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BoPMLPIP: Application of Classification Techniques to Explore the Impact of PIP among BoPs

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Abstract: This study tries to gain insight into the effect of demographic and psychological variables on the Bottom of the Pyramid (BoP) consumers for making Packaging Influenced Purchase (PIP) decisions by focusing on two specific consumer behaviour theories - compensatory consumption and consumers' resistance. Being the product's face, packaging contributes heavily to the above mentioned two streams of consumption behaviour. A collection of ten demographic variables and four psychological variables have been administered on a sample of 1400 BoP consumers to explore their effect behind making PIP of selected FMCG products. Various classification techniques have been deployed to capture the impact of these variables. This experimental research design revealed that both demographic and psychological variables affect the PIP. The comparison between urban and rural BoPs potentially comes with the guidelines for practical marketing implications.

Index Terms: BoP, Packaging Influenced Purchase Decisions, West Bengal, Machine Learning, Behavioural Tests.

1. Introduction

Bottom of the Pyramid (BoP) refers to massive consumer segments who earn less than 2 dollars per day. These are the population living at the lowest level of the economic pyramid as well as the income pyramid across the world [1]. Hammond *et al.* (2007) define them as a market with more than 4 billion people earning less than US$2,000 per annum representing more than $5 trillion worth of purchasing power [2].

Two dominant and opposite streams of research have explored the consumer behaviour of the BoPs. One stream [3-5] has called it a huge untapped consumer market, which has tremendous potential to attract markets and make them profitable. Through this, they can also reduce their intense poverty levels up to a great extent. For the other stream, BoPs are getting exploited with attractive marketing strategies [6-8]. As per them, these strategies are forcing BoPs to buy unnecessary purchases, ultimately sacrificing the essential health and nutritional needs. These critics have argued that marketers are making them fool by taking advantage of their lower education level, inaccessibility of information, and poor socio-economic situations. The targeting approach for BoP consumers can be divided into three phases. The idea of BoP 1.0 assumes that the BoP consumer segment has the potential to create opportunity for the marketers. The next evolutionary phase is BoP 2.0 [9] that highlights the need for co-creation of products and services [10] with this consumer segment as target. It emphasizes collaboration between corporate resources, innovative technologies and best practices that finally comes with an ability to co-design and launch BoP business for mutual value creation among partners. It aims at real value creation that leads to 'inclusive capitalism'. The latest phase is BoP 3.0 [11]. This

combines application of information and communication technology to create sustainable business models and deliver value for BoP markets [12-17].

Talking about the theoretical foundation of consumption behaviour of the BoPs, Transformative Consumer Research (TCR) has been highlighted by many researchers [18-20]. It is a type of stream that focuses on improving the quality of consumers' life such that every individual can realize their full potential. It aims to improve the living conditions of the poor, reduce stress levels, and partner with institutions [18]. In the domain of consumer behaviour of BoP, Compensatory Consumption and Consumer Resistance are two specific theories that have drawn the researchers' attention. The first theory deals with compulsive buying [21] and addictive consumption [22] which forces the BoP to buy a particular product due to mere attraction. However, the purchase of that product is not mandatory at that point of time. The second theory restricts the BoP from getting attracted to seductive and coercive marketing [23]. It focuses on the concept that "customers are too smart to be fooled".

For both the cases packaging plays a significant role. For compulsive buying, packaging helps to gain the attention of the consumers. Whereas, in case of consumer resistance packaging provides important information like price, expiry dates and so on that helps consumers to make wise decisions. Packaging, acting as a "silent salesman", contributes significantly to making a purchase decision [24]. Apart from a container that protects product in transit, it acts as a "face for the product" [25] by supporting self-service, consumer affluence, company and brand recognition, and opportunity for innovation [26]. For its importance it has been considered as 5Ps of marketing [4]. Now combining these two above-mentioned areas, a prominent research gap can be noticed in the literature. This is the motivation why the Packaging Influenced Purchase (PIP) decision of BoP has been considered here.

Regarding the factors affecting the purchase decisions, the demographic factors play a significant role in many studies [27-29]. Age, gender, income, education, occupation, time spent watching TV, social media etc are popular demographic factors. Along with demographic variables, psychological variables also play a significant role in determining purchase intention [10, 30].

Needless to say, few studies have focused on both urban and rural BoP consumers' demographic and psychological factors for making Packaging Influenced Purchase (PIP) decisions, especially in West Bengal State, India, where a significant number of consumers are under the BoP category.

This paper has a research objective to explore the impact of ten demographic and four psychological factors for making PIP decisions for both urban and rural BoP consumers. We have selected two districts of West Bengal, Paschim Medinipur and North-24-Pgs where a high Human Poverty Index (HPI) is present. Machine learning based approach has been selected to give this study a shape of empirical research.

Along with fulfilling the existing research gap, this study has the potential to contribute to the literature of BoP domain by suggesting practical marketing implications that can be adopted by marketing practitioners while targeting both urban and rural BoP consumers. The practical marketing contributions for each hypothesis have been highlighted in the finding and analysis section.

The rest of the paper is arranged in the following manner: relevant studies have been presented in Section 2. The proposed model is being presented in Section 3 along with the detailed research methodology. Section 4 highlights the findings of this study. Section 6 concludes the paper with implications for marketers and section 7 highlights the future scope.

2. Literature Review

The literature review section has been divided into three subsections. The first subsection discusses the main two types of BoP consumers. The next subsection highlights the reason for selecting packaging as a marketing variable. Finally, the last subsection shows the effect of demographic variables and psychological factors for making a purchase. The last subsection by collecting the motivation from the previous two subsections highlights formulated hypotheses.

