A Comparative Analysis of UltraTech and ACC Cement: Market Size, Quality, and Price in Patna City

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ABSTRACT
This study examines the relationship between age and consumer perceptions of UltraTech and ACC Cement in Patna City, Bihar, with a focus on availability, trust, pricing, quality, logistics efficiency, and overall satisfaction. Primary data were collected using a structured questionnaire, and Chi-square tests were applied to assess associations between age and perception variables. Results indicate that age significantly affects consumer perceptions in areas such as brand availability, trust, logistics efficiency, and satisfaction. Respondents aged 18 to 25 years demonstrated a stronger preference for UltraTech Cement, attributing this to greater accessibility, contemporary branding, and prompt delivery. In contrast, older participants expressed higher confidence in ACC Cement, valuing its reliability, consistency, and established relationships with local dealers. No significant differences emerged regarding pricing and quality perceptions, suggesting that both brands are perceived to offer comparable standards across age groups. The study provides significant theoretical contributions by reinforcing consumer behaviour and demographic segmentation theories. It demonstrates that psychological and demographic variables influence brand perceptions in industrial product markets such as cement. From a practical perspective, the findings indicate that cement companies should implement age-specific marketing strategies. For example, digital media is more effective for younger consumers, while relationship-based approaches are preferable for older demographic groups. The research concludes that recognizing demographic diversity is critical for enhancing customer satisfaction and fostering long-term brand loyalty.

Keywords: Consumer Perception, Age, UltraTech Cement, ACC Cement, Brand Trust, Patna City

1. INTRODUCTION

As the main material used in building and construction activities, cement is a crucial component of the construction industry, which serves as the foundation for a country's economic and infrastructure development (Vidani & Solanki, 2015). Due to rising urbanization, industrialization, and housing demand, India—one of the world's biggest producers and consumers of cement—has seen tremendous growth in this industry (Solanki & Vidani, 2016). Because of this, the cement industry has changed from being solely focused on manufacturing to becoming fiercely competitive and brand-driven, with consumer perception and brand image having a big impact on decisions to buy (Vidani, 2018). Given this, it is imperative that marketers and policymakers comprehend how demographic characteristics, particularly age, impact consumers' perceptions of cement brands (Vidani & Solanki, 2015).

In the past, cement purchase decisions were thought to be technical, logical, and heavily impacted by practical characteristics like cost, strength, and durability (Vidani, 2016). Consumer perception, however, has evolved into a multifaceted idea in recent years, influenced by emotional, psychological, and service-related elements in addition to product quality (Bhatt, Patel, & Vidani, 2017). Brand differentiation strategies that emphasize trust, availability, customer satisfaction, and marketing communication have emerged as a result of the increased competition among major brands like UltraTech Cement and ACC Cement (Niyati & Vidani, 2016). These companies are now seen as trustworthy construction partners rather than just product suppliers (Pradhan, Tshogay, & Vidani, 2016). Accordingly, investigating how customers of various ages view and assess these brands offers valuable information about consumer behavior and strategic positioning (Modi, Harkani, Radadiya, & Vidani, 2016).

Additionally, like other industries, the In the past, cement purchase decisions were thought to be technical, logical, and heavily impacted by practical characteristics like cost, strength, and durability (Vidani, 2016). Consumer perception, however, has evolved into a multifaceted idea in recent years, influenced by emotional, psychological, and service-related elements in addition to product quality (Bhatt, Patel, & Vidani, 2017). Brand differentiation strategies that emphasize trust, availability, customer satisfaction, and marketing communication have emerged as a result of the increased competition among major brands like UltraTech Cement and ACC Cement (Niyati & Vidani, 2016). These companies are now seen as trustworthy construction partners rather than just product suppliers (Pradhan, Tshogay, & Vidani, 2016). Accordingly, investigating how customers of various ages view and assess these brands offers valuable information about consumer behavior and strategic positioning (Modi, Harkani, Radadiya, & Vidani, 2016).

