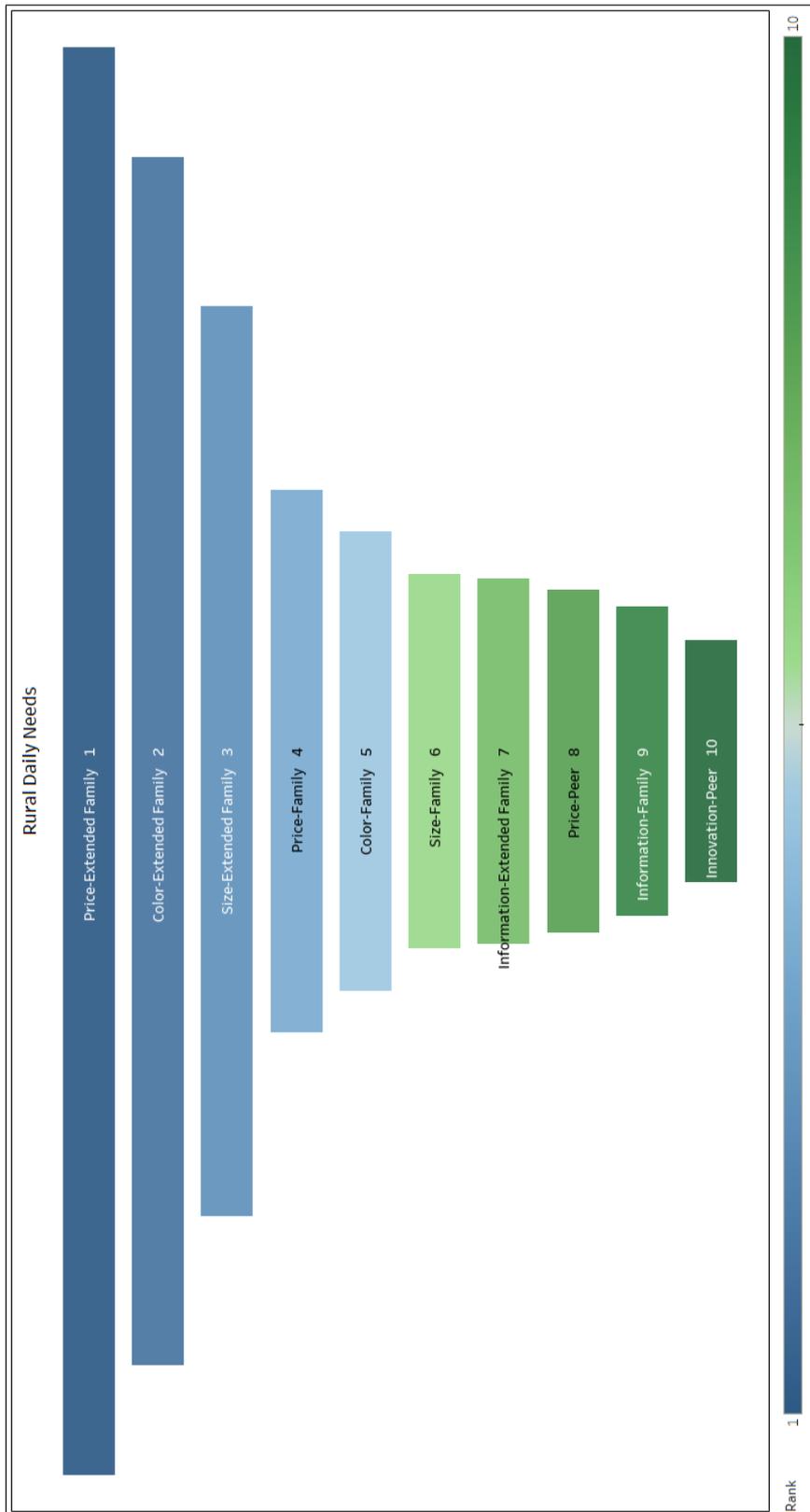


Fig.4. Ranks for daily needs for rural BoPs obtained by AHP and validated by Fuzzy AHP

Family has been observed as the most influencing factor followed by extended family as well as peers with equal frequency of 3 times.