2.1. The BoP Market

A significant number of studies [31-33] have highlighted the heterogeneous characteristics of BoP consumers. The whole BoP population can be broadly divided in two parts based on their residential area i. urban and ii. rural BoP. The urban BoPs mainly live in the urban areas like municipality, corporation or cantonment or town area [33] and have employment opportunities as unskilled and semi-skilled workers. They have a stable income, throughout the year, although the amount is very less. They have moderate to decent access to infrastructural facilities like electricity, sanitation, access to transportation and so on. In contrast to this, a large portion of Indian BoP consumers live in more than 60,000 rural areas with extremely low income i.e. less than $2 on a purchase power parity basis per day. These populations are mostly dependent on agriculture [19] and spend as much as 72% of their income on daily needs or foods [34]. Limited income, extremely low spending power, limited product access, high product distribution costs, vast geographical distances and lower population density are some of the common characteristics of the rural BoP population of India. Most of the studies have considered both of these segments separately or in a combined manner. These are the reasons why some rural BoPs migrated to urban places. This is the motivation while conducting this study we have considered both urban and rural BoP population [35].

2.2. Studies Related to Effect of Packaging on the Low-income Group or the BoP Consumers

In the introduction section the reason behind selecting packaging as a marketing variable has been highlighted. This section highlights some relevant literature related to the effect or influence of packaging elements on purchase.

According to Dantas *et al.* (2004), price and expiry dates are the two most informational elements being noticed by the BoP consumers [23]. Considering two income groups i.e. low- and mid-income group, Chatterjee (2007) discussed how symbolic packaging with visual cues influence purchase decisions [36]. All the selected consumers belong to Worcester, Massachusetts. A total of thirty hair and skin-care products had been selected for this study. This study showed that low-income group people are getting attracted towards the image of non-white women on the packets rather white-women or any other picture like nature, plants or animals. Another study conducted by Gbadamosi (2009) showed that purchase of products with low-involvement levels like sugar, salt, tea, soap etc. are not greatly influenced by packaging elements among low-income group women consumers from Northwest England [37]. For minimally processed food products, a focus group based qualitative study indicated that women with low-income and with mostly having education level up to graduation expressed that colour and transparency are the most important packaging attribute for them. An in-store simulation-based study has been conducted by Van Biljon and Van Rensburg (2011), with 103 low-income group consumers found that the visual stimuli is the most influencing packaging element compared to other elements [38]. Nakata and Weidner (2012) studied the importance of packaging attributes in case of adopting new innovative products in BoP markets. Oodith and Parumasur (2017) discussed how packaging helped to build brand-consciousness among South-African BoP consumers [39]. Oodith (2018) mentioned the importance of packaging behind purchase of products for 600 rural South-African BoP consumers [40]. Study showed a tendency for buying products with larger packets, reusable containers and packets which can be stored for a long period of time. In contract to these studies conducted on low-income group consumers [41] show weak association between packaging and brand experience.

From the above section it can be easily identified that BoP consumers are getting affected by the packaging elements. Needless to say, a significant research gap is present in this domain. This is the motivation why we have included packaging elements in our data collection instrument.

2.3. Effect of Demographic and Psychological Factors

Income: Income is one of the most considered demographic factors for influencing consumers' purchase behaviour and BoP consumers. The purchasing power of both durables and nondurables are found to be significantly associated with income [42]. The purchasing power of quality products [43] and the creation of brand loyalty depend on this factor [44].

Based on this demographic variable and literature from the previous sections, the following hypothesis has been formed.

H_1: Income can affect the packaging influenced purchase (PIP) behaviour of urban and rural BoP consumers.

Age: Advertisements (ads) have been found significantly influencing purchase behaviour of consumers. It also acts as a medium for providing information about packaging. Television, social media is a popular platform for displaying ads. Literature provides evidence that age and media usage is highly associated. Young age group spends more time watching TV or are more active in the media [45]. The use of the internet also decreases with age [46].

Based on this demographic variable and literature from previous sections the following hypothesis has been formed.

H_2: Age can affect the packaging influenced purchase (PIP) behaviour of urban and rural BoP consumers.

Education: Education has a direct association with the habits and savings mentality of consumers [47]. Literature also indicates that education reduces price sensitivity and creates motivation for buying quality products [48]. For BoP consumers, the aspiration of education also increases the chance to spend more on children's education, which affects the spending habits and budget allocation.

Based on this demographic variable and literature from previous sections the following hypothesis has been formed.

H_3: Education can affect the packaging influenced purchase (PIP) behaviour for urban and rural BoP consumers.

Household size and home ownership: Per capita income is being directly associated with the household size [49]. An increase in household size decreases the per capita demand for food [50]. This is also applicable to BoP households. Households with many family members face purchase constraints. As a result, they may indulge in less price products, local shops where local brands are available [51], products loosely available rather than packaged to ensure quality.

Talking about ownership of the house, the literature showed that feeling of house ownership is associated with satisfaction and self-esteem [51]. Spending habit, borrowing habits also depend on the house ownership up to great extent [52].

Based on this demographic variable and literature from previous sections, the following hypothesis has been formed.

H_4: Household size, Status in the family, Preference towards local shops affect the packaging influenced purchase (PIP) behaviour for urban and rural BoP consumers.

Gender: Males and females show different attitudes for shopping behavior [53], purchase intention made based on web-based advertisements [17], green purchase behaviour [54] etc.

Based on this demographic variable and literature from previous sections, the following hypothesis has been formed.

H_5: Gender affects the packaging influenced purchase (PIP) behaviour of urban BoP consumers.

Apart from the above-mentioned demographic variables "average duration spent on TV", "noticed product packaging while watching ad", "which packaging element influenced most" have been considered for this study to check whether these can affect packaging influenced purchase (PIP) behaviour.

Regarding the psychological factors, the following factors have been considered:

Political Interests and Ethical concerns: The research suggested that consumers involved in political and community matters spent time in society, which in turn affect their purchase behaviour [55]. Even due to political reasons, consumers may show preference to buy or boycott products [56]. Talking about ethical concerns, BoP consumers, although they know about unethical practices of local shops (Kirana), still purchase from them due to social influence or peer reference.