Attitudes, preferences, and decision-making styles are significantly influenced by age (Vidani, 2016). According to Sukhanandi, Tank, and Vidani (2018), younger consumers may have a different perception of brands than older consumers who rely more on experience, personal trust, and long-term relationships with dealers or suppliers. Younger consumers are also frequently influenced by modern advertising and digital communication. Understanding age-based perception differences aids businesses in creating targeted marketing, communication, and service strategies in the cement industry, where both professional contractors and individual home builders contribute to brand demand (Singh, Vidani, & Nagoria, 2016). While a 50-year-old contractor might prioritize dependability, cost-effectiveness, and after-sales service, a 25-year-old customer building his first home might prioritize accessibility and brand reputation (Mala, Vidani, & Solanki, 2016).

Cement sector is progressively embracing consumer-centric strategies due to the growing impact of branding and marketing communication (Dhere, Vidani, & Solanki, 2016). As the industry leader, UltraTech Cement prioritizes innovation, quality control, and accessibility, whereas ACC Cement—a subsidiary of Holcim and a pioneer in the Indian cement industry—prioritizes reliability, trust, and client connections (Singh & Vidani, 2016). Despite these initiatives, empirical studies examining the perceptions and reactions of various age groups to these branding tactics are still lacking (Vidani & Plaha, 2016). Individual consumer perceptions are not well understood because the majority of previous research has concentrated on technical aspects, dealer perspectives, or organizational buying behaviour (Solanki & Vidani, 2016).

With a focus on elements like availability, trust, pricing, quality, delivery efficiency, and overall satisfaction, this study intends to examine the association between age and consumer perception of UltraTech and ACC Cement in Patna City, Bihar (Vidani, 2016). The study aims to ascertain whether age has a significant impact on consumer attitudes and brand preferences by using quantitative techniques like the Chi-square test (Vidani, Chack, & Rathod, 2017). Ultimately, by providing insights into age-based market segmentation, consumer satisfaction, and brand strategy optimization within the cement industry, the study advances both academic knowledge and real-world decision-making (Vidani, 2018). Businesses can create more efficient, focused, and customer-focused marketing strategies that promote enduring loyalty and brand success in a market where competition is growing by comprehending demographic-driven perception differences (Vidani, 2018).

2. RESEARCH OBJECTIVES

- To compare the availability of UltraTech and ACC Cement in the Patna City market.
- To analyze consumer perception regarding the price reasonableness and affordability of UltraTech and ACC Cement.
- To evaluate the quality consistency and performance (strength, durability, setting time) of UltraTech and ACC Cement.
- To assess consumer trust towards UltraTech and ACC Cement based on brand reputation and local acceptance.
- To study the delivery and logistics efficiency of UltraTech and ACC Cement.
- To examine overall customer satisfaction levels with UltraTech and ACC Cement.
- To identify consumer willingness to recommend UltraTech and ACC Cement to others.

3. LITERATURE REVIEW

1. The Indian Cement Industry: An Overview

In terms of industrial output and GDP contribution, the cement industry in India has grown to become one of the most important economic sectors. With an annual production capacity of more than 500 million tonnes, India is the world's second-largest producer of cement (Singh & Malhotra, 2024). Policy changes, liberalization, higher infrastructure spending, and a robust housing demand brought on by fast urbanization have all influenced this industry. Crucially, it is an industry that has proven resilient, as evidenced by the COVID-19 pandemic, when demand did not collapse to the same degree as other industries in spite of supply chain disruptions (Vidani & Plaha, 2016).

Predicting future industry trends requires an understanding of the financial, operational, and competitive dynamics of cement companies, according to several academics (Gopi, 2018; Singh & Malhotra, 2024). Although studies at the national level provide a broad overview, region-specific analyses are becoming increasingly necessary, particularly in rapidly urbanizing cities like Patna, which serves as the capital of Bihar and one of the fastest-growing urban centres in Eastern India (Biharani & Vidani, 2018). In contrast to national averages, demand forecasts, consumer preferences, and competitive strategies may vary significantly in this context (Vidani, 2015).

