Research Article

A study on consumer satisfaction of consumers towards Hitachi air conditioners in Gandhinagar and Ahmedabad city

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I N F O

A B S T R A C T

This study investigates consumer satisfaction towards Hitachi air conditioners in Gandhinagar and Ahmedabad, focusing on the influence of age on various satisfaction factors. Data was collected from 252 respondents and analysed to test ten hypotheses relating age to aspects such as usage patterns, product performance, ease of use, and service quality. The results showed that while age had statistically significant associations with several variables—like cooling performance, quiet operation, energy efficiency, and service response—the relationships were weak. A stronger correlation was noted only in the perception of design and aesthetics, suggesting that visual preferences may vary across age groups. Overall, the study found that age alone does not significantly determine satisfaction, indicating the need for broader consumer profiling. Practical implications include the importance of improving design options, user interface simplicity, and consistent service quality. The findings offer insights for enhancing customer experience and tailoring marketing strategies. Future research could include more demographic factors and psychographic data to gain deeper understanding.

Keywords: Consumer Satisfaction, Hitachi, Air Conditioners, Age, Product Design, Service Quality

Introduction

Home comfort relies to a large degree on air conditioning, especially in hot weather. Homeowners can conserve energy and reduce their carbon footprint by understanding how air conditioners operate and selecting an efficient system.[1] Air conditioning is prevalent in the United States, where 88% of homes have air conditioning equipment installed and 66% use central systems.[2] But these appliances are power-guzzlers, using some 12% of household electricity, costing homeowners about $29 billion annually, and producing over 100 million metric tonnes of carbon dioxide emissions annually.[3] To be more efficient and have a lesser impact on the environment, it's better to buy units bearing the ENERGY STAR® label.[4]

Air conditioners work like refrigerators by conducting heat from inside the home to the outside by heat transfer.[5] The major parts include the evaporator coil, which extracts heat from the air inside the home; the condenser coil, which releases that heat to the outside; and the compressor, which pumps refrigerant between the two coils.[6] While being used, the refrigerant evaporates in the indoor coil and removes heat from the air, cooling the home.[7] It proceeds to the outdoor coil and releases the extracted heat before it liquefies.[8] Refrigerants have previously

Tailor J et al.
J. Adv. Res. Strat. Mark. Intell. Cust. Engagem. Optim. 2025; 1(2)

26

transitioned from harmful chlorofluorocarbons (CFCs) to lower carbon-harming hydrofluorocarbons (HFCs) and newer low-carbon A2L refrigerants.[9] CO_2 and ammonia are also being considered for their environmental benefits.[10]

When choosing an air conditioner, there are numerous elements that influence energy efficiency and performance.[11] First, look for the ENERGY STAR® label, which signifies efficiency and reduced emissions.[12] Also, consider the Energy Efficiency Ratio (EER) or the more stringent EER2 rating introduced in January 2023.[13] Proper sizing is essential: an air conditioner typically requires 20 BTUs per square foot of living space, with adjustments based on ceiling height, climate, shading, and window size.[14] Electrical requirements should also be considered, as smaller units can run on standard circuits, while larger ones may need dedicated circuits.[15] Other components such as directional airflow, easy access to filters for maintenance, digital thermostats, in-built timers, and app-controlled functions can enhance user convenience and system efficiency.[16]

Choosing the right air conditioning system and periodic maintenance can greatly increase indoor comfort, save energy, and lower environmental impact. By understanding how these systems work and being energy-efficient, homeowners can enjoy a cooler house and significantly reduced energy bills

Joint venture between Hitachi Appliances, Inc. (currently Hitachi Global Life Solutions, Inc.) and Johnson Controls, Inc.[17] Hitachi Appliances reserved and contributed its air conditioning business to the joint venture.[18] Johnson Controls purchased a 60% interest in the reserved business, and Hitachi Global Life Solutions, Inc., remains a 40% shareholder of this business.[19]

The vision is what the Hitachi Group desires to become. [20] The phrase "Inspire the Next" is a statement of the Group's intent to actualise this vision .

The word "inspire" comes from the Latin "in" or "into" and "spire" or "breathe". It means "to breathe life into", "to expand upon", and "to encourage". It also carries the meaning of "lifting spirits and raising awareness" and of "giving energy and courage".[21]

The red line stretching above and to the right of "Next" is called the "Inspire Flash". It represents Hitachi's strong desire to achieve even further growth.