The results (including consistency ratio (CR) and rank of each criteria) of AHP for urban and rural BoPs for snacks beverages have been presented in the Table 4.

Table 3. Results of AHP for Urban and Rural BoPs Daily Needs

| Criteria    | CR-Urban BoP | CR-Rural BoP | Priority Rank-Urban BoP | and | Priority Rank-Rural BoP | and |
|-------------|--------------|--------------|-------------------------|-----|-------------------------|-----|
| Price       | 0.028        | 0.037        | 0.437(1)                |     | 0.464(1)                |     |
| Size        | 0.037        | 0.037        | 0.210(2)                |     | 0.181(3)                |     |
| Color       | 0.028        | 0.037        | 0.166(3)                |     | 0.194(2)                |     |
| Information | 0.021        | 0.029        | 0.111(4)                |     | 0.073(4)                |     |
| Innovation  | 0.020        | 0.028        | 0.074(5)                |     | 0.066(5)                |     |

Table 4. Results of AHP for Urban and Rural BoPs Snacks Beverages

| Criteria    | CR-Urban BoP | CR-Rural BoP | Priority Rank-Urban BoP | and | Priority Rank-Rural BoP | and |
|-------------|--------------|--------------|-------------------------|-----|-------------------------|-----|
| Price       | 0.037        | 0.027        | 0.436(1)                |     | 0.499(1)                |     |
| Size        | 0.038        | 0.032        | 0.201(2)                |     | 0.185(3)                |     |
| Color       | 0.031        | 0.035        | 0.189(3)                |     | 0.227(2)                |     |
| Information | 0.028        | 0.031        | 0.078(5)                |     | 0.050(4)                |     |
| Innovation  | 0.021        | 0.028        | 0.089(4)                |     | 0.039(5)                |     |

### 5.3. Interpretation and discussion of AHP

Existing studies have again and again emphasized the price-sensitive nature of BoP consumers [64, 65]. Crises like Covid-19 have further worsened the scenario. More than half of their income they spent on foods and daily needs [66]. Preference for trusted and regular relationships with retailers and the likelihood of shopkeeper's availing credit or instalment facilities has increased. Restrictions in travelling have decreased the chance of price comparison for a single product, especially for rural people. This justifies the reason behind price as the most occurring packaging element for both urban and rural BoPs. As per respondents, color acts as a tool for recognizing and recalling brands. Color helps to identify a product's variety quickly. During Covid-19, it directly makes purchases easy and quick. The value conscious [2] mentality among both urban and rural BoP consumers has made them search for more size or more quantity products at a reasonable price. A huge amount of research has repeatedly highlighted the significant influence of family on consumer decision-making. In the case of urban BoPs, many of them have migrated from rural areas for better employment opportunities. Due to the high cost of urban living, nuclear family structure is mainly observed in urban areas. Spousal roles have been observed to play significant roles in family decision-making. Moreover, this situation has obtained a gear with the participation of more women in the workforce and more involvement of husbands in household roles [31]. Whereas, in rural areas joint family concept is mostly present. This is the reason why urban BoPs are getting affected by family, whereas rural BoPs are getting influenced by extended family. During the Covid-19 pandemic, the increase of healthy, widely available food grain consumption [67] has more involved senior/adult family members to participate in PIP for daily needs actively. The majority of BoP consumers shifted their focus towards essential products [68]. They want to utilize their small income quite wisely. One noticeable fact is that family involvement, peers for most urban BoPs and extended family and family for most rural BoP for making PIP indicates the tendency to buy packaged daily needs. During the pandemic, the chance of infection, hygiene-related issues, ease of disinfecting and cleansing the packaged products has further accelerated this fact.

