

CONSUMER BUYING BEHAVIOUR TOWARDS BEE-LABELLED WHITE GOODS IN RAMANATHAPURAM DISTRICT

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Abstract:

The growing concern for energy conservation, rising electricity costs and environmental sustainability has increased consumer interest in energy-efficient household appliances. The Bureau of Energy Efficiency (BEE) star-rating label provides consumers with information about the energy efficiency of white goods and supports informed purchasing decisions. The present study examines Consumer Buying Behaviour Towards BEE-Labelled White Goods in Ramanathapuram District. The study specifically focuses on consumers' perceptions of BEE star ratings and energy-efficiency labels and examines their buying behaviour towards BEE-labelled white goods. A descriptive and analytical research design was adopted for the study, and data were collected from 385 respondents through a structured questionnaire using a five-point Likert scale. Convenient sampling was used for selecting the respondents. Primary data were analysed using frequency, percentage, mean score and standard deviation. The demographic analysis indicates that the respondents represent diverse age, educational, occupational, income and residential backgrounds. The mean score analysis reveals an overall favourable attitude towards BEE-labelled white goods, with an overall mean score of **4.10**. Among the various dimensions, consideration of energy consumption while comparing different brands recorded the highest mean score of **4.28**, followed by willingness to purchase higher-rated BEE appliances with a mean score of **4.21**. The findings indicate that energy consumption, BEE star ratings and willingness to purchase energy-efficient appliances are important considerations in consumer buying behaviour. The study concludes that greater awareness and trust in BEE labelling can encourage informed purchasing decisions, promote energy-efficient consumption and contribute to sustainable household practices in Ramanathapuram District.

Keywords: Consumer Buying Behaviour, BEE Label, White Goods, Energy Efficiency, BEE Star Rating, Consumer Awareness, Sustainable Consumption.

1.1 Introduction

The rapid growth of consumer awareness regarding energy conservation and environmental sustainability has significantly influenced the household appliance market. White goods such as refrigerators, washing machines, air conditioners and other major domestic appliances consume considerable amounts of electricity during their operating life. As a result, consumers are increasingly considering not only the purchase price and product features but also energy efficiency, operating costs and environmental impact when making purchasing decisions. In India, the Bureau of Energy Efficiency (BEE) has introduced the Standards and Labelling programme to provide consumers with information about the energy efficiency of appliances. The BEE star-rating label enables consumers to compare appliances according to their energy performance. Appliances carrying higher star ratings generally indicate greater energy efficiency and can help consumers reduce electricity consumption and long-term operating expenses. Therefore, BEE labelling has become an important source of information in the purchase of energy-efficient household appliances.

Consumer buying behaviour refers to the process through which individuals identify their needs, search for information, evaluate alternatives, make purchase decisions and assess products after purchase. In the case of BEE-labelled white goods, buying behaviour can be influenced by several factors, including awareness of BEE labels, perceived energy savings, product price, brand image, product quality, durability, environmental concern, electricity cost, trust in the BEE label and availability of information. The increasing participation of women in the workforce has also contributed to changes in household purchasing patterns. Working women frequently participate in decisions relating to household appliances and may consider convenience, durability, energy consumption, maintenance costs and long-term economic benefits when selecting products. Their level of awareness about energy-efficient appliances may therefore play an important role in promoting sustainable household consumption. Ramanathapuram District provides an appropriate geographical setting for examining consumer behaviour towards BEE-labelled white goods. Differences in income, occupation, education, household characteristics, access to information and awareness of energy-efficiency programmes may influence consumers' preferences and purchasing decisions. Although studies have examined energy-efficient appliance adoption and consumer attitudes towards energy labels, comparatively limited attention has been given to consumer buying behaviour towards BEE-labelled white goods at the district level, particularly in Ramanathapuram. The present study therefore focuses on Consumer Buying Behaviour Towards BEE-Labelled White Goods in Ramanathapuram District. The study seeks to understand consumers' awareness and perceptions of BEE labels and identify the factors influencing their purchase decisions. It can also provide useful insights for appliance manufacturers, retailers, policymakers and energy-efficiency agencies in developing effective consumer awareness and marketing strategies.

1.2 Review of Literature

Nguyen et al. (2025) conducted a systematic literature review of consumer purchases of energy-efficient appliances. The study reviewed a large body of empirical research and classified the factors affecting energy-efficient appliance purchases into socioeconomic, psychological, situational and marketing-related factors. The review highlighted the importance of consumer attitudes, perceived benefits, social influence, economic considerations and environmental concerns. The study also identified the Theory of Planned Behaviour (TPB) as one of the commonly used theoretical approaches for understanding energy-efficient appliance purchase behaviour.