Customer Expectation: This refers to set of behaviours or actions consumers anticipate from a product or service. It is directly associated with consumer satisfaction. Many studies have reported that prediction of the socio-economic conditions [57] and predictions of the consumption pattern of non-durables and services [58] influenced consumers' expectations.

Perceived Opportunity: This is the consumers' capability to become aware of the opportunities that can improve their lifestyle. Arenius and Clercq (2005) suggested that people who participated less in the social-network or groups can explore more opportunities [59]. This is the reason why this study also wants to justify this psychological factor with BoP consumers.

Perceived Self-Efficacy: It encompasses a consumer's confidence towards various stages of the purchase process [59]. An increase in self-efficacy leads to searching for premium quality products, more information search and improved brand loyalty.

Hence, this study investigates if the factors mentioned above influence PIP on urban and rural BoP consumers.

H_6: Political Interest, Consumer expectation, Perceived opportunity, Perceived Self-Efficacy affect the packaging influenced purchase (PIP) behaviour of urban and rural BoP consumers.

3. Research Context and Methodology

3.1. Method and Selection of Variables

To test hypotheses, experimental design has been followed. From the literature review, demographic and psychological variables have been selected. The flow of this study has been presented in Fig 1.

The below mentioned table (Table 1) is showing the sources and score calculation technique for each psychological variable.

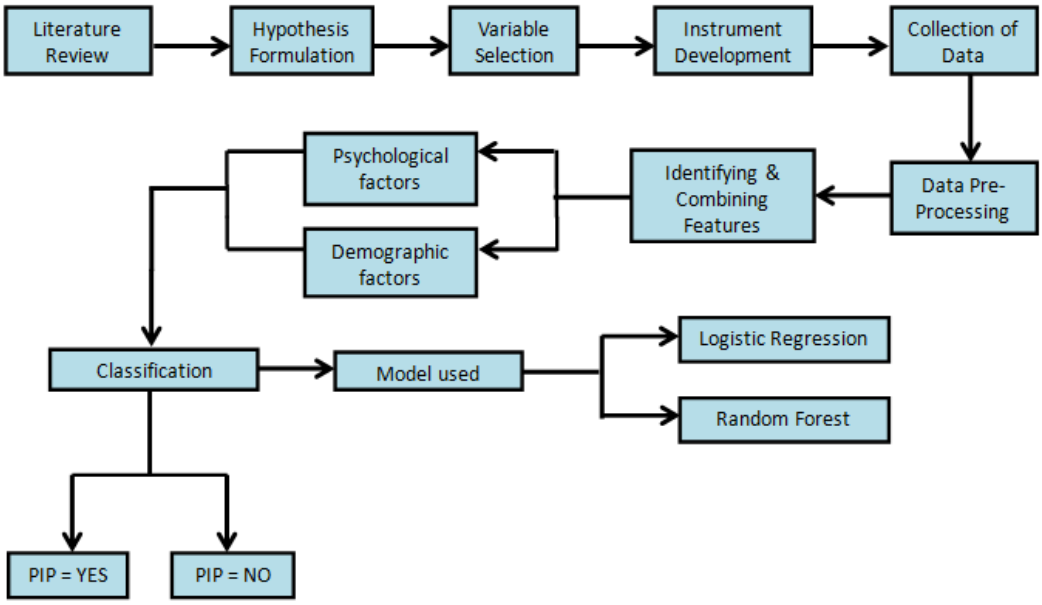

Fig.1. Flow chart of the study

Table 1. Source and score calculation technique of psychological variables

Psychological Variable	Source	Score calculation technique
Customer expectation	Questions have been developed on the basis of variables included in the study conducted by Kulkarni (2011).	Internal consistency has been evaluated. Mean score has been calculated for this variable to use it in further analysis.
Perceived opportunity	Questions have been developed on the basis of variables included in the study conducted by Yee & San (2011).	Internal consistency has been evaluated. Mean score has been calculated for this variable to use it in further analysis.
Perceived self-efficacy	Questions used in the study by Hu et al., (2007).	Internal consistency has been evaluated. Mean score has been calculated for this variable to use it in further analysis.
Political interest	Questions have been developed on the basis of variables included in the study conducted by Stolle et al., (2005).	Internal consistency has been evaluated. Mean score has been calculated for this variable to use it in further analysis.

3.2. Reasons for Selecting Paschim Medinipur and North-24-Pgs

As per the District Human Development Report (2011) of Paschim Medinipur, the district is one of the largest districts located at the southern part of the West Bengal State. It ranks 3rd in terms of the population density of the rural population. It comes in the top ten (8th place) for showing high Human Poverty Index. This district secures 6th position in literacy rate (70.41%). Regarding providing basic amenities, the district ranks 12th for providing provisions of electricity, latrine and safe drinking water for all the residents. Approximately 76.79% of Mouzas are under electricity coverage (up to 2010). Up to 2009, there are a total of 26,205 Self Help Groups (SHGs) and 21,743 women are associated with it. Most of the places are interconnected through massive cable networks, television, local newspapers, street hoardings.

Among the twenty-three districts of West-Bengal, this study has used North-24-Pgs to select urban and rural BoP consumers. As per the Human Development Report (2009), the following are some highlights for choosing this district. This district qualifies in the top three ranks in terms of the population density as well as in terms of the total number of populations. It has been considered as the largest district of West Bengal. This district has been able to achieve 2nd rank in the literacy rate among all other districts. Despite this, it lacks in per capita income and does not qualify in the top ten ranks to create employment opportunities. It has a very lower job participation rate (only 33.45%) and thus stands at 17th rank among other districts.

Although having qualified resources, this district has very low per capita income for most of its inhabitants. The rural areas of North-24-Pgs are wide-spread with a total of twenty-two developmental blocks. Although having proximity to Kolkata, villages have electricity ranging from 79.83% to 95.59% for domestic use. This fact also supports low facility-based infrastructure for some rural areas. The report highlights a huge diversity in BPL (Below Poverty Line), ranging from 20.28% to 59.81%. For rural areas, the figure is approximately 29.28%.