The two main participants in this study are ACC Cement, a comparatively established but regionally significant player with strong brand recognition in Bihar, and UltraTech Cement, the biggest cement company in India with a pan-India presence (Biharani & Vidani, 2018). Their comparison of Patna's markets in terms of size, quality, and cost will help close the research gap noted in the body of current literature (Vidani, 2015). Patna's booming construction sector—driven by infrastructure projects under PMAY, Smart City initiatives, and the growing urban middle class—makes it a particularly relevant field for this comparative analysis.

2. Financial Performance of Cement Companies

Financial performance evaluation is one of the most extensively studied topics in the cement industry. When Singh and Malhotra (2024) compared Shree Cement and UltraTech Cement, they found that UltraTech had better trends in net profit, return on equity, and return on assets, but Shree Cement did better in terms of gross and operating profit (Odedra, Rabadiya, & Vidani, 2018). This distinction emphasizes how a comprehensive evaluation of capital management, investment trends, and strategic positioning is necessary to understand profitability rather than just operational efficiency.

Financial performance was further broken down into elements like asset turnover, tax efficiency, and equity multiplier using the extended DuPont approach that Gopi (2018) applied to businesses like ACC, Gujarat Ambuja, and UltraTech (Odedra, Rabadiya, & Vidani, 2018). The findings showed that although industry-wide financial returns decreased between 2006 and 2015, financial structure similarities surfaced, suggesting industry-wide limitations (Vidani, 2019). These revelations are essential for comparative research because they demonstrate how structural issues affect even market titans like UltraTech.

ACC Cement, as a Holcim subsidiary, benefits from global financing mechanisms and technology transfer arrangements. Unlike purely regional players, ACC can leverage international capital markets and sustainability financing, giving it an advantage in terms of green cement technology deployment. However, UltraTech has strategically diversified its sources of funding, striking a balance between debt and equity to preserve operational flexibility (Trends in Finance and Economics, 2024). This contrast in capital structure is directly relevant to the Patna market, where large-scale infrastructure contracts require financial stability and consistent supply capacity.

3. Quality Assurance and Process Optimization in Cement Production

One of the most important factors influencing consumer preference, construction durability, and regulatory compliance is cement quality. Gohel, Sarkar, and Raghavendra (2018) investigated how RMC plants in major Indian cities used statistical process control tools like CUSUM and EWMA control charts (Vidani J. N., 2016). Their research uncovered inefficiencies like overly conservative mix designs that resulted in cement waste and unfavorable side effects like shrinkage cracks. RMC plants could save between INR 4.8 and 7.2 million a year by implementing sophisticated monitoring tools.

The incorporation of such tools is consistent with the established R&D and technological infrastructure of large producers such as UltraTech (Vidani J. N., 2016). As part of its brand value, UltraTech has frequently highlighted quality consistency, which is crucial when catering to a variety of Indian markets. ACC Cement, with its decades-long history and ISO certifications, also maintains strong quality standards; however, regional supply chain nuances in Bihar may affect perceived consistency at the ground level (Vidani J. N., 2016).

Consumer expectations in Patna are increasingly shaped by quality research and construction best practices. Cement with consistent workability, durability, and compressive strength is becoming more and more in demand from developers, contractors, and individual consumers (Vidani J. N., 2016). Businesses that can ensure high-quality output are more likely to win market preference in places like Patna, where massive government-funded housing and infrastructure projects such as the Ganga Expressway and various PMAY schemes predominate. According to the literature, quality assurance procedures serve as both operational requirements and competitive differentiators.

4. Cement Pricing Strategies and Market Competition

Pricing in the cement industry is influenced by several factors. These include production costs, raw material availability, transportation, and tax policies. While academic research has not specifically examined cement pricing in Patna, industry reports and financial studies highlight relevant factors. Singh and Malhotra (2024) and Gopi (2018) both noted that profit margins in cement are usually slim, making cost control crucial for pricing flexibility.