Rai, Patyal and Ambekar (2025) investigated women's adoption of energy-efficient appliances from the perspective of sustainable consumption. Their research examined the role of eco-literacy and factors such as attitude, subjective norms, perceived behavioural control and environmental consciousness in influencing women's intentions to adopt energy-efficient appliances. The findings suggest that women's environmental awareness and knowledge can contribute to sustainable purchasing behaviour. This study is highly relevant to the present research because it establishes the relationship between women consumers and energy-efficient appliance adoption.

Kishore, Shubin Tad and Lija (2023) examined women consumers' perceptions of selected white goods. The study focused on the factors considered by women while purchasing household appliances and examined the challenges encountered during the purchase process. The findings highlighted the importance of product-related and consumer-related factors in determining preferences towards white goods. This study is particularly relevant to the present research because it establishes the importance of studying women consumers in the white-goods market.

1.3 Research Gap

The existing literature demonstrates that consumer awareness, energy efficiency, price, environmental concern, product quality, perceived usefulness, social influence and trust can influence the purchase of energy-efficient appliances. Previous studies have also examined women's perceptions of white goods and the role of energy labels in consumer decision-making. However, there is a research gap at the district level, particularly regarding the buying behaviour of consumers towards BEE-labelled white goods in Ramanathapuram District. Limited studies have simultaneously considered BEE label awareness, perceived energy savings, price, brand preference, product quality, environmental consciousness and trust in BEE labelling in explaining consumer buying behaviour. Therefore, the present study attempts to address this gap by examining the factors influencing consumers' purchase decisions towards BEE-labelled white goods in Ramanathapuram District.

1.4 Objective of the Study: To assess consumers' perception towards BEE star ratings and energy-efficiency labels.

1.5 Research Methodology: The study will adopt a descriptive and analytical research design to examine consumer buying behaviour towards BEE-labelled white goods in Ramanathapuram District. The population of the study comprises consumers residing in Ramanathapuram District who are aware of, have purchased, or are potential purchasers of BEE-labelled white goods such as refrigerators, washing machines and air conditioners. A sample of 385 respondents will be selected for the study using a convenient sampling technique. Primary data will be collected through a structured questionnaire, while secondary data will be obtained from research journals, books, government publications, reports, websites and publications of the Bureau of Energy Efficiency (BEE). The questionnaire will consist of demographic details and statements relating to BEE label awareness, energy efficiency, perceived energy savings, price, product quality, brand image, environmental consciousness, trust in BEE labelling, perceived economic benefits and consumer buying behaviour. The findings of the study are expected to provide insights into the factors influencing consumer adoption of BEE-labelled white goods and contribute to promoting energy-efficient and sustainable consumption in Ramanathapuram District.

1.6 Data Analysis and Interpretation

1.6.1 Demographic Profile of the Respondents

Table 1.1 Demographic Profile of the Respondents

S. No.	Demographic Variable	Category	Frequency	Percentage (%)
1	Gender	Male	142	36.88
		Female	238	61.82
		Other	5	1.3
		Total	385	100
2	Age	Below 25 years	52	13.51
		25–35 years	126	32.73
		36–45 years	112	29.09
		46–55 years	67	17.4
		Above 55 years	28	7.27
		Total	385	100
3	Educational Qualification	School level	31	8.05
		Undergraduate	108	28.05

		Postgraduate	151	39.22
		Professional qualification	82	21.3
		Other	13	3.38
		Total	385	100
4	Occupation	Government employee	86	22.34
		Private-sector employee	139	36.1
		Self-employed	51	13.25
		Business	48	12.47
		Homemaker	47	12.21
		Other	14	3.64
		Total	385	100
5	Monthly Family Income	Below ₹25,000	48	12.47
		₹25,001–₹50,000	103	26.75
		₹50,001–₹75,000	109	28.31
		₹75,001–₹1,00,000	72	18.7
		Above ₹1,00,000	53	13.77
		Total	385	100
6	Place of Residence	Rural	168	43.64
		Semi-urban	119	30.91
		Urban	98	25.45
		Total	385	100
7	Type of White Goods Owned	Refrigerator	64	16.62
		Washing machine	51	13.25
		Air conditioner	38	9.87
		Television	29	7.53
		More than one of the above	191	49.61
		Other	12	3.12
		Total	385	100

Source: Primary Data

The above table presents the demographic profile of the 385 respondents selected for the study. With regard to gender, females constitute the majority of the respondents with 238 (61.82%), followed by males with 142 (36.88%), while 5 (1.30%) respondents belong to other categories. In terms of **age**, the largest group comprises respondents aged 25–35 years (32.73%), followed by those aged 36–45 years (29.09%). Regarding educational qualification, postgraduates constitute the largest group with 151 respondents (39.22%), followed by undergraduates with 108 (28.05%). With respect to occupation, private-sector employees form the largest group with 139 respondents (36.10%), followed by government employees with 86 (22.34%). In terms of monthly family income, the largest proportion earns ₹50,001–₹75,000 (28.31%), followed by ₹25,001–₹50,000 (26.75%). Regarding place of residence, the majority of respondents are from rural areas (43.64%), followed by semi-urban areas (30.91%) and urban areas (25.45%). Finally, concerning white goods owned, nearly half of the respondents, 191 (49.61%), own more than one type of white good, while refrigerators account for 64 respondents (16.62%). Overall, the sample represents respondents with diverse demographic and socioeconomic characteristics, providing a reasonable basis for analysing consumer buying behaviour towards BEE-labelled white goods.

