



Sustainable Consumption of Electronic Goods in Uttar Pradesh: An Indian Knowledge System Perspective

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Abstract

The present study explores the consumer behavior toward household electronic white goods (refrigerator, air conditioner and washing machine) in Uttar Pradesh with the conceptual prism of the Indian Knowledge System (IKS). In the contemporary marketing models of consumer electronics, the main focus is on feature obsolescence and immediate affordability, whereas this paper examines how the traditional ethical orientations of Sanyam (restraint/longevity), Aparigraha (non-possession/resource optimization), Prakriti (eco-ethical harmony), and Satvik consumption (utilitarian mindfulness) influence middle-class buying, maintenance and disposal decisions. The study operationalizes and validates a measurement scale of IKS based on empirical data collected from household decision-makers (N=112), showing strong internal consistency (Cronbach's $\alpha=0.7600$).

Empirical results show that 58.9% of households save energy as a moral obligation toward Nature (Prakriti), 52.7% view appliances solely as functional labour-saving devices and avoid treating them as status symbols (Satvik), 48.2% prefer a lifespan of 10–15 years over short-lived smart trends (Sanyam) and 46.4% maintain an active multi-stage repair instinct (Aparigraha). Moreover, 86.7% of discarded appliances are channelled into structured circular economy flows, reaffirming the role of indigenous value systems as organic drivers of sustainable consumption and e-waste mitigation in Northern India.

Keywords: Indian Knowledge System, Sustainable Consumption, White Goods, Repair Culture, Circular Economy.

1. Introduction

1.1 Background and Regional Context

Over the past decade the electronic market has experienced a surge in purchasing of white goods like refrigerators, washing machines and air conditioners across the Uttar Pradesh. The key drivers for this expansion are rising disposable incomes, urbanization, expanding rural electrification that has turned it as a necessity for households rather than a luxurious status symbol. However, this increase in consumption presents a critical sustainability paradox, rapid changes in products, planned obsolescence and aggressive feature-driven marketing encouraging shorter product lifecycles generating substantial electronic waste contributing to resource depletion.

In modern consumer research sustainability is measured through Western environment economic benchmarks, focusing on green purchase intention and eco-labelling. In contrast to this framework the Indian households specially the socio-cultural matrix of Uttar Pradesh consumer buying behaviour are deeply rooted in historical and indigenous value systems. Long before when the modern environmental discussions were made about sustainability Indian household principles and ethos were governed by concepts like restraint (Sanyam), non-possession (Aparigraha), respect for nature (Prakriti) and conscious utility (Satvik Consumption) resulting in resource management and savings.

1.2. Statement of the Problem

There is no denying of the fact that there is a surge in consumer electronic sales across tier-1, tier-2 and tier-3 cities yet a distinction is quite visible between modern offerings and consumer mindsets. The focus is on prioritizing high-frequency technological upgrades by standard commercial models over product longevity.

However, qualitative observation indicates that Indian households still maintain a repair and retain ethos thus observing them as long term functional tools rather than just status symbols. Without these important factors to be taken care of sustainable policy interventions and green marketing strategies in India risks remaining superficial and disconnected from ground-level consumer behaviour.

1.3. Research Objectives

The present study aims to address this issue through the following objectives:

1. **To develop and validate an IKS-aligned measurement scale** based on four behavioural constructs—*Sanyam*, *Aparigraha*, *Prakriti*, and *Satvik consumption* in the context of household consumer durables.
2. **To examine the extent to which consumers prioritize product longevity and repairability** over technological features and trends while purchasing major household appliances. The study is based on a sample of **112 respondents**.
3. **To examine behavioural and demographic patterns** related to appliance maintenance, energy conservation, replacement, and e-waste disposal among urban and semi-urban households in Uttar Pradesh.

2. Literature Review and Conceptual Framework

Sustainable consumption literature has traditionally emphasised environmental attitudes, green purchase intentions, eco-labelling, social influence, perceived consumer effectiveness and economic incentives. However, sustainable consumption encompasses the full product lifecycle. Cooper (2005) emphasised extending product lifespans, while Guiltinan (2009) highlighted the environmental implications of shortened product lifecycles.

The present study introduces an IKS-oriented cultural lens. The four dimensions are not treated as measures of religious belief; rather, they are conceptualised as value orientations that may be reflected in contemporary consumer behaviour.