As partial fulfilment of the Postgraduate Diploma in Management requirement, an 8-week summer internship is to be undertaken at an organisation.[22] Due to this requirement, I completed an "On-the-Job" internship on "A comparative study of Hitachi air conditioners in a modern retail store." During May-June, 19.[23]

Hitachi, Ltd. is a Japanese multinational engineering and electronics conglomerate company based in Chiyoda, Tokyo, Japan. Hitachi is a diversified company with eleven business segments: Information & Telecommunication Systems.[24] Social Infrastructure, High Functional Materials & Components, Financial Services, Power Systems. Electronic Systems & Equipment, Automotive Systems, Railway & Urban Systems, Digital Media & Consumer Products, Construction Machinery and Other Components & Systems.[25]

Hitachi is one of the top FMCG brands in India. The activity 1 has undertaken is "to understand and study the dynamics of modern retail working in modern retail outlets". This report has been presented by me as part of the summer internship training at Hitachi between May 1, 2018 and June 30, 2018.[26] As part of the training, I was tasked with facilitating the working of salesmen. The prime objective of this project is to boost the sale of Hitachi air conditioners and also to suggest different ways of forging its market and sales. The firm is enhancing the market and distribution potential with capability upgrades through training and IT enablement & emphasis on modern trade channels.[27]

Marketing focus on modern trade can contribute significantly towards growth and increased revenue generation for the firm. I was in charge of 2 things that are sales targets for this month: products whose visibility is ongoing should have sufficient stock availability, and appropriate merchandising of products should be done.[28] With all these two tasks, it definitely assists us to boost the sales of Hitachi AC.[29]

This was a wonderful experience to work in the field for 2 months for one of the largest FMCG companies in India. Being a marketing student, all the data, information, knowledge, and skills acquired through this internship will definitely assist in shaping my career.[30]

Our business has been the driving force of innovation, reshaping and revolutionising the sector for 140 years.[31] Celebrating a history of innovation and leadership in smart, safe, healthy, and sustainable solutions, our anniversary commemorates decades of advancement achieved through our passionate teams, loyal consumers, and forward-thinking sector leaders.[32]

Since the establishment of the joint venture Johnson Controls–Hitachi in 2015, we have not only delivered significantly more than just products.[33] We have remained committed to our vision of blending tradition and innovation to enrich the essence of life through air.[34]

Our promise, "air is life", represents our passion for changing lives with our dependable cooling and heating solutions that build ideal indoor conditions, providing clean and healthy air that optimises comfort and well-being worldwide.[35]

27

Tailor J et al.
J. Adv. Res. Strat. Mark. Intell. Cust. Engagem. Optim. 2025; 1(2)

Research Objectives

- To assess the overall satisfaction level of consumers using Hitachi air conditioners in Gandhinagar and Ahmedabad.
- To evaluate consumer perception regarding product quality, cooling efficiency, and energy consumption.
- To study the after-sales service experience of Hitachi air conditioner users.
- To identify the impact of pricing and brand image on consumer satisfaction.
- To analyse whether consumers are likely to recommend or repurchase Hitachi air conditioners.

Literature Review

R. Nunkoo, G. Prayag, and Saman Hassibi (2018)

This review paper seeks to provide a systematic examination of research published in five hospitality journals from the year 2000 to 2016. The review is structured around four general themes (conceptual developments, consumer satisfaction measurement, research methods applied to study consumer satisfaction, and consumer satisfaction antecedents and consequences). The results indicate that over half (110 studies) of all the studies published in the five journals fail to give a precise definition of consumer satisfaction. Studies on this subject are skewed toward quantitative as opposed to qualitative and mixed-methods approaches in all five journals. Researchers have examined numerous determinants of customer satisfaction, including equity and fairness perceptions, emotions, corporate social responsibility, and employee satisfaction. The beneficial effects of satisfaction on loyalty, behavioural intentions and switching costs are well documented. Yet some gaps in the existing body of literature can be identified, and these are reflected in this review.

