

Market survey of ceiling fans and air-conditioners on e-commerce platforms

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Amidst the ongoing hot summer, quite a few people are using e-commerce platforms to either buy cooling appliances online or do research before buying it offline in the shops. We surveyed two major e-commerce platforms selling air-conditioners and ceiling fans in India to analyse the availability and validity of energy efficiency related information through the mandated energy star-rating labels. We find that these e-commerce platforms need to improve the way they show the star-rating labels in a manner which is clear, consistent, prominent, and in accordance with the regulatory requirements. Further, our analysis of prices shows that although the median price of 5-star models of both ceiling fans and air-conditioners is more than that of 3-star models, there is substantial variation in price within a rating band. There are quite a few 5-star models comparable to the median price of a 3-star model.

India is reeling under a hot summer. People are buying ceiling fans, air-conditioners, and air-coolers to get respite from the heat in their homes, shops, and offices. These appliances are driving up the demand for electricity. Cooling appliances contribute to about 50% of the total annual electricity consumption in Indian homes. Energy Efficient variants of the cooling appliances can consume as less as half of the electricity consumed by the in-efficient variants. This can drastically reduce electricity bills along with providing relief to the over-stressed electricity system. About 60% of the sales in consumer durable markets is estimated to be '[digitally influenced](#)' which include direct online sales as well as those sales where buyers research on the internet before buying the product. In this context, we surveyed 224 listings of air-conditioners and 153 listings of ceiling fans on two major e-commerce platforms in India³. Our objective was to understand whether buyers get clear and relevant information on energy efficiency from these websites. We also examined the variation in the prices of models with energy efficiency. We discuss our findings in this article. This survey was done in April 2024.

Bureau of Energy Efficiency (BEE), central government's nodal agency for energy efficiency, has a mandatory [Standards and Labeling \(S&L\)](#) program for major appliances and equipment

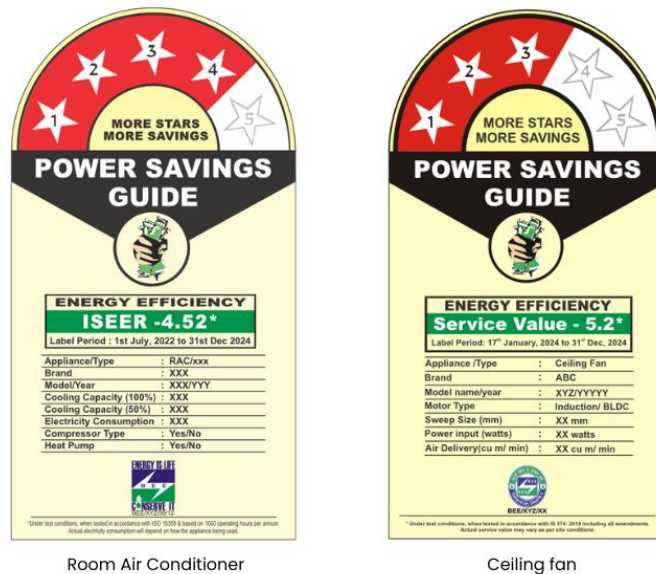
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² This article is part of an ongoing series called Power Perspectives which provides brief commentaries and analyses of important developments in the Indian power sector, in various states and at the national level. The portal with all the articles can be accessed here: <https://prayaspune.org/peg/resources/power-perspective-portal.html>. Comments and suggestions on the series are welcome and can be addressed to powerperspectives@prayaspune.org.

³ The air-conditioner models in the sample are 1.5 ton, split type and the ceiling fans have 1200 mm sweep size. These are the most commonly sold configurations.

including ceiling fans and air-conditioners⁴. Under this program, all the appliances are rated from 1-star to 5-star with the 5-star appliance being the most energy efficient. Under the mandatory program, appliances are not allowed to be sold in the market without a star label. BEE has specific formats for the labels (see Figure 1) and instructions for their display on the packaging and the product so that they are prominently visible to the prospective consumers. However, there are no specific provisions for e-commerce platforms leading to inconsistent and incomplete information to the consumers. We had highlighted this issue in an [article](#) two years ago. Our survey shows that the issues still remain.