Generally, crises restrict impulse buying. Moreover, the concept of low involvement is not present among BoPs. Every purchase matters a lot for them [46]. The significant impact created by peers and extended family on urban and rural BoP, respectively, for snacks beverages, can be directly mapped with the concept of "social capital" [69] theory. Social capital gives power to the members of the group and enables them to access group resources. In order to gain social acceptance, to make children happy, BoPs mainly decide the purchase of snacks beverages. The influence of family indicates the influence of children for making PIP. This fact establishes urban BoPs as a potential consumer base with visible scope for marketers. The frequent occurrence of price, size highlights the affordability issue. During the crisis, this factor matters most for the BoPs. For both types of BoPs, size and color have been observed as another important packaging element. During crisis time when the pre-existing income has become less, price-size trade-off matters significantly. Here, the ethical concerns of marketers need to be very prominent. Color helps in brand recall, recognition. For urban BoPs, innovation also matters. Influence of celebrity [7], advertisements have made them aware of new innovative packaging. Innovative ideas about re-usage of containers, long shelf-life, advanced technology to store products for more days without a refrigerator, usage instruction in regional language, the container looks like a toy have been appreciated by the urban BoPs. All of these findings create opportunities for marketers.

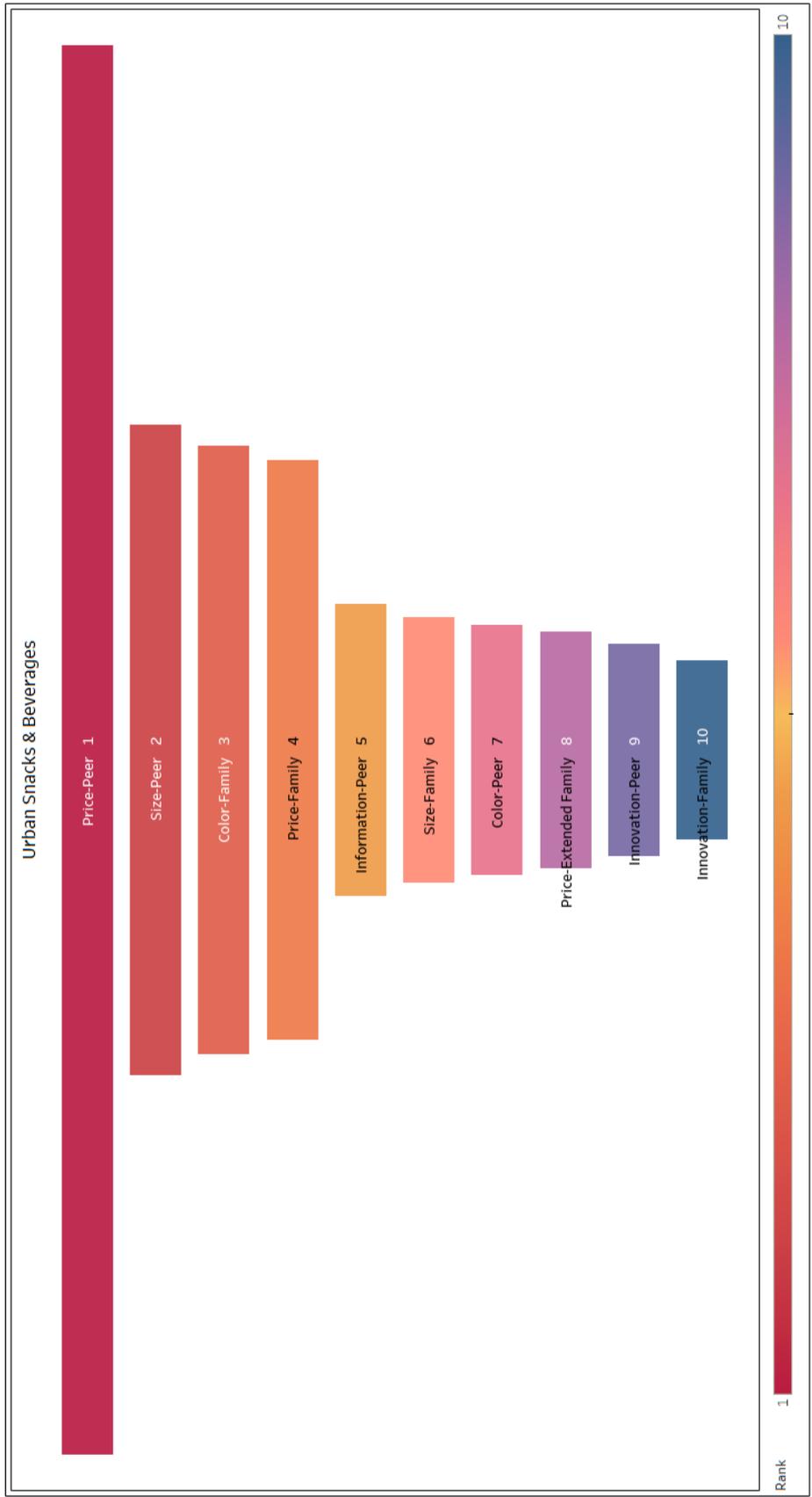


Fig.5. Ranks for snacks beverages for urban BoPs obtained by AHP and validated by Fuzzy AHP