Changlu Zhang, Zihao Wei, and Liqian Tang (2025)

Promoting green product consumption and low-carbon transition is needed to put new paradigm-orientated developmental policies into practice and accomplish carbon neutrality goals. The current research utilised text mining methodology for analysis of user online reviews on e-commerce websites, with emphasis on consumer satisfaction towards green products. Using the KeyBert model, keywords were derived from customer reviews, and keyword vectors were trained through Word2Vec. K-means clustering was utilised in developing an all-around system of consumer satisfaction assessment index system for energy-saving air-conditioning products on JD.com. The results indicate that functionality, service quality, aesthetic appeal, price, logistics, and installation are the most important factors in consumers' reviews. Manufacturers are advised to improve installation processes, aesthetic designs, and functional benefits to increase consumer satisfaction. This study has limitations in that it is applied to one product category only and requires further studies using a larger dataset to confirm the findings. Future research needs to look at a broader set of green products and use multiple sources of data to add richness to the analysis.

Sonika, K. K. De, Harjot Singh (2017)

The Indian economy has shifted from a controlled economy to a market-driven economy over the recent years. Monumental growth has been experienced due to active involvement by the private enterprise. Along with other industries, the consumer durables industry too has been experiencing a wave of growth in India. Increasing awareness, rising incomes and changed lifestyles have been the major drivers for growth in the durables market. The new marketing scenario had led to a spurt in new business opportunities. Growing competition, changing technologies and government policy initiatives like tax reforms have been facilitating organisations to sustain a marketing-orientated approach with a focus on building awareness and delivering consumer satisfaction. While framing a business plan, an organisation gives importance to marketing mix elements, popularly known as the Ps of marketing, to work out integrated programmes and to elicit a desired response in the target market. Marketing communication is worked out accordingly to instil faith in consumers regarding a given brand. Building awareness about a brand influences the mind of a consumer during the purchase process and makes it more likely to be chosen from among a set of alternatives. In the current research, the impact of marketing mix elements on brand awareness and consumer satisfaction in the context of the consumer durables sector in the state of Punjab and union territory of Chandigarh has been investigated. The four Ps of the marketing mix, i.e., product, price, promotion, and place, and two levels of brand awareness, i.e., brand recognition and brand recall, have been examined. The study gains significance because very few studies have been done to study such an influence. The influence of marketing mix elements on consumer satisfaction has also been investigated, directly as well as indirectly through brand awareness. xi The size of the consumer durable market has been limited to four brands, i.e., air conditioners, refrigerators, washing machines and televisions, whose customers have been taken as respondents. Four brands, namely, LG, Samsung, Voltas and Hitachi, have been examined in the product category of air conditioners; LG, Samsung, Whirlpool and Godrej in the case of refrigerators; LG, Samsung, Whirlpool and Videocon in the category of washing machines; and Sony, LG, Samsung and Videocon in the televisions' category. A pre-tested, structured and non-disguised questionnaire has been used to collect data from 350 consumers. The Likert-type scale has been widely used.

Tailor J et al.
J. Adv. Res. Strat. Mark. Intell. Cust. Engagem. Optim. 2025; 1(2)

28

Statistical procedures like regression, mediation analysis, structural equation modelling, Kruskal-Wallis, t-test, and chi-square analysis have been employed.

Shu-Chiang Lin, Fadil P. Satria, Masyiakh K. Dendy (2021)

This study examines AC (air conditioner) customer loyalty in Surabaya city. The integration of Expectation Confirmation Theory on AC customer satisfaction and the interaction between satisfaction and loyalty with the inclusion of brand reputation variables. The application of structural equation modelling techniques could offer an explicit description of the relationship among variables. From the information processing, it can be observed whether the connection between satisfaction and loyalty variables significantly affects the value of 0.901 and the connection of satisfaction variables to the reputation of the brand that has a significant impact with the value of 0.989. The hope in this study is to be able to determine the factors that are able to affect the consumer loyalty of the XYZ brand AC so that it can be employed as a reference in making strategic measures of the company.

Qingqing Wu (2023)

According to the practice of the air conditioner industry, this research mainly determined the different dimensions of corporate image, customer satisfaction and customer loyalty of Chinese air conditioner companies and defined the customer relationship management system driven by the corporate image of Chinese air conditioning firms. Empirical research, descriptive statistical analysis and inferential analysis were conducted on the questionnaire data of 567 samples from the survey of SPSS version 28, and the current situation of the assessment of the dimensions of corporate image, customer satisfaction and customer loyalty of Chinese air conditioner companies was unveiled, and the interrelations among corporate image, customer satisfaction and customer loyalty were derived. Specifically, this research indicated that respondents agreed on the assessment standards concerning the corporate image, customer satisfaction and customer loyalty of the air conditioning enterprises involved, and the crucial role of natural image, service image, product image, corporate behaviour and other elements in constructing corporate image. The research also discovered the significance of customer satisfaction and customer loyalty to enterprises in achieving market competitiveness. In the meantime, through the correlations among corporate image, customer satisfaction and customer loyalty tested in this research, it was concluded that corporate image has a positive and significant interrelation with customer satisfaction and customer loyalty, which is to say the better the corporate image is, the higher customer satisfaction and customer loyalty will be. The empirical research outcomes also indicated that there exists a strong positive and significant