These facts support the idea of collecting data of BoP consumers from these two districts.

3.3. Design of the Questionnaire

A structured questionnaire has been developed to administer the survey procedure. Most of the demographic variables have been categorically developed. All the psychological variables have been developed using a 5-point likert scale.

The list of profiles of the respondents along with the entire demographic variables has been represented in the Appendix 1.

3.4. Selection of the Sample

Finding the eligible BoP consumers is very challenging due to fluctuations in economic conditions, un-stability of jobs, engagement with more than one work, variable income based on nature of employment, sudden termination from employment, migration to another place, etc. Therefore, adhering to the literature's definition of BoP consumers may not be strictly maintained while collecting data. It happened for some respondents that while collecting data, they are earning $2 or more than it per day. But many times, in a year, like for weeks even for months either they are earning very less or not earning anything at all. All the respondents have been selected here as per the average monthly income of equal or below Rs 10,000.

For collecting data from the rural BoP consumers, the register of the Self-Help Groups (SHGs) and Health and Wellness Centre (HWC) play a significant role as the sampling frame. The registers of local clubs' act as sampling frames for most of the men BoP consumers. A total of 600 rural BoP consumers have been sampled from the above mentioned two districts. Convenience sampling method has been applied.

For collecting data of urban BoP consumers apart from the sources mentioned above, slum areas help us to locate many BoP consumers. One respondent's reference helps to identify another respondent using snowball sampling [60] technique. A total of 800 urban BoP consumers have been sampled.

The entry criteria have been fixed before collecting the data that each respondent participates in the purchase decision and purchase products for themselves and their family.

3.5. Selection of the Product

Several studies [61,62] have highlighted the growing demands of India's FMCG sector. BoP consumers have shown an increasing demand for this market [32]. Continuous growth has been observed in the FMCG sector by both urban and rural consumers of India [63]. This validates the selection of the FMCG sector. Based on the two reports: the first one by PricewaterhouseCoopers for IBEF [63] and another one by Bain Company and Kantar Worldpanel with support from the Confederation of Indian Industry (CII) [21] the penetration of FMCG products into urban and rural India has been used as references for finalizing FMCG food products for this study.

3.6. Procedure

The Activated Social Health Activists (ASHAs) and some club members act as volunteers to facilitate the data collection procedure. During routine health check-ups at HWCs or working at SHGs data have been collected from a group of respondents. Events at local clubs help to collect data from men BoP consumers. Before collecting data, the purpose of this data collection procedure has been narrated to them. After collecting data, a small amount of financial reward has been provided to all the respondents along with snacks to show acknowledgement. Everyone participated voluntarily and has shown immense enthusiasm and positive motivation throughout the procedure. The literacy rates of districts validate that the maximum number of the people can speak and write the regional language (Bengali) and express their feelings in Bengali. Electricity coverage, inter-connectivity indicates that they spend time watching televisions or have a minimum understanding of media, advertisements etc.

3.7. Pretest

The questionnaire has been translated to Bengali from English for collecting data. To check the validity and reliability of the translated questionnaire, the back-translation technique has been used [64]. After conducting a pilot study with 50 respondents, the internal consistency of the instrument has been ensured by Cronbach's alpha, KR-20 [65] and Cohen's kappa coefficients [66] for ratio, dichotomous and ordinal variables respectively.

3.8. Selection of Techniques

Over the years, machine learning techniques have found applications in diversified domains like healthcare [67] agriculture [68], environmental sciences [69], management sciences [70] and so on. In this paper, application of more than one machine learning based classifier has been deployed to compute the classification between urban and rural BoP on the basis of above mentioned two types of factors. Four classification techniques i.e., Random Forest Classifier, Logistic Regression (LR), K-Nearest-Neighbour (KNN) [71] and Support Vector Machine (SVM) [72] have been applied to find out the overall contribution of all demographic variables behind making PIP decisions. The accuracy, precision and recall parameters [73] of these four classifiers have been shown in Table 2. The data has been analysed using python programming language in Jupyter Notebook in anaconda, which is a free and open-source distribution. SPSS also has been used for the analysis purpose. After studying the nature of the variables, classification techniques have been applied.

4. Finding and Analysis

The following subsections are highlighting pre-processing, finding and interpretations of both demographic and psychological variables along with practical marketing implications. We have tried to connect the finding with existing literature of BoP consumer behaviour. This strengthens the applicability of this study.

4.1. Data Pre-processing

After collecting the data, using the Distance and Density-based approach [74] outliers have been detected and through the Box-plot technique they have been visualized. After detection, serious outliers have been replaced by mean and mode for continuous and categorical variables respectively. All variable's missing values have been replaced by either mean or mode of the rest of the values for that variable for continuous and categorical variables, respectively. Finally, the scaling and transformation technique has been done using the 'StanadardScalar function of sklearn.preprocessing package' to convert every variable to standardized variables before applying further analysis.

4.2. Effect of Demographic Variables

The random forest classifier has outperformed the rest of the classifiers in terms of all these parameters. The accuracy represents the total number of correct predictions (Here making PIP yes when it is yes and predicted PIP no, when it is no) over the total number of predictions. Precision represents 'true positives' (predicted PIP yes when it is actually yes) over actual results (predicted PIP yes when it is actually yes and predicted PIP yes when it is actually no). Finally, Recall denotes 'true positives' (predicted PIP yes when it is actually yes) over predicted results (predicted PIP yes when it is actually yes and predicted PIP no when it is actually yes).

The precision denotes how much this model is trustable and the recall is highlighting how well the model can

detect the class. ROC (Fig 2) also indicates the performance of the four classification techniques among which random forest performs best.