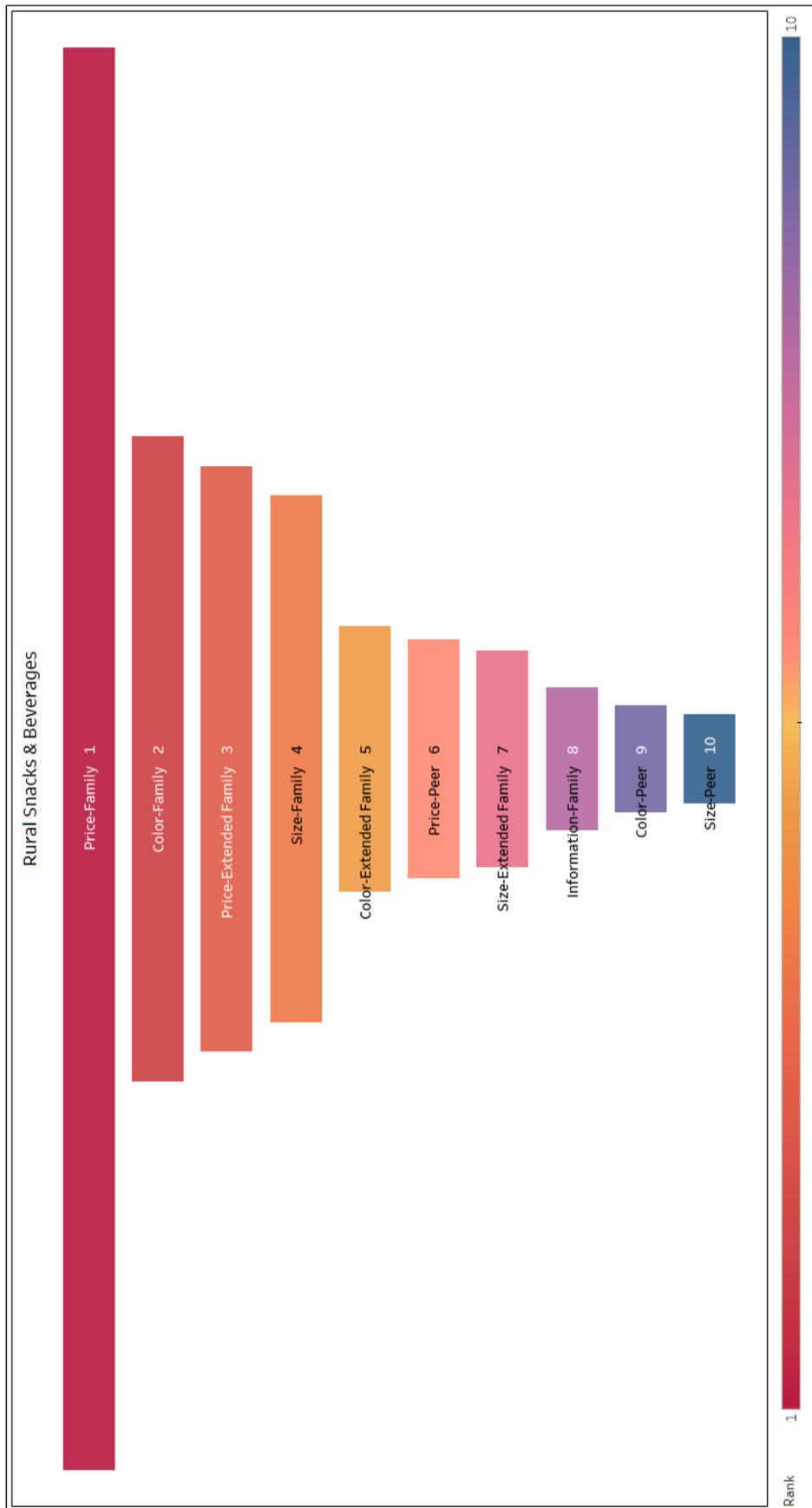


Fig.6. Ranks for snacks beverages for rural BoPs obtained by AHP and validated by Fuzzy AHP

5.4. Feature extraction

A total of 30 questions have been used to find out the attitude of BoP consumers towards purchase patterns during this Covid-19 crisis. EFA has been deployed to get reduced dimensions/features. The suitability of the dataset has been checked through the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett’s Test of Sphericity. We have finalized the features based on the "eigenvalue greater than 1" criteria. The varimax rotation technique has been used to finalize the factor loading. The mapping between the questionnaire items and features has been presented in the Table 5. The cut-off for the factor loading has been fixed at 0.4 [70]. Chronbach Alpha coefficient has been calculated for each feature as the reliability measurement to validate the internal consistency.

5.5. TOPSIS results for urban and rural BoP daily needs

The result of TOPSIS for urban and rural BoP has been highlighted in Figure 7 and Figure 8 respectively. "Open for any products and multiple purchase points", "pure need based" and "budget friendly purchase" are the best three features observed for urban BoP’s daily need based purchase. All of these features have shown most sensitivity in case of price followed by information. Whereas, for rural BoP people the best performing feature is "mainly depends on local products and local purchase points" followed by "pure need based" and "budget friendly good products". Like urban BoP, here price caused a significant impact. The second and third significant packaging elements are color and size respectively.

5.6. TOPSIS results for urban and rural BoP snacks beverages

The result of TOPSIS for urban and rural BoP has been highlighted in Figure 9 and Figure 10 respectively. Keeping parity with the previous result, the top three features for urban BoPs are "Open for any products and multiple purchase points", "pure need based" and "budget friendly purchase". Here, color is causing the most impact followed by price and size. Similarly, for rural BoP consumers, just like the previous case, "mainly depends on local products and local purchase points" followed by "pure need based" and "budget friendly good products" are the top three features. Color followed by price and size are the most significant packaging elements.