correlation between customer satisfaction and customer loyalty; that is to say, the higher the customer satisfaction, the higher the customer loyalty. This paper also established a customer relationship management model of Chinese air conditioner companies; that is to say, a good customer relationship management model should be made up of corporate image, customer satisfaction and customer loyalty. Lastly, according to this research, the researcher put forward relevant suggestions which have certain empirical reference value for the air conditioning industry.

Research Gap

The topic of consumer satisfaction has been extensively studied across various product categories and industries, particularly in the consumer electronics and home appliance sectors. However, when it comes to air conditioning systems, especially branded products like Hitachi in specific Indian urban markets such as Gandhinagar and Ahmedabad, there is a noticeable gap in focused primary research. Most of the existing studies in the domain of consumer satisfaction tend to adopt a generalised approach, addressing broader categories such as home appliances or HVAC (Heating, Ventilation, and Air Conditioning) systems collectively, often neglecting brand-specific and location-specific nuances. As a result, valuable insights into how consumers interact with, evaluate, and develop perceptions about specific brands in different local contexts remain underexplored. Furthermore, there is a tendency to emphasise functional attributes like energy efficiency, cooling performance, or price in previous studies, while often overlooking subjective factors such as design appeal, brand image, post-purchase services, and ease of use—factors which play a crucial role in shaping overall satisfaction.

In the case of Hitachi, a well-established air conditioning brand in India, the existing literature does not offer comprehensive insights into consumer attitudes, experiences, and satisfaction levels from a city-specific perspective. Cities like Gandhinagar and Ahmedabad have unique climatic, economic, and lifestyle factors that influence consumer behaviour differently compared to metro cities or rural areas. Yet, there is limited empirical data that captures the voice of consumers in these urban centres, especially when it comes to their brand-specific experiences with air conditioners. This lack of regional segmentation in consumer research leads to a gap in understanding localised preferences, expectations, and challenges faced by consumers in using high-end appliances like air conditioners.

Moreover, while secondary data and marketing reports may highlight market share, pricing strategies, or energy ratings, they often fail to delve into the psychological and service-related dimensions of satisfaction, such as after-sales support, customer service response time, service

29

Tailor J et al.
J. Adv. Res. Strat. Mark. Intell. Cust. Engagem. Optim. 2025; 1(2)

centre accessibility, and the perceived user-friendliness of features. These elements significantly influence the overall satisfaction level of consumers but are often treated as peripheral in broader surveys. Additionally, demographic variables like age, income, education, and occupation are frequently acknowledged but rarely analysed in depth for their specific influence on satisfaction in the context of air conditioner usage. This creates a gap between what marketers assume about customer preferences and what customers actually experience and expect.

Another major gap lies in the methodological aspect. Much of the available research relies heavily on secondary data or focuses on qualitative approaches like interviews or case studies. While such methods offer depth, they lack generalisability. Quantitative primary research based on structured surveys targeting specific consumer demographics and geographies—such as what this study undertakes—can offer more actionable insights. Also, there is limited literature on how satisfaction levels correlate with long-term brand loyalty or repeat purchases in the air conditioning sector, especially with reference to Hitachi.

Therefore, this study aims to bridge these research gaps by focusing specifically on Hitachi air conditioner users in Gandhinagar and Ahmedabad, analysing demographic influences on satisfaction, and exploring both functional and service-related attributes in depth through quantitative analysis.

Hypothesis (Only List)

H1: There is an association between age and current usage of a Hitachi air conditioner.

H2: There is an association between age and duration of usage (>1 year) of Hitachi AC.

H3: There is an association between age and perception of cooling performance.

H4: There is an association between age and perception of quiet operation.

H5: There is an association between age and perception of energy efficiency.

H6: There is an association between age and perception of design/aesthetics.

H7: There is an association between age and ease of use/user-friendliness of features.

H8: There is an association between age and satisfaction with installation service.

H9: There is an association between age and perception of response time to service requests.