Table 2. Accuracy, precision and recall parameters of the classifiers

Type of BoP	Names of the classifiers	Accuracy	Precision	Recall
Urban BoP	Random Forest	82	84	94
	LR	76	74	90
	KNN	70	83	72
	SVM	75	75	90
Rural BoP	Random Forest	75	80	88
	LR	68	73	83
	KNN	60	83	72
	SVM	66	78	70

Table 3. Significant demographic features (variables) affecting PIP for urban and rural BoP consumers

Type of BoP	Names of the classifiers	Significant Features
Urban BoP	Random Forest	'Income'*, 'Occupation'*, 'Age'**, ' Average duration spent on TV'**, 'Influence of packaging element'**, 'Number of dependent'*.
Rural BoP	Random Forest	'Income'**, 'Occupation'**, 'Age'**, ' Average duration spent on TV'+, 'Influence of packaging element'*, 'Number of dependent'+, 'Prefer only local shop for buying'*.

Note: **p < .01, *p < .05, +p < .10

As the Random Forest classifier performs best, the feature scores for each demographic variable have been computed using this classifier. We have selected those variables that can perform best in terms of training complexity, accuracy and model evaluation techniques (overfitting and underfitting). Table 3 highlighted all the factors along with their p-value, those found significant for making PIP decisions for both urban and rural BoP consumers.

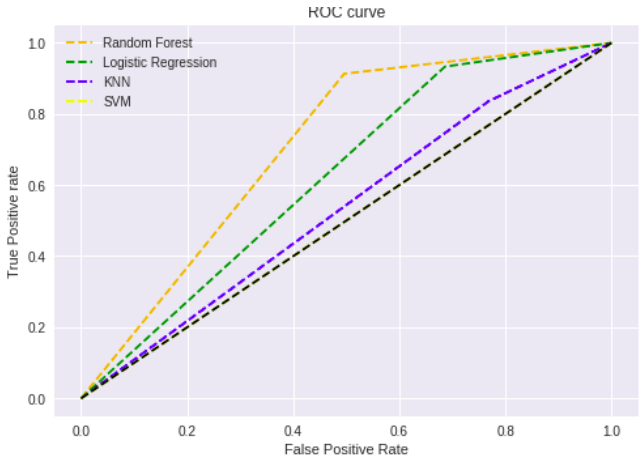

Fig.2. ROC curve.

The accuracy and precision of every significant factor has been shown in Fig 3 and Fig 4 respectively.

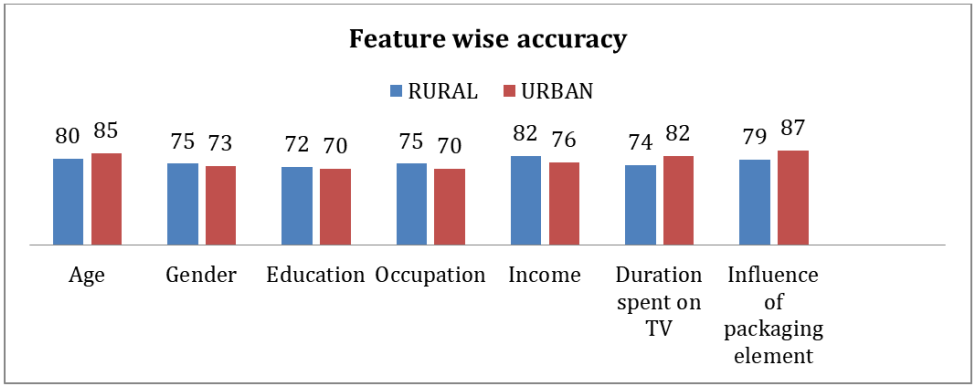

Fig.3. Feature wise Accuracy of demographic variables for rural and urban BoP

From the figures it can be noticed that synchronization exists between accuracy and precision levels for every variable that indicates all the variables that have increased the accuracy for making positive or increased PIP decisions are also responsible for increasing precision level.

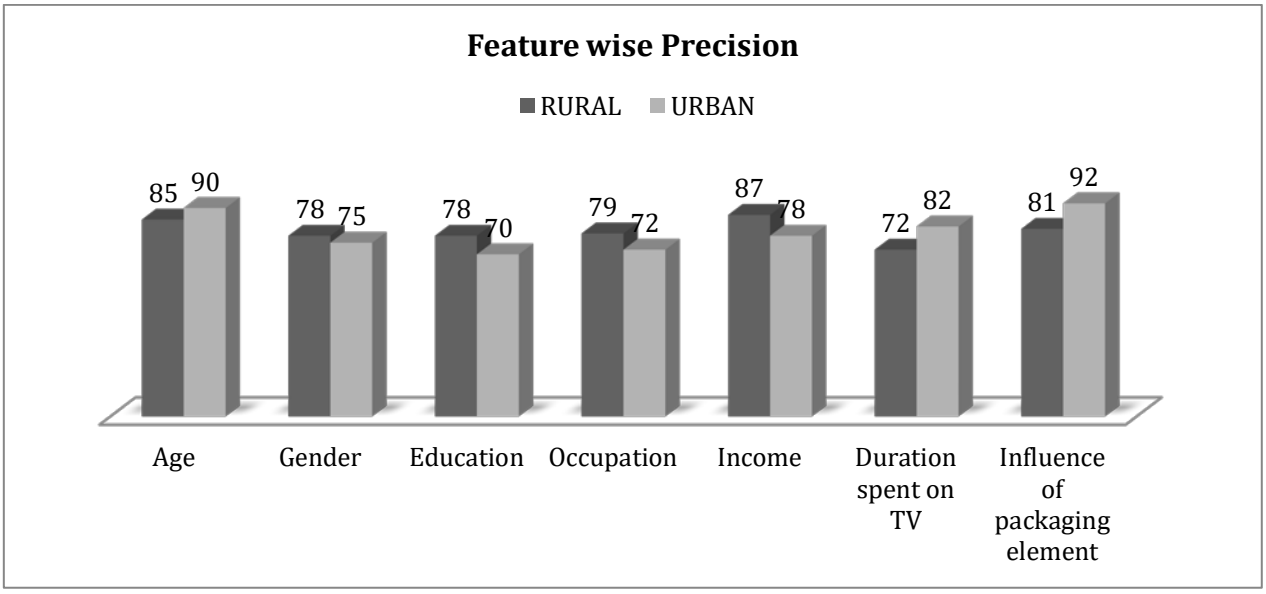

Fig.4. Feature wise Precision of demographic variables for rural and urban BoP

Income, age and influence of packaging elements followed by occupation, gender, education and duration spent on TV found to be the most significant demographic variables for the rural BoP consumers. For rural BoP 'Prefer only local shops for buying' also found significant variables.