Table 5. Mapping between questionnaire items and features.

|           | Feature 1: Budget friendly  | Feature 2: Pure need based  | 3: Open for any products and purchase points  | Feature 4: Depends on local products and purchase points                           | Feature 5: Hygiene concerned  |
|-----------|---|---|---|--|---|
| Questions | 1. I always look for good, packaged products at affordable price.               | 1. I buy packaged products only when I need them.                               | 1. I visit many places to search less costly packaged products.   | 1. Prefer to buy local products, they are fresh, less chance of causing infection. | 1. Lockdown has made me realize to spend more on hygiene products.          |
|           | 2. Lockdown has made me realize to save money and reduce unnecessary shopping.  | 2. During lockdown, I generally buy packaged products if any offer is going on. | 2. During lockdown, use variety of packaged products from several brands to check cost quality trade-off.   |  | 2. During lockdown, every month I buy hygiene products.                     |
|           | 3. Costly products restricts purchase as they exceed budget.                    | 3. During lockdown, I never do unplanned purchase of products.                  | 3. During lockdown, I will consciously buy any products from any places, those have cost quality trade-off. | 2. During lockdown, prefer to buy from local shops to avoid going outside.         | 3. Every packaged product is more hygiene compared to unpackaged products.  |
|           | 4. During lockdown, afford small sized packaged product due to affordable cost. | 4. I used to avoid extra shopping as nowadays my income is less.                | 4. During lockdown, apart from shops, I buy from online.  |  | 4. During lockdown I prefer to buy packaged products due to hygiene issues. |
|           | 5. I buy packaged products if it comes under my monthly expense limit           | 5. There is no fixed time in a month to make purchase.                          | 5. I generally try to compare price for packaged products from multiple places.                             | 3. Buy packaged products if available in local shops to enjoy instalment facility. |   |

5.7. Interpretation and discussion of TOPSIS

The urban BoPs exhibit a value-consciousness mentality with a high score of "open for any products and multiple purchase points". Their focus group discussion revealed that familiarization with online platforms enabled them to search for single products at multiple platforms and finally order them. Better infrastructure, income, lifestyle, accessibility, and media reach enabled the urban BoPs to enjoy the benefits of online platforms during this pandemic

time. They also highlighted the key role played by the young high-school and college goers in this regard. Among packaging elements, price, color and size played the most influencing role. This validates the findings of the above-mentioned two techniques of MCDM. Information has been noticed by them when urban BoPs have purchased daily needs and become aware of hygiene issues. Whereas for rural BoPs they "mainly depend on local products and local shops". BoP consumers habitually purchase products from small, local, unorganized retail shops for rural subsistence marketplaces, generally belonging to the same community. Long habits of purchasing from local "Kirana" shops created this huge dependency gupta2016despite. During the focus group most of the participants, again and again, highlighted the benefits of instalment and borrowing they get from these shopkeepers. Moreover, as they are purchasing from a particular shop from one generation to another, they enjoy discounts on the printed price of every product. Even some local shopkeepers are comfortable selling loose single product units from a packaged lot. During the pandemic, many of the urban migrated rural BoPs have returned to their villages. During the crisis, the instalment and borrowing facilities have helped them a lot. They also mentioned one problem regarding the unavailability of many packaged goods in urban areas not available in local rural shops. They have to request the shopkeeper to bring that product in stock and have to wait for a long time. As per them, during this pandemic, this problem has become more serious. The reasons behind "pure need-based purchase" and "budget friendly purchase" are quite obvious for both the BoPs. Pandemic has even worsened the situation further. For snacks and beverages, features have scored almost in a similar way, just like daily needs. During the focus group, they mentioned that they have to indulge in this type of impulse buying behaviour primarily due to the pressure of children. They also highlighted that they have to restrict this type of impulse purchase during pandemics up to a great extent due to the restricted budget.