H10: There is an association between age and perceived accessibility of service centres.

Validation Of Questionnaire

The responses indicate a generally positive experience with Hitachi air conditioners. Many users report that they are currently using a Hitachi air conditioner [36] and have been using it for more than one year.[37] The cooling performance is considered excellent,[38] and the appliance operates quietly with minimal noise.[39] Users also appreciate the energy efficiency of Hitachi air conditioners, noting savings on electricity bills[40] The design and aesthetics are found to be appealing,[41] and features such as the remote control are user-friendly.[42] Satisfaction with installation services is also high,[43] and the company is perceived to respond promptly to complaints and service requests.[44] Service centres are considered easily accessible, and the behaviour of service staff is described as professional and helpful.[45] Users believe that Hitachi air conditioners offer good value for money[51] and that the price is justified by the features and performance offered.[46] Attractive offers and financing options also enhance the purchase experience.[47] Overall, Hitachi is viewed as a trustworthy and reputable brand in the air-conditioner market,[48] with many customers willing to purchase another Hitachi AC in the future[49] and recommend the brand to others.[50]

Research Methodology

The study adopts a descriptive research design and utilises a non-probability convenient sampling method. Primary data was collected through a structured questionnaire consisting of close-ended questions, administered online via Google Forms. The data was analysed using tables, with SPSS and Excel serving as the main analytical tools. The sample size for the study comprises 252 respondents from Gandhinagar and Ahmedabad city, including students, private and government employees, businessmen, homemakers, and professionals such as chartered accountants and doctors.

Demographic Summary

The demographic summary of the respondents reveals that the majority (65.9%) fall within the 21–30 age group, followed by 26.2% aged between 31 and 40, and only 7.9% aged 41–50. In terms of gender, 59.1% of the participants are male, while 40.1% are female, and a small fraction (0.8%) preferred not to disclose their gender. Regarding occupation, students make up the largest group at 40.1%, followed by employed individuals (29.4%), businesspersons (18.3%), homemakers (8.3%), professionals (2.8%), and retired individuals (1.2%). When it comes to the area of residence, a significant majority of the respondents (73.0%) reside in Ahmedabad, while 27.0% are from Gandhinagar. This demographic distribution provides a diverse perspective for analysing consumer satisfaction towards Hitachi air conditioners in the selected cities.

Tailor J et al.
J. Adv. Res. Strat. Mark. Intell. Cust. Engagem. Optim. 2025; 1(2)

30

Cronbach's Alpha

The Cronbach's Alpha coefficient for the 17-item scale was calculated to be 0.951, indicating an exceptionally high level of internal consistency among the items. This suggests that the scale is highly reliable and the items effectively measure the same underlying construct. A value above 0.9 is considered excellent, reinforcing the credibility of the instrument used in this study.

Table 1.Results Of Hypothsis Testing

Sr. No	Alternate Hypothesis	Result p =	>/< 0.05	Accept/ Reject Null hypothesis	R value	Relationship
H1	There is an association between Age and current usage of a Hitachi air conditioner.	0.001	<	H01 Rejected (Null hypothesis rejected)	0.026	weak
H2	There is an association between Age and duration of usage (>1 year) of Hitachi AC.	0.248	>	H02 Accepted (Null Hypothesis Accepted)	0.165	weak
H3	There is an association between Age and perception of cooling performance.	0.004	<	H03 Rejected (Null hypothesis rejected)	0.022	weak
H4	There is an association between Age and perception of quiet operation.	0.003	<	H04 Rejected (Null hypothesis rejected)	0.006	weak
H5	There is an association between Age and perception of energy efficiency.	0.035	<	H05 Rejected (Null hypothesis rejected)	0.190	weak
H6	There is an association between Age and perception of design/aesthetics.	0.119	>	H06 Accepted (Null Hypothesis Accepted)	0.416	Strong
H7	There is an association between Age and ease of use/user-friendliness of features.	0.000	<	H07 Rejected (Null hypothesis rejected)	0.001	weak
H8	There is an association between Age and satisfaction with installation service.	0.000	<	H08 Rejected (Null hypothesis rejected)	0.006	weak
H9	There is an association between Age and perception of response time to service requests.	0.010	<	H09 Rejected (Null hypothesis rejected)	0.005	weak
H10	There is an association between Age and perceived accessibility of service centers.	0.021	<	H10 Rejected (Null hypothesis rejected)	0.161	weak

*Source: Author's compilation

31

Tailor J et al.
J. Adv. Res. Strat. Mark. Intell. Cust. Engagem. Optim. 2025; 1(2)

Discussion

The research sought to establish customer satisfaction with Hitachi air conditioners by the people residing in Gandhinagar and Ahmedabad, with the emphasis on the association of the age of the consumer with influencing factors (Vidani & Plaha, 2017). The hypotheses to be tested are a total of ten factors that are usage pattern, perceived performance, appearance, ease of use, and customer experience (Vidani J. N., 2020).