1.6.2 Consumer Buying Behaviour Towards BEE-Labelled White Goods- Mean Score Analysis:-
Consumer Buying Behaviour Towards BEE-Labelled White Goods refers to the way consumers think, evaluate, choose, purchase, and use household appliances that carry the Bureau of Energy Efficiency (BEE) energy-efficiency label. Table 1.1 Consumer Buying Behaviour Towards BEE-Labelled White Goods.

Table 1.2 Consumer Buying Behaviour Towards BEE-Labelled White Goods- Mean Score Analysis

S. No.	Code	Consumer Buying Behaviour Statements	Mean Score	S.D.	Rank
1	CBB1	I prefer BEE-labelled white goods over non-labelled alternatives.	4.13	0.78	IV
2	CBB2	BEE star rating influences my final purchase decision.	4.17	0.75	III
3	CBB3	I compare BEE ratings before purchasing white goods.	4.08	0.81	V
4	CBB4	I am willing to purchase a higher-rated BEE appliance.	4.21	0.72	II
5	CBB5	I consider energy consumption when comparing different brands.	4.28	0.68	I
6	CBB6	I would recommend BEE-labelled energy-efficient appliances to others.	3.96	0.87	VI
7	CBB7	I intend to purchase BEE-labelled white goods in the future.	4.02	0.84	VII
8	CBB8	BEE labelling has positively influenced my purchase behaviour.	3.91	0.89	VIII

Source: Primary Data

The above table presents the mean score analysis of consumer buying behaviour towards BEE-labelled white goods among 385 respondents. The overall mean score of 4.10 indicates that respondents have a highly favourable buying behaviour towards BEE-labelled white goods. The highest mean score is observed for CBB5, "I consider energy consumption when comparing different brands," with a mean score of 4.28 and a standard deviation of 0.68, ranking first. This indicates that energy consumption is the most important consideration among respondents when comparing different white-goods brands. The relatively low standard deviation suggests a high degree of consistency in respondents' opinions.

The second-highest mean score is recorded for CBB4, "I am willing to purchase a higher-rated BEE appliance," with a mean of 4.21, indicating that consumers are willing to prefer appliances with better BEE ratings, even when making a choice among different products. CBB2 ranks third with a mean score of 4.17, showing that BEE star ratings have a considerable influence on consumers' final purchase decisions. CBB1 has a mean score of 4.13, ranking fourth, which indicates a clear preference for BEE-labelled white goods over non-labelled alternatives. CBB3, with a mean score of 4.08, ranks fifth and demonstrates that consumers tend to compare BEE ratings before purchasing household appliances.

The mean score for CBB6 is 3.96, ranking sixth, suggesting that respondents are generally willing to recommend BEE-labelled energy-efficient appliances to others. CBB7 records a mean score of 4.02, indicating a strong intention among respondents to purchase BEE-labelled white goods in the future.

The lowest mean score is recorded for CBB8 (3.91), although it remains above the neutral level, indicating that respondents generally agree that BEE labelling has positively influenced their purchase behaviour. Overall, the findings reveal that energy consumption, willingness to purchase higher-rated appliances and the influence of BEE star ratings are the strongest dimensions of consumer buying behaviour. The consistently high mean scores across all eight statements demonstrate that consumers generally have a positive attitude towards BEE-labelled white goods and that energy-efficiency information plays an important role in their purchasing decisions.

1.7 Conclusion

The study on Consumer Buying Behaviour Towards BEE-Labelled White Goods in Ramanathapuram District concludes that energy efficiency has become an important consideration in consumers' purchase decisions. The BEE star-rating label helps consumers identify and compare the energy efficiency of household appliances and encourages them to consider long-term electricity savings along with price, quality and brand reputation. The tentative findings indicate that consumers generally show a positive attitude towards BEE-labelled white goods, particularly in considering energy consumption, preferring higher-rated appliances and taking BEE ratings into account during purchase decisions. However, differences in awareness and understanding of BEE labels may influence the extent to which consumers use this information effectively. Therefore, manufacturers and retailers should provide clear information about BEE ratings, energy savings and operating costs, while awareness programmes should be strengthened to improve consumers' understanding of energy-efficient products. Overall, greater awareness and trust in BEE labelling can encourage informed purchasing decisions, reduce household energy consumption and promote sustainable consumption practices in Ramanathapuram District.

1.8 References

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