Figure 1: BEE's Star label



1. Display of Labels

We find that all the listings of the air-conditioners have information of star-rating in their product title lines. Image of the actual label is also included in the set of images accompanying the product, albeit at the end. The platforms also provide star rating as one of the filters to sort the available models. However, in absence of specific instructions, the placement of the label is not consistent and not always prominent in the product listing, or description. A more serious issue, however, is related to the validity of the label. BEE revises the standards periodically to ensure that the ratings adequately represent the advances in energy efficiency technology. After revision, the rating of the model usually drops by 1 or 2 stars. Hence, a 5-star model after revision may become a 3-star or 4-star, and the new 5-star would be much more efficient. BEE usually allows a period of 6 months to sell off any unsold inventory with older star labels. Standards for air-conditioners were last revised in July 2022. In our survey we found that about 36% of all the air-conditioner listings displayed a label which was outdated and valid only up to July 2022. Most of these models displayed a rating which was 1 star-level higher than applicable as per the revised standard. This is a violation of BEE's mandatory requirement and can mislead the consumers into buying lesser efficient models.

⁴ We have not included air coolers in the present analysis since S&L does not cover it as of now.

In the case of ceiling fans, most of the listings mention the star rating in their product title line. This is a welcome change compared to our previous survey when none of the listings included star rating information. Although rated only one star and being the most energy inefficient compared to other star-ratings, some listings make claims such as '*energy efficient 1-star rating*'. Almost none of the listings showed the image of the actual star label. This is a violation of BEE's rules, which require display of star label even when the product is sold online. Furthermore, we also found some listings which sold ceiling fans labelled under 'non-BEE' category which is legally not allowed since they may have energy efficiency level less than that of 1-star. Neither of the platforms provide a filter to sort the listings based on the star rating.

It is critical that consumer receives clear and correct information on the energy efficiency of the appliances on these e-commerce platforms to make informed decisions. BEE can issue an advisory to all the e-commerce platforms to ensure that all the appliances under its mandatory category should display correct labels as per the regulatory requirements. This is similar to the recent [advisory](#) issued by the Food Safety and Standards Authority of India (FSSAI) to all the e-commerce food business operators to remove the tag of energy/health drinks in some cases as it was misleading the consumers. BEE can also [specify uniform instructions](#) to ensure that the star labels are displayed consistently and prominently on these platforms.

2. Availability and Price of energy efficient models

BEE publishes a list of all the approved models on its [website](#). Consumers can use this data to verify the authenticity of the labels displayed on the product packaging. As per this data there are 1258 different models of 1.5 ton split air-conditioners, and 2668 models of 1200 mm sweep size ceiling fans. About 50% of the registered AC models are 3-star models while 21% are 5-star models. In the case of ceiling fans, about 60% are 1-star models while 28% are 5-star models. For our market survey, we selected only those models which were available in the stock on the e-commerce platforms and had more than 100 consumer ratings to ensure we cover popular models.