Through hypothesis testing, there was a significant relationship between consumer age and use of Hitachi air conditioners currently (p = 0.001), indicating that consumer age has something to do with the use of the brand at the current moment or otherwise (Vidani J. N., 2018). The strength of the relationship (R = 0.026), however, indicates that the relationship is weak, meaning that other variables such as income or awareness also play a role towards use at the current moment (Vidani & Dholakia, 2020). Interestingly, there was no positive relationship between age and duration of use for over a year (p = 0.248), indicating that once consumers begin to use Hitachi air conditioners, their age does not play a significant role towards duration of use (Vidani, Meghrajani, & Siddarth, 2023) (Rathod, Meghrajani, & Vidani, 2022).

When consumer attitudes towards cooling performance, noise, and energy efficiency were analysed, age had a significant correlation with all of them (p < 0.05) (Vidani & Das, 2021). All R values were below 0.2, which means weak correlations. This suggests that while age groups may have slightly varying views, overall consumer attitudes towards key performance parameters of Hitachi ACs are extremely consistent across age groups (Vidani J. N., 2022).

The only significant exception is in aesthetics and design. Though the outcome was not significant statistically (p = 0.119), the R value of 0.416 was the highest in the data (Saxena & Vidani, 2023). It shows there is a very strong practical correlation between what is seen as design and age, though it is not statistically significant at the 5% level (Vidani, Das, Meghrajani, & Singh, 2023). They could pay more or less attention to details of design or evaluate aesthetics differently from younger consumers, which is still an area to be researched further with qualitative research (Vidani, Das, Meghrajani, & Singh, 2023).

Moreover, high correlation was observed between age and ease of use (p = 0.000), satisfaction with the installation service (p = 0.000), response time to the service requests (p = 0.010), and availability of the service centre (p = 0.021) (Vidani, 2015). Once more, a low strength of relationship exists despite statistical significance (R values < 0.2), signifying negligible differences in perception among the age groups (Vidani & Solanki, 2015). This suggests the possibility of Hitachi standardising and improving after-sales services and product usability features across all consumer segments (Vidani, 2015).

In general, most of the hypotheses testing age versus measures of consumer satisfaction were statistically significant, albeit weakly in most cases (Vidani, 2015). This implies that while age does play a role to a limited extent in perception and experience, it is not a key driver for total overall satisfaction of Hitachi air conditioners. The sole exception might be an interesting one to investigate further due to its relatively stronger correlation (Vidani, 2015).

In summary, the findings highlight that Hitachi's quality of product and service is perceived equally across the various age groups, and this speaks to brand consistency (Solanki & Vidani, 2016). The firm, however, does not have to overlook minor perceptual variations that may influence subsequent purchases, particularly in such issues as looks and user interface design, which may attract different young or old consumers (Vidani, 2016).

Theoretical Implications

The findings from this study offer several valuable theoretical implications in the domain of consumer behaviour and satisfaction, particularly in the context of durable goods like air conditioners. This research reinforces and expands the theoretical understanding of how demographic factors, especially age, intersect with product satisfaction and brand perception.

Firstly, the study affirms the relevance of age as a demographic variable in shaping consumer behaviour, albeit with limited explanatory power. While age showed statistically significant associations with several variables, such as cooling performance, quiet operation, energy efficiency, ease of use, and service-related aspects, the strength of these relationships was consistently weak. This supports existing theories in consumer behaviour, which suggest that demographic factors alone are often insufficient predictors of satisfaction and must be viewed in combination with psychographic and behavioural dimensions. This aligns with multi-attribute attitude models, which posit that consumer satisfaction is a composite outcome influenced by numerous factors beyond basic demographics.

Secondly, the study adds nuance to the expectation-disconfirmation theory, which is central to understanding customer satisfaction. The weak association between age and product usage experience suggests that customers across age groups generally have similar expectations and levels of satisfaction with Hitachi air conditioners. This points to a relatively standardised consumer experience, where the brand delivers a consistent product performance that matches or exceeds expectations across diverse age segments.