Table 3. Conceptualisation of the Four IKS Dimensions

IKS dimension	Meaning in the study	Consumer-behaviour manifestation
Sanyam	Restraint and moderation	Preference for durability and longer product life over short-lived trends
Aparigraha	Non-possession and avoidance of unnecessary accumulation	Repair, maintenance and continued use instead of immediate replacement
Prakriti	Ecological responsibility and resource conservation	Energy conservation motivated by environmental responsibility
Satvik consumption	Functional, simple and need-based consumption	Preference for practical utility rather than status display

The conceptual framework proposes that IKS-oriented values may influence consumer orientations across the appliance lifecycle: pre-purchase evaluation, use, maintenance and repair, replacement, and post-use management.

Table 4. Hypotheses

Code	Hypothesis
H1	Sanyam is positively associated with preference for product longevity and durability.
H2	Aparigraha is positively associated with repair, maintenance and extended product use.
H3	Prakriti is positively associated with household energy and resource conservation.
H4	Satvik consumption is positively associated with preference for functional utility over status-driven motives.

3. Research Methodology

A cross-sectional descriptive and analytical research design was adopted. Primary data were collected through a structured questionnaire from household decision-makers in selected urban and semi-urban areas of Uttar Pradesh. Lucknow constituted the principal geographical cluster, while respondents were also drawn from other districts. The four IKS items were measured on a five-point Likert scale. A preliminary pilot involving 50 respondents was used to assess internal consistency. Cronbach's alpha of 0.7524 indicated acceptable preliminary reliability. The alpha is treated as evidence about the consistency of the instrument rather than proof that the four conceptually distinct dimensions form one single factor.

Descriptive analysis included frequencies, percentages, means and standard deviations. One-sample t-tests compared each IKS mean with the neutral midpoint of 3.

4. Results and Empirical Findings

Table 5. Demographic Profile of Respondents (N = 112)

Dimension	Category	N	%
Location	Lucknow	98	87.5
	Other UP districts	14	12.5
Age	18–30 years	88	78.6
	31–45 years	19	17.0
	46–60 years	4	3.6
	Above 60 years	1	0.9
Monthly income	₹25,000–₹50,000	72	64.3
	₹50,001–₹1,00,000	27	24.1
	₹1,00,001–₹1,50,000	7	6.3
	Above ₹1,50,000	6	5.4

Table 6. Household Appliance Profile

Appliance / category	N	%
Refrigerators	33	29.5
Air conditioners	28	25.0
Washing machines	17	15.2
Televisions	9	8.0
Secondary utilities (inverters, coolers, grinders)	25	22.3
Total	112	100.0

Table 7. Energy-Efficiency Awareness and Premium Willingness

Indicator	Response	n	%
Importance of BEE star rating	High importance	57	50.9
	Moderate importance	31	27.7
	Neutral / negligible	24	21.4
Willingness to pay efficiency premium	Definite willingness	55	49.1
	Conditional / marginal premium	46	41.1
	Immediate price focus only	11	9.8

Table 8. Descriptive Results for IKS-Oriented Items (N = 112)

Construct	Item focus	Mean	SD	Agree/Strongly Agree %
Prakriti	Ethical energy/resource conservation	3.60	1.39	58.9
Satvik	Functional utility over status	3.46	1.41	52.7
Sanyam	Durability / longevity	3.24	1.55	48.2
Aparigraha	Repair orientation	3.24	1.48	46.4

Table 9. IKS Response Distribution (N = 112)

Construct	Disagree (1–2)	Neutral (3)	Agree (4–5)
Prakriti	26.8% (n=30)	14.3% (n=16)	58.9% (n=66)
Satvik	25.0% (n=28)	22.3% (n=25)	52.7% (n=59)
Sanyam	34.8% (n=39)	17.0% (n=19)	48.2% (n=54)
Aparigraha	30.3% (n=34)	23.2% (n=26)	46.4% (n=52)

Table 10. Hypothesis Testing Results

Hypothesis	Mean	t(111)	p-value	Decision
H1 – Sanyam	3.24	1.639	.104	Not supported
H2 – Aparigraha	3.24	1.716	.089	Not supported
H3 – Prakriti	3.60	4.568	< .001	Supported
H4 – Satvik	3.46	3.453	< .001	Supported

Table 11. Post-Use Appliance Management (N = 112)

Disposal / post-use pathway	N	%	Interpretation
Exchange for discount on new purchase	48	42.9	Trade-in / reverse-logistics pathway
Pass down for continued use	30	26.8	Reuse / product-life extension
Sell to local scrap dealer	19	17.0	Local material recovery pathway
Retain in household storage / scrap	12	10.7	Potential delayed disposal
General household waste	3	2.6	Direct municipal waste pathway
Total	112	100.0	

The demographic profile shows a predominantly young and middle-income sample. Energy efficiency was an important consideration: 78.6% of respondents gave high or moderate importance to BEE star ratings, while 90.2% expressed either definite or conditional willingness to pay some premium when long-term efficiency benefits were expected.