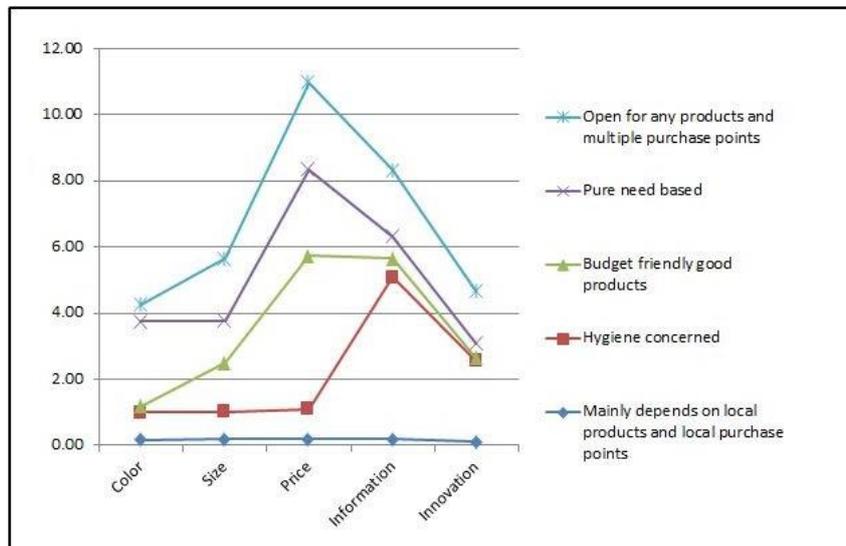


Fig.7. TOPSIS result for urban daily needs

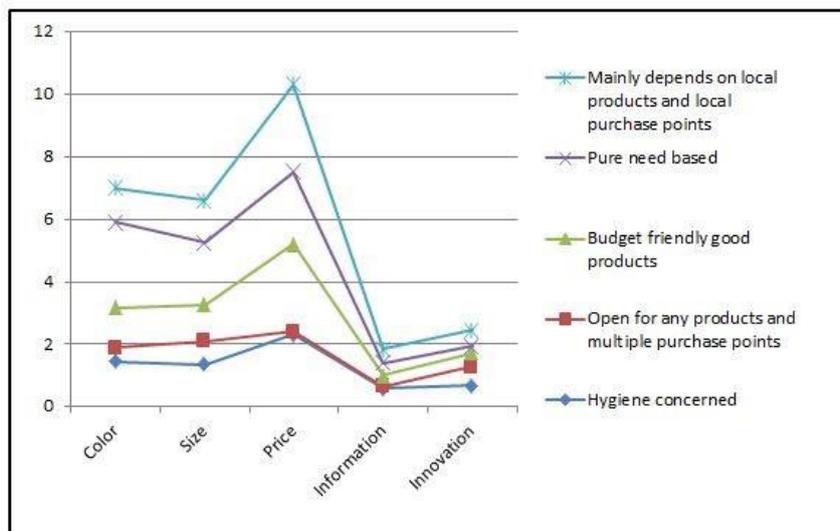


Fig.8. TOPSIS result for rural daily needs

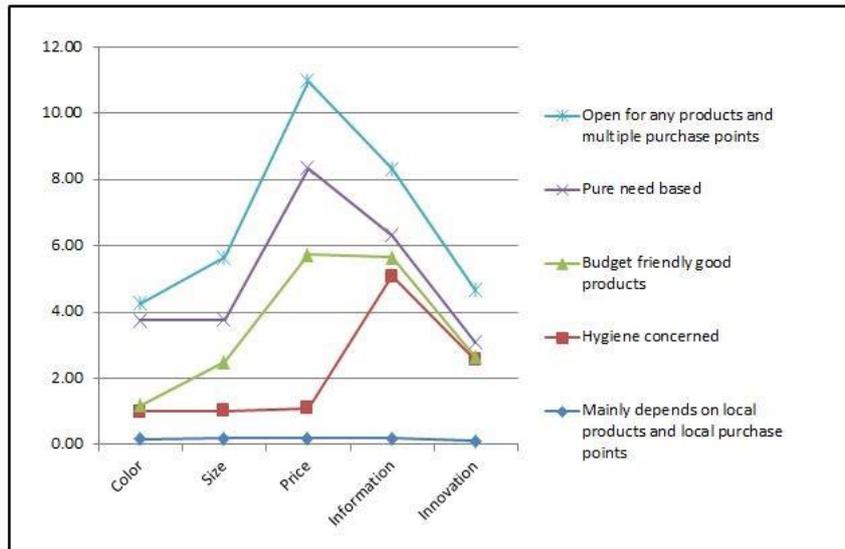


Fig.9. TOPSIS result for urban snacks beverages

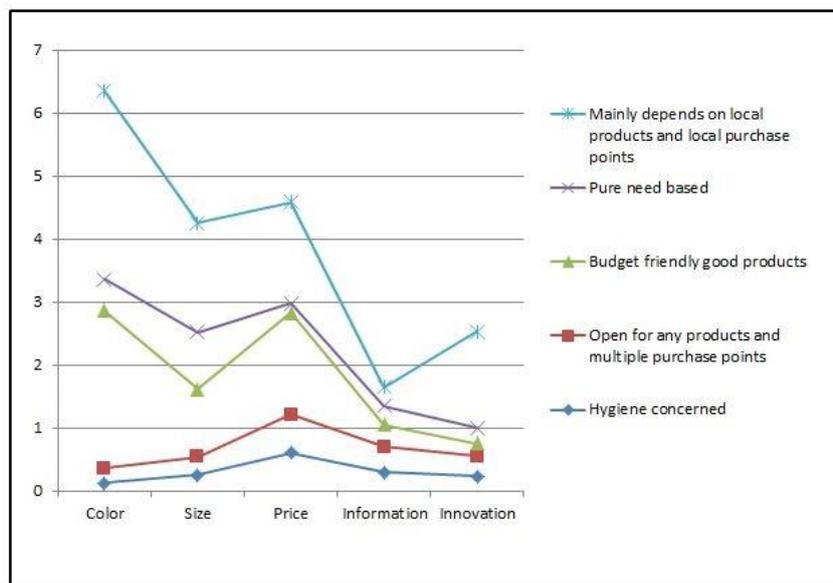


Fig.10. TOPSIS result for rural snacks beverages

## 6. Conclusions and Implications

The BoPs markets are primarily attributed to institutional environments that restrict efficient market transactions. This current pandemic situation has further endorsed this situation. Under this mindset, this research argues that BoPs also act like potential consumers. Like other value-conscious consumers, BoPs are also inclined to PIP. Moreover, based on their residential type, separate influences of packaging elements and people have been observed. Together, this emerging marketing demands special attention from marketers. During this crisis situation inclines towards PIP, creating an association between packaging and hygiene further accelerates opportunities for marketers. It is unavoidable that marketers often face multitudinous awareness, affordability, availability, and accessibility-related challenges while serving this segment. This study aims to minimize the challenges of marketers by proposing an MCDM framework to assist them during Covid-19 or afterward regarding PIP. The potential of these findings can be mapped as a part of Transformative Consumer Research (TCR), a way to improve consumers' lifestyle by discussing the state of flourishing health, happiness, and prosperity mick2012transformative. The findings related to snacks beverages can be mapped with the concept of conspicuous consumption. Through this, they try to reduce the dissatisfaction arising from their current possessions and try to keep them at par with their peers. The findings can help companies design packaging, formulate promotional strategies, and formulate an idea about impulse buying behaviour during crisis timing when income has become extremely low. Companies can also plan to maintain a "price-quality" trade-off i.e., ethical concerns while targeting this segment. The use of three types of different methods of MCDM can be incorporated into the

decision support systems of companies for observing multi-criteria-based priorities set by the consumers.

## 7. Future Scope

This study can be further expanded by observing the perception of consumers towards purchasing non-durable items. The current research can be conducted for more states, districts of India. Comparison can be made between during Covid-19, pre/post-Covid-19 periods. Professionals from companies can be requested to participate in this type of research to provide an idea about the companies' initiatives for serving BoPs regarding PIP.

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