Tailor J et al.
J. Adv. Res. Strat. Mark. Intell. Cust. Engagem. Optim. 2025; 1(2)

32

Moreover, the notable exception concerning design and aesthetics, where a strong (though statistically insignificant) relationship with age was observed, provides support for differential perception theory. This theory suggests that perception of visual and sensory product elements can vary widely based on demographic factors such as age, lifestyle, or cultural background. It implies that while functional satisfaction may be uniform, emotional or design-related satisfaction can diverge based on subjective evaluation.

The findings also highlight the limitations of relying solely on traditional demographic segmentation for market analysis and support the growing emphasis on behavioural and psychographic segmentation in modern marketing theory. The weak correlations across most satisfaction variables suggest that deeper behavioural insights—such as lifestyle, usage patterns, environmental consciousness, or brand loyalty—may be more powerful predictors of satisfaction.

Furthermore, from a service quality theory perspective, the findings imply that perceptions of after-sales services, including installation and service responsiveness, are only mildly influenced by age. This supports the SERVQUAL model's assertion that while demographic traits may influence service expectations, the perceived quality is ultimately shaped by reliability, responsiveness, assurance, empathy, and tangibles, which may be uniformly experienced across age groups if managed consistently.

In summary, this research contributes to the theoretical body of knowledge by illustrating that while age may hold some influence on specific aspects of consumer satisfaction, its role is limited in strength. It underscores the importance of integrating demographic analysis with broader behavioural and experiential factors to form a more comprehensive understanding of consumer satisfaction in the durable goods sector.

practical implications

The findings of this study have several important practical implications for Hitachi and other companies operating in the air conditioning industry, especially in regional markets like Gandhinagar and Ahmedabad. These insights can be used to refine marketing strategies, improve customer experience, and enhance product and service offerings based on consumer demographics—particularly age.

Firstly, the fact that age has a statistically significant but weak association with most variables suggests that Hitachi's product performance is perceived relatively uniformly across age groups. This is a positive indicator of brand consistency and quality control. It implies that the company does not need to drastically differentiate its core products based on age but can instead focus on maintaining a uniform standard in cooling performance, energy efficiency, and operational quietness for all consumer segments.

However, design and aesthetics emerged as an area where age may have a stronger influence, even though the result was not statistically significant. This indicates that younger consumers may value modern and sleek designs, while older consumers might prioritise functionality and simplicity. Hitachi could use this insight to develop design variants targeting different age groups—for instance, offering minimalist models for older users and premium, tech-enhanced designs for younger, style-conscious buyers.

Another practical implication involves user-friendliness and ease of use, which were significantly associated with age. Even though the relationship is weak, it suggests that certain age groups, possibly older users, may find the operation of features slightly less intuitive. Hitachi should consider improving user interface design—such as simplified remote controls, mobile app usability, or voice-command features—to cater to a broader age range more effectively.

The study also revealed a significant association between age and satisfaction with installation service, service response time, and accessibility of service centres. Although weak, these relationships highlight the importance of consistent and efficient after-sales support, regardless of customer age. Hitachi can use this information to enhance its service delivery model, ensuring prompt response times, transparent communication, and well-trained service staff who can handle the needs of different age groups sensitively and effectively.

From a marketing perspective, the insights suggest that age-based segmentation alone may not be enough. However, targeted promotional strategies can still be effective in creating personalised messaging. For instance, younger customers might respond better to promotions highlighting smart features, app connectivity, and energy efficiency, whereas older customers might be more influenced by reliability, durability, and service convenience.

Additionally, since usage duration showed no significant relationship with age, it implies that once consumers adopt Hitachi air conditioners, they tend to continue usage regardless of their age. This highlights the potential to build long-term customer loyalty, making it worthwhile to invest in loyalty programmes, maintenance packages, or upgrade incentives.

In conclusion, while age may not be a dominant driver of satisfaction, the subtle differences observed in perceptions offer actionable insights. By enhancing design options, improving user accessibility, and delivering superior service experiences, Hitachi can effectively cater to a diverse age

33

Tailor J et al.
J. Adv. Res. Strat. Mark. Intell. Cust. Engagem. Optim. 2025; 1(2)

demographic and strengthen its position in the competitive air conditioning market.