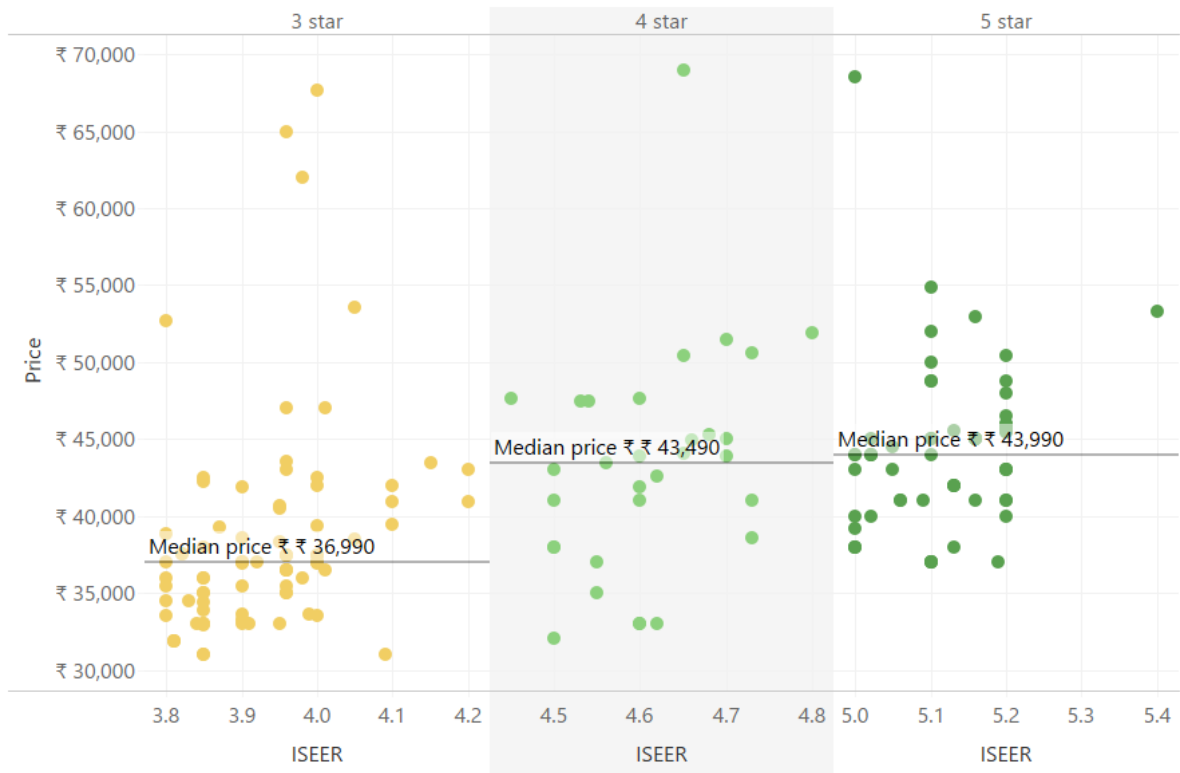
Our analysis of prices⁵ of the 224 AC models show that a median 5-star model costs about ₹7000 more than a median 3-star AC, but the difference in median prices is a mere ₹500 between 4 and 5 star⁶. However, there is significant price variation across the models within a star-rating (see Figure 2). Energy Efficiency of air-conditioners is measured in terms of Indian Seasonal Energy Efficiency Ratio (ISEER). Higher the ISEER, better the efficiency. Our analysis shows that although the ISEER is a statistically significant factor affecting the price of an AC, it explains only 9.5% of the price variation. This means that there are several other factors that explain the variation of price such as brand and additional features. There are a few 5-star models with price comparable to that of a median 3-star AC. This indicates a trend where companies brand 5-star AC as a premium model and have additional features which increase its price. A basic no-frills 5-star AC may add more value to the consumers. This needs to be

⁵ Most of the listings show the actual price and the discounted price. We consider the discounted price since the buyer will be buying at that price. We expect these prices to be similar to the retail store prices as verified by a few store visits.

⁶ We do not analyse 1 and 2 star models since there are very few models in those categories.

examined further though. Consumers, on the other hand, can look at the ISEER value and opt for models with higher ISEER value within a star rating to realize higher gains of energy efficiency.

Figure 2: Price vs ISEER for 1.5 ton, split AC ⁷.

