With increasing global focus on harnessing renewable energy sources for improving quality of life, solar energy has emerged as one of the contending alternatives that have shown great potential. However, the pace of the market penetration, diffusion and increased market share of solar products has not shown satisfactory progress in many countries.

There are lots of promotional measures by way of subsidies/soft loans and other efforts by the Government of India towards the promotion of renewable energy technologies in the country. Though the potential for the use of solar energy is enormous in India, the use of Domestic Solar Water Heaters (DSWH) to reduce the primary energy requirement has not been successful, in spite of several measures taken by the Central and State Governments.

Although there have been several studies, review papers, and reports pertaining to developments in the technologies, analysis, and design issues related to solar gadgets for various applications, the literature review indicates that there are not many studies on the application of product development processes and the “fuzzy” front end issues related to these products. The current research has recognised that a successful solar product ought to be an
organic derivative of both technology as well as the hitherto unexpressed need of the customer. There have been very few attempts in gathering the voices of various stakeholders, including the end-users, to get the customer-centred development of these products. Therefore, there is an important need to develop a scientific methodology where the customers are guided, but not influenced, towards offering their choices in a considered, but subjective manner.

The major objectives of the present work were to look at the various studies on barriers to the diffusion of DSWH in India, to identify any customer indifference to these products, to gather the voice of the customer through a conjoint analysis and coming out with some possible suggestions to design and develop a DSWH. In the present study, a methodology was developed by combining preliminary survey, brainstorming, focus group and conjoint analysis.

The two important parameters obtained as the output of the conjoint analysis are relative importance values for each of the five attributes and total utility values for each of the eight product profiles. These two are very useful to arrive at the final decision. The relative importance chart indicates that price is the most important attribute, which dictates the decision-making process of a customer. This is quite natural, if the hidden advantages or imperatives of environmental concerns are not considered. This also lays
emphasis on the need to educate and create awareness of such merits in the customers.

However, in the absence of a conviction on the life-cycle cost issues, all earlier studies on the barriers to diffusion also corroborate the high initial cost, as the most significant barrier. In order to encourage widespread acceptance, pricing the SWH appropriately is absolutely necessary, when introducing it into the market. It is seen that not all consumers and potential consumers, at all consider the impact of the indirect environmental benefits involved though at a higher cost. This, in a way, signifies customer indifference.

Payback period is another important attribute in which the customers are keen to invest, if the interest part involved is extended further. Reliability coupled with extended use will justify the initial higher cost, and need to be addressed in the design. Any value addition to the product in this aspect would aid in developing the DSWH into a successful product in India.

Two attributes, price and payback period are related to financial aspects. The relative importance values are higher for the attributes related to financial aspects than the attributes related to the human comfort. Three attributes heat, capacity and duration are related to human comfort. This indicates that the respondents considered for the survey have given more importance for the initial cost aspect than the comfort. However, these results
may be on the other way in the economically developed nations. Though the technical and the environmental attributes were not given much importance by the respondents, the price, payback period, and the comfort attributes of the DSWH could be brought to the level of customer satisfaction only by providing attention in the development of technical attributes.