Recommendations For Future Research/Future Scope Of The Study

While the current study provides important insights into consumer satisfaction with Hitachi air conditioners in Gandhinagar and Ahmedabad, there are several opportunities for future research to expand and deepen the understanding of consumer behaviour in this product category.

- **Expand the Demographic Scope:** This study focused primarily on the influence of age on consumer satisfaction. Future research could include other demographic variables such as income level, education, marital status, or family size, which may significantly affect consumer preferences, purchasing decisions, and satisfaction levels.

- **Include Psychographic and Behavioural Factors:** Since age alone showed only weak associations with satisfaction variables, future studies could incorporate psychographic factors like lifestyle, environmental concern, or brand loyalty. Understanding the motivations, values, and behavioural patterns behind air conditioner usage can offer deeper insights for marketers and product developers.

- **Comparative Brand Analysis:** To contextualise Hitachi's performance, future research could conduct a comparative study involving other major brands such as LG, Voltas, Daikin, or Samsung. This would help in identifying Hitachi's relative strengths and weaknesses and provide a benchmark for improving customer satisfaction

- **Use of Qualitative Methods:** While this study used quantitative techniques, qualitative methods like interviews, focus groups, or case studies could be used in future research to gain richer, more nuanced understanding of consumer perceptions, especially around emotional satisfaction, brand loyalty, and service experience.

- **Longitudinal Study Design:** A longitudinal approach could help track changes in consumer satisfaction over time, especially as new technologies (such as IoT-enabled smart ACs) are introduced. This would help companies anticipate shifting consumer needs and expectations more accurately.

- **Inclusion of Rural and Semi-Urban Areas:** The current study is limited to urban areas (Gandhinagar and Ahmedabad). Future research can explore consumer satisfaction in rural or semi-urban regions, where service infrastructure, purchasing power, and usage patterns may differ significantly.

- **Study of Post-Purchase Behaviour and Loyalty:** Future research could delve into how satisfaction with Hitachi ACs influences post-purchase behaviour, including repeat purchases, word-of-mouth referrals, and long-term brand loyalty.

- **Technological Impact Assessment:** With the rising adoption of energy-efficient and smart air conditioning systems, future studies could evaluate how technological advancements influence consumer satisfaction across different age or income groups.

- **Environmental and Sustainability Considerations:** As consumers become more environmentally conscious, future research can assess how perceptions of sustainability, energy ratings, and green technology affect satisfaction and purchase intentions.

- **Service Quality and Digital Engagement:** Future studies can focus more deeply on customer service quality, especially through digital channels, mobile apps, and online support systems, which are becoming increasingly important in shaping customer experience.

In conclusion, future research can broaden both the depth and scope of this study by integrating diverse variables, regions, and methodologies. These expansions would not only contribute to academic knowledge but also provide actionable insights for businesses aiming to enhance consumer satisfaction and brand value in the competitive air conditioning market.

Conclusion

This study on consumer satisfaction towards Hitachi air conditioners in Gandhinagar and Ahmedabad provides valuable insights into how age influences various aspects of consumer experience and perception. The analysis revealed that while age has a statistically significant association with many variables—such as cooling performance, quiet operation, energy efficiency, ease of use, and service-related factors—the strength of these relationships is generally weak. This suggests that although consumers of different age groups may exhibit slight variations in perception, overall satisfaction levels with Hitachi air conditioners are relatively consistent across demographics.

One notable exception was the perception of design and aesthetics, where a stronger correlation with age was observed, indicating that preferences regarding product appearance may vary more noticeably across age segments. This insight opens opportunities for the brand to consider offering diversified design features to cater to varying aesthetic expectations.

The findings also indicate that Hitachi's existing product and service strategies are largely effective across a broad consumer base. However, there is room for improvement in areas like user interface design and after-sales service responsiveness, which can further enhance the customer experience for specific age groups, particularly older

Tailor J et al.
J. Adv. Res. Strat. Mark. Intell. Cust. Engagem. Optim. 2025; 1(2)

34

consumers who may prefer more intuitive functionality and dependable service support.

Overall, the study concludes that while age is a relevant factor in shaping consumer perception and satisfaction, it is not the primary determinant. Hitachi's ability to maintain consistent performance standards across age groups is commendable, but addressing subtle differences—particularly in design, ease of use, and service quality—can lead to increased customer satisfaction, stronger brand loyalty, and greater market competitiveness in regions like Gandhinagar and Ahmedabad.

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