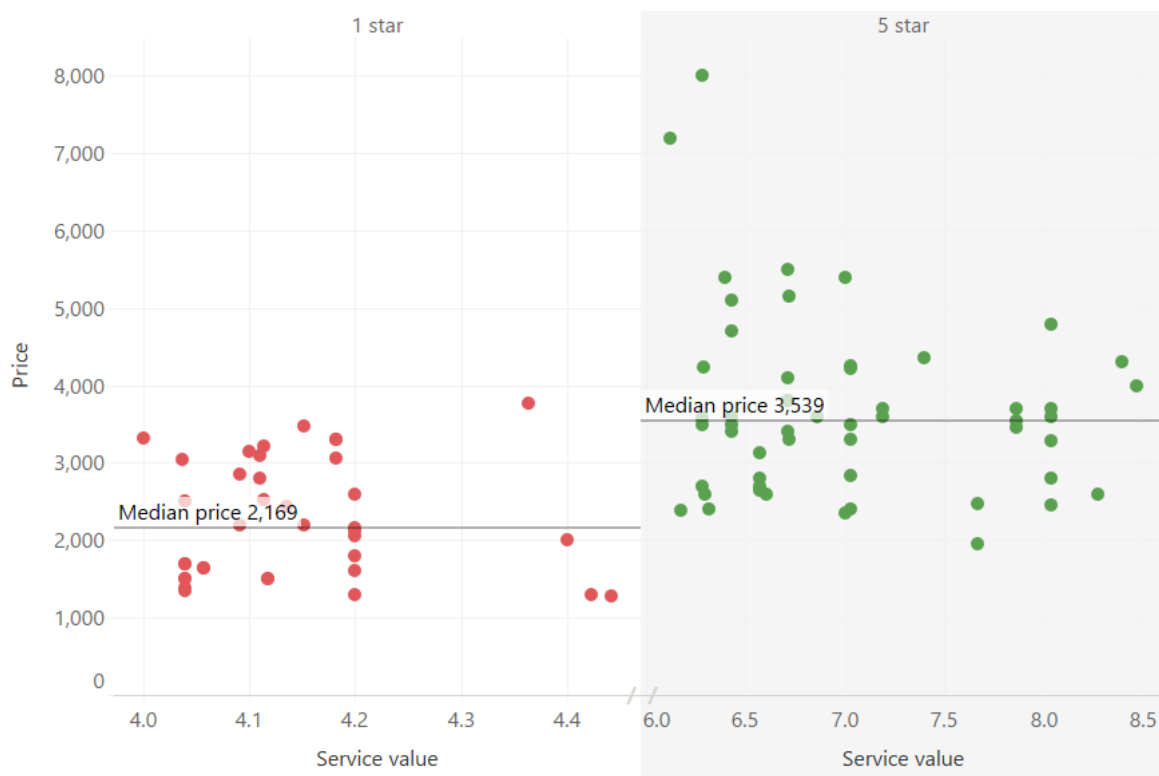


Our analysis of the prices of 153 ceiling fan models reveal similar trends. A median 5-star variant costs ₹1370 more than a median 1-star variant⁸. However, there is significant variation within the star-rating. Energy Efficiency of ceiling fans is measured in terms of Service Value (SV). Higher the SV better the efficiency. Our analysis shows that although SV is a statistically significant factor, it explains only 12% of the total price variation. Similar to the case of AC, other factors including brand and additional features could explain the rest of the price rise. There are quite a few 5-star ceiling fans with price comparable to the median price of a 1-star ceiling fan. Similar to the AC, it looks like companies are branding the 5-star model as a premium model.

⁷ Star rating of 21 models has been corrected from 5-star to 4-star to reflect the revised standards.

⁸ We do not consider 2, 3 and 4 star models since there are very few models in those categories.

Figure 3: Price Vs Service Value of 1200 mm sweep size ceiling fans.



To conclude, our market survey shows that the e-commerce websites need to make improvements to show energy efficiency information related to ceiling fans and air-conditioners in a manner which is clear, consistent, prominent, and in accordance with the regulatory requirements. Information currently displayed on such portals needs to be corrected as majority of consumers use the internet to research and buy appliances. BEE can issue an advisory to the e-commerce platforms requiring them to comply with the display requirements under the S&L program. Furthermore, it can provide specific instructions to ensure that the information is prominently and consistently displayed. We also find that although the median price of 5-star models of both ceiling fans and air-conditioners is more than that of 3-star models, there is substantial variation in price within a rating band. There are quite a few 5-star models comparable to the median price of a 3-star model. Companies also seem to be branding 5-star models as premium models by adding other features to it and increasing its price. A basic energy efficient variant may add substantial value to the consumers.