For urban BoP consumers the order of factors affecting PIP is influence of packaging element, age, duration spent on TV followed by income, gender, occupation, education.

Interpretation: Rural consumers found more price sensitive for making PIP related decisions. The reason is rural consumers generally have less employment opportunities. Mainly they are dependent on farming. This scenario is somehow different for urban areas where they can fit themselves in many jobs like factories, carpentry, master artisans, household assistants, etc. This may be a reason why income is very crucial for rural BoP. Age is a common significant factor as the young age-group followed by the middle age group has more exposure to news, media, social media, TV, etc. That acts as a catalyst to become aware and knowledgeable, for which they can influence PIP decisions or can make PIP (Fig 5). This also indicates the influence of children in a family for making PIP decisions.

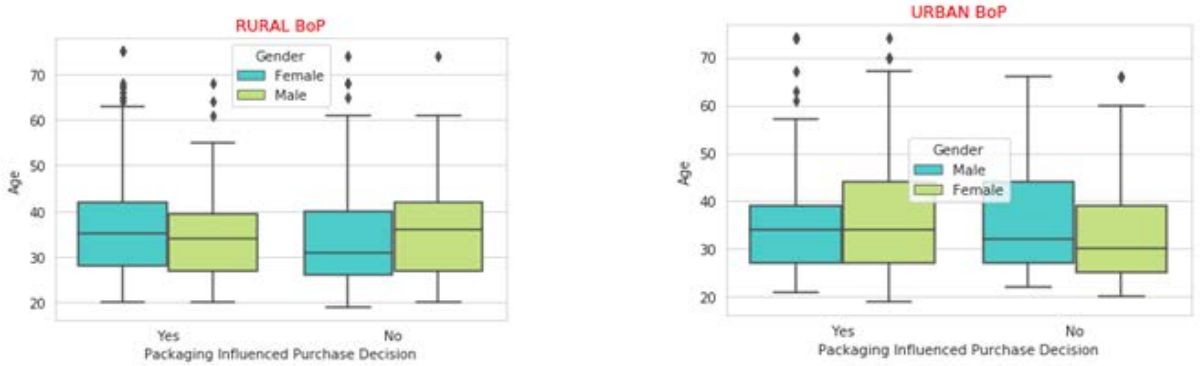

Fig.5. Visualization for PIP decisions and 'Age' by male and female

Needless to say, urban areas are more developed in terms of digital connectivity which supports the reason why 'average duration spent on TV' is more impactful for urban BoP consumers (Fig 6). Influence of packaging elements is common for both groups. Perhaps the elements of packaging are different. Rural areas are more influenced by visuals. Whereas, information, innovation affect the urban BoP mostly.

For gender, the female has shown more interest in PIP decisions compared to males. For most of the families in India, the purchase of FMCG products involves female members compared to male family members.

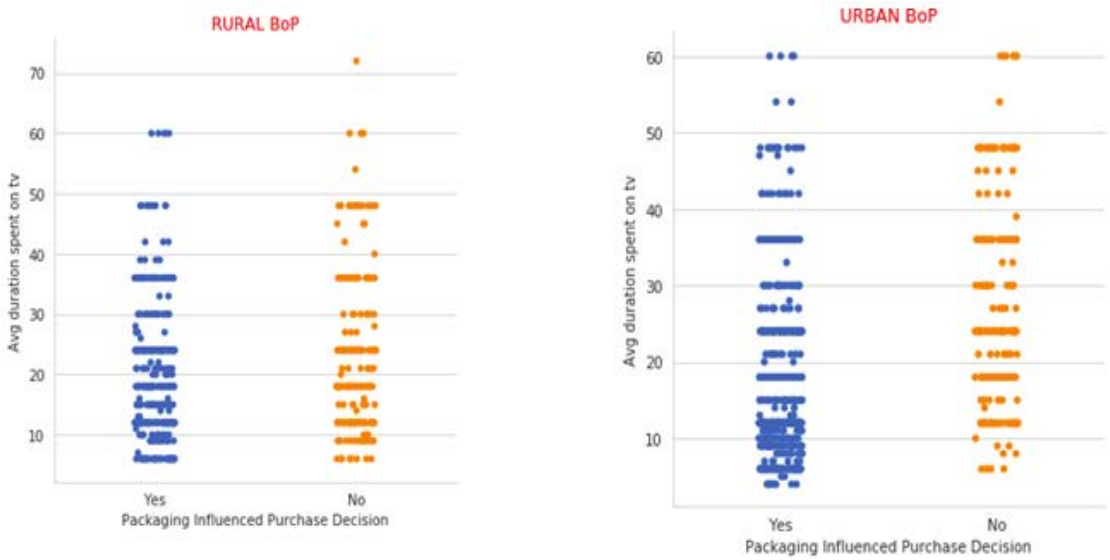

Fig.6. Visualization for PIP decisions and 'Average duration spent on TV' by male and female

4.3. Effect of Psychological Variables

For classification of PIP, based on psychological factors, the Logistic Regression classifier has been shown the highest level of accuracy (for urban 85% and for rural 78%) and precision (for urban 92% and for rural 85%). The significance, coefficient and odds-ratio of each variable have been provided in table 4 for both urban and rural BoP consumers.