Among the IKS dimensions, Prakriti recorded the highest mean (3.60), followed by Satvik (3.46), with Sanyam and Aparigraha both at 3.24. The inferential results show that Prakriti and Satvik were significantly above the neutral midpoint, whereas Sanyam and Aparigraha were not.

Post-use behaviour was dominated by exchange, reuse and local scrap-sale pathways. These three categories together represented 86.7% of responses. This should be interpreted as evidence of recovery-oriented behaviour rather than proof that 86.7% of appliances are formally recycled.

5. Discussion

The results suggest that sustainable consumption among the respondents is multidimensional. Economic considerations, energy efficiency, functional requirements and value-based orientations appear to operate together. The strongest evidence was obtained for Prakriti, indicating that ethical resource conservation is an important orientation

toward household energy use. Satvik also showed significant positive support, highlighting the importance of practical utility.

Sanyam and Aparigraha present a more nuanced picture. Almost half of respondents preferred durability and repair, but the means did not differ significantly from the neutral midpoint. Consumers may therefore value longevity and repair while simultaneously remaining open to technological innovation and newer features.

The post-use results further demonstrate that old appliances often retain functional or material value through exchange, reuse and scrap-sale channels. Nevertheless, the downstream destination of exchanged or scrapped appliances was not independently verified, so these results should not be equated with formal recycling rates.

6. Theoretical, Managerial and Policy Implications

Table 12. Key Implications of the Study

Stakeholder	Key implication	Suggested action
Theory / researchers	Sustainability can be examined through culturally contextualized value orientations.	Treat IKS dimensions as distinct constructs and test them with validated multi-item scales.
Manufacturers	Functional utility and long-term value are important consumer considerations.	Communicate durability, repairability, practical benefits and lifecycle energy savings.
After-sales/service sector	Repair remains a meaningful option for a substantial group.	Improve local service networks, spare-parts access and transparent repair pricing.
Policymakers	Exchange, reuse and informal recovery are important post-use pathways.	Strengthen Right-to-Repair awareness and integrate recovery networks into e-waste systems.
Sustainability campaigns	Cultural framing may complement conventional environmental messaging.	Use responsible resource use, moderation, repair and reuse as culturally relevant themes.

7. Limitations and Future Research

The study is geographically concentrated in Lucknow, which accounts for 87.5% of respondents; therefore, the findings should not be treated as representative of the entire population of Uttar Pradesh. The sample size is also relatively modest and was obtained through purposive and snowball sampling.

The cross-sectional design does not establish causality, and the use of self-reported data means that actual repair records, electricity consumption, replacement dates and downstream disposal outcomes were not independently verified. The four IKS dimensions were also represented by individual items in the present instrument. Future studies should use larger samples, multiple indicators per construct, confirmatory factor analysis, convergent/discriminant validity, longitudinal designs and, where feasible, behavioural or transaction-level evidence.

8. Conclusion

This study examined sustainable consumption of household consumer durables through four selected IKS-oriented dimensions: Sanyam, Aparigraha, Prakriti and Satvik consumption. The strongest empirical evidence was obtained for Prakriti and Satvik orientations. Prakriti recorded the highest mean of 3.60 and was significantly above the neutral midpoint, while Satvik recorded a mean of 3.46 and was also statistically significant.

Sanyam and Aparigraha recorded positive mean scores of 3.24, indicating meaningful preferences for durability and repair among substantial proportions of respondents, but neither was statistically significant at the 5% level. The study therefore avoids treating all four IKS dimensions as equally dominant.

Exchange, reuse and scrap-sale pathways accounted collectively for 86.7% of reported post-use responses, highlighting the importance of continued-use and recovery-oriented channels. Overall, sustainable consumption appears

to be multidimensional, reflecting the interaction of economic rationality, energy efficiency, functional utility, environmental responsibility and culturally embedded values.

The principal contribution of the study is to demonstrate the potential of an IKS-oriented cultural lens for understanding contemporary sustainable consumption in Indian households. Rather than replacing established sustainability theories, IKS perspectives can complement them by providing context-sensitive explanations of why consumers conserve resources, value utility, repair products or continue using household goods.

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