For both urban and rural BoP segments, 'Customer expectation' and 'Perceived self-efficacy' found to be significant at 95% CI level. 'Political interest' found to be significant for only rural BoP consumers. 'Perceived opportunity' found to be significant at 90% CI level for only urban BoP consumers (Table 4).

From the odds ratio, it can be concluded that for urban BoP consumers, 'Customer expectation' increases the highest chance among all other psychological variables, for making PIP by 1.09 compared to not making PIP. For rural BoP, 'Political interest' increases the highest chance among all other psychological variables for making PIP by 3.54 compared to not making PIP.

Table 4. Result of LR classifier on psychological variables

Predictor	B	Wald	p-value	Odds Ratio
Urban				
Customer expectation	1.78	20.78	0.000**	1.09
Perceived opportunity	0.08	2.90	0.100+	0.31
Perceived self-efficacy	1.92	30.08	0.050*	0.89
Political interest	1.01	6.92	0.101	0.11
Rural				
Customer expectation	0.29	0.78	0.020*	0.91
Perceived opportunity	0.48	0.921	0.190	0.07
Perceived self-efficacy	0.59	1.41	0.030*	0.49
Political interest	0.77	19.90	0.001*	3.51

Note: **p < .01, *p < .05, +p < .10

Feature-wise accuracy and precision values for urban and rural BoP have been shown in Fig 7 and Fig 8, respectively. Synchronization has been observed for each variable for accuracy and precision level. This confirms the consistency among the respondents and the contribution of variables behind increasing the chance of PIP.

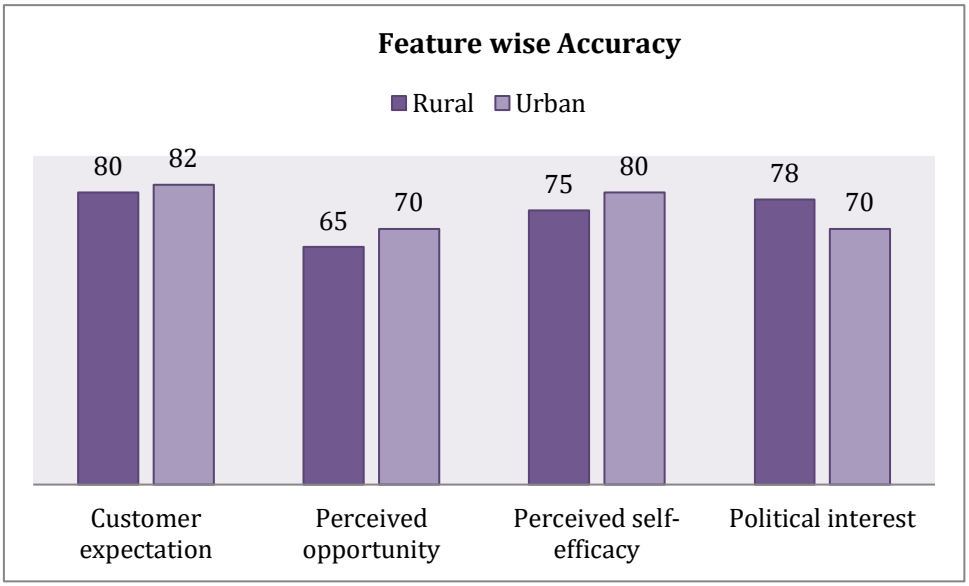

Fig.7. Feature wise Accuracy of psychological variables for rural and urban BoP

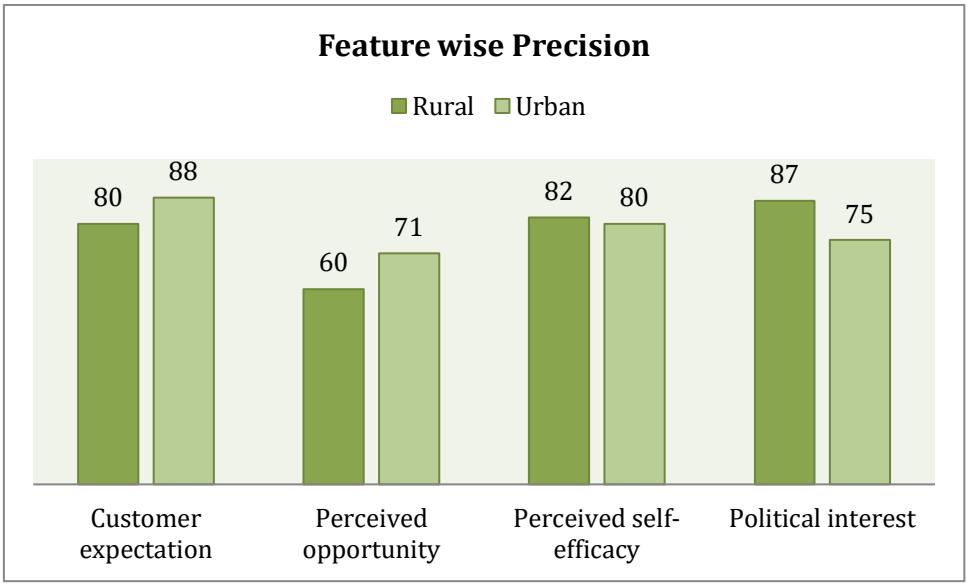

Fig.8. Feature wise Precision of psychological variables for rural and urban BoP

5. Interpretation

It can be interpreted that for both BoP consumers, psychological variables play a significant role. 'Customer expectation' and 'Perceived self-efficacy' were found to be the common significant factor for both BoP consumers. This finding can be interpreted in line with the findings of Martin and Hill (2012) [44], where more autonomy and relatedness results in improvised consumption, life satisfaction, and poverty alleviation. The significance of these two factors highlights that both rural and urban BoP consumers possess some expectations of their purchase. Naturally, they want to invest (can be mapped with autonomy and relatedness) their hard-earned money where the price, availability, product features, quality, and information are satisfactory. Given the limited income and other constraints, the concept of low involvement is not present among the BoP families as every purchase decision is important regardless of the price and nature of the product [75]. Change in lifestyle, influence of family, extended family [5], peers and reference groups, increasing literacy, exposure to television, social network, and media, and looking for "value-based purchase" [76], are resulting in self-efficacy. They can also judge products and be sensitive to brands as they have their own choices while making purchases. This is in line with Prahalad and Hammond (2002) [1] who repeatedly emphasized BoP consumers' equal rights, when deciding on the purchase. They have argued that no one else can decide their interests. Another way it can be placed is that both of these consumers can't afford sudden change of brands or products. Hence they emphasized more on their expectations and efficacy while making any purchase.

Urban BoPs are also getting affected by 'Perceived opportunity' as they have more exposure to modern lifestyle [28] through the workplace, schooling of children, providing domestic assistance, etc. As a result, they are looking for

less perceived risk and more perceived quality while taking PIP decisions.

Along with the above mentioned two psychological variables, rural BoPs are getting affected by 'Political interest', which shows their dependency on peer groups or towards a particular community before making PIP decisions. This can be strongly mapped with the concept of 'social capital' [77]. Social capital refers to a network of family, friends and associates that allow people to act accordingly. They are getting influenced by peer groups and extended family, respectively. Following this concept, they are showing loyalty to the local retailers. This act can also be explained as their learned behaviour, which they have seen their family members and friends follow for a long time from the past. Moreover, due to not so improved interconnectivity, they are mainly dependent on local shops, which again validate this factor's significance. The opportunity for less employment for rural BoPs than urban BoPs, make them more dependent on instalment payment for purchasing items. This also makes the influence of a particular local shop-keeper significant.

This study also helps to emphasize the ethical concerns of the marketers, those aims to target BoP consumers for making PIP. As packaging can act as the interaction point between consumers and products. It has the potential to lead the consumption pattern both towards compensatory consumption [78] as well as consumer resistance [20, 79]. Due to attractive packaging BoPs may end up buying unnecessary products or overspends [80] their extremely limited income to fulfil general lacks or deficiencies in their life [81] or when their confidence gets threatened in their self-views [82], to gain social acceptance, or to consume "better than their peers"[83], to link between link between power and consumption, which results as a response (consumption) to compensate for the psychological state of lack of economic power[84]. This is in line with the propositions of Karnani (2005) [85], who talked about the idea that "romanticizing poor" through nonessential attractive marketing policy [3] will not help the poor, instead will "harm" them. Hence marketers need to be careful while designing packets as well as during the development of marketing strategies to influence BoP consumers for making PIP decisions. Now talking about consumer resistance, packaging can communicate important communications by overcoming consumer ignorance, resistance. Packaging effectively can highlight usage, benefits, pricing, expiry dates that aids the decision-making process of BoP consumers to make wise purchase decisions, not merely overspend in the consumption of "not so necessary" purchases by scarifying basic needs. In this way it can facilitate building and nurturing the inter-personal relationship between products/brands and consumers and not getting merely influenced by aggressive, attractive and expensive marketing strategies.

6. Conclusions and Managerial Implications

The study provides empirical evidence that both demographic and psychological variables affect packaging influenced purchase (PIP). Both urban and rural BoPs are getting affected by both demographic and psychological variables. At the same time, the significance level and contribution of demographic variables are different for urban and rural BoP consumers. Same scenario happens for psychological factors. Some factors that are significant for rural areas may not be found effective for urban and vice versa.

This difference among significant variables can be seen as evidence that PIP is getting affected by genuine factors like lifestyle, socio-economic conditions etc. for both urban and rural BoP. The high level of accuracy for the classifier proves a high level of consistency among the urban and rural consumers for taking PIP decisions.

Apart from the above-mentioned theoretical implication, significant psychological factors denote that the consumption pattern of BoP has the potential to make BoP as a noteworthy consumer segment with aspirations of a better lifestyle. Making them 'fools' by mere marketing strategy will not always help.

As a managerial implication, this study can provide marketers with guidelines about significant demographic and psychological variables affecting PIP. Marketers can use it for better targeting. They can also use this information to design advertisements of FMCG products that they are planning to target BoP consumers.

7. Future Scope

To gain more insight, a qualitative study can be conducted to gain more insight about the influence factors that caused PIP. More psychological variables can be introduced. More districts can be covered to get more generalized results. Apart from the influence of packaging on FMCG products, other products like luxury products can also be studied.

APPENDIX 1: Demographic Profile of Urban and Rural BoP Consumers

	Urban BoP	Rural BoP
Gender		
Male	390	260
Female	410	340
Age		
Young	267	203
Mid age	304	199
Elder	229	198
Income		
< Rs.10,000 per month	300	200
Rs. 10000 - Rs. 20,000 per month	300	300
> Rs. 20,000 per month	200	100
Occupation		
Farming	63	315
Other (factory, mason, wall paining, carpentry etc)	397	155
Household assistance	340	130
Education		
Completed School Education	250	161
Completed/Pursuing Graduation	438	309
Completed/Pursuing Post-Graduation	23	78
Illiterate	89	52
Size of the household (Respondent and dependent member)		
3 members	269	165
4 to 6 members	301	210
More than 6 members	230	225

Average hours spent on TV per week		
< 10 hours	193	185
10-20 hours	469	284
>20 hours	138	131

Packaging element influenced most		
Visual	153	446
Information and innovation	647	154

Prefer only local shop for buying		
Yes	174	389
No	626	211

How often purchase has been made		
After a fixed time interval	197	124
Whenever required	109	49
When consumers can afford	494	427

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