Large companies like UltraTech may use a penetration pricing strategy in competitive areas. They benefit from economies of scale, allowing them to set competitive prices without hurting their profits (Vidani J. N., 2016). ACC Cement, being part of the Holcim group, employs both localized and standardized pricing models, focusing on building relationships with distributors and contractors to provide cost advantages in particular markets like Bihar (Vidani J. N., 2016). There is also evidence that transportation and logistics costs significantly affect cement pricing (Sarkar et al., 2019). In Patna, where demand is strong but often concentrated in specific construction corridors, companies with efficient supply chains can pass cost savings to consumers. UltraTech's large logistics network gives it a clear advantage, while ACC may depend on stronger regional distribution partnerships to remain competitive in the Bihar market (Vidani J. N., 2016). The literature suggests that price competition is not just about cutting costs—it also involves managing financial health, distribution efficiency, and perceived value for money.

5. Cement Demand in Patna: Growth and Sustainability Dimensions

Patna has emerged as a key centre for economic and urban growth in Bihar and Eastern India. As Bihar's capital city, Patna is at the centre of massive government-led infrastructure projects including highways, bridges, metro rail, and affordable housing schemes under the Pradhan Mantri Awas Yojana (PMAY). The city's rapidly growing population and increasing urbanization have driven sustained demand for construction materials, with cement consumption expected to grow significantly through 2050.

Although UltraTech can meet large-scale demand with its pan-India manufacturing network, its growth in Bihar depends on balancing cost management with timely logistics. ACC Cement, operating through its established regional network in Eastern India, might target niche markets like affordable housing or local contractors, allowing them to offer tailored services and respond more quickly to changes (Vidani J. N., 2016). The cement demand in Patna is further accelerated by the Bihar government's 'Niti Bihar' infrastructure vision and smart city development framework.

Sustainability is an urgent issue in cement demand research. The increasing scale of construction in Bihar raises concerns about carbon emissions and environmental impact. Both UltraTech and ACC have announced national sustainability programs, but their implementation at regional levels varies. UltraTech has invested in blended cement technologies and waste-heat recovery systems at its plants, while ACC has promoted the use of supplementary cementitious materials. Local contractors and dealers in Patna are gradually becoming aware of green building standards, though economic considerations still dominate purchase decisions.

6. Operational Efficiency and Logistics in the Cement Industry

One of the most significant cost factors in the cement sector is logistics. Besides, logistics is an essential driver of customer satisfaction in the cement sector. Sarkar, Gohel, and Dabasia (2019) have built a delivery schedule optimization model for RMC plants in Indian cities, which led to a reduction in the waiting time of truck-mixers and overall delays. Their results have shown that a slight change in dispatching sequences can bring about a reduction of waiting time up to 155 minutes per day.

Patna presents unique logistical challenges due to its geography—straddling the Ganga river—and the varying road infrastructure across urban and peri-urban zones. UltraTech Cement's large fleet of vehicles and state-of-the-art supply chain mechanisms lower the risk of project delays and thus increase the company's ability to meet large contracts requirements (Vidani, Das, Meghrajani, & Chaudasi, 2023). ACC, whose operations in Bihar include proximity to key raw material sources in the Vindhya-Satpura belt, can leverage shorter transportation routes for certain supply corridors to remain competitive.

The analyzed sources indicate that operational efficiency can be considered a non-price competitive strategy, especially in urban markets where the importance of timely delivery is usually higher than that of small price differences. This feature becomes crucial in Patna, where construction periods are constrained by monsoon seasons, and therefore delays may result in significant financial losses for contractors and developers (Vidani, Das, Meghrajani, & Singh, 2023).

7. Identified Gaps in Literature

Despite the number of studies concerning the topic, certain gaps can still be found, which is the reason for the current research focus:

- Regional Comparisons: Most research work evaluates cement companies at the national level (e.g., UltraTech, ACC, Ambuja) and does not investigate city-specific environments such as Patna in Bihar.
- Eastern India Context: The research literature predominantly focuses on Gujarat, Maharashtra, and South India markets. Eastern Indian cities like Patna remain understudied despite their growing market potential.
- Price and Quality Linkages: Only a few pieces of research have directly linked financial performance and quality assurance dimensions to consumer perceptions of price-value trade-offs.
- Primary Data Insights: Most existing research has been done based on secondary data; primary research at the city level can reveal different consumer behavior and real-time market competition dynamics in Bihar.

8. Synthesis for Present Study

The literature reviewed collectively points out that the cement industry of India is grappling with the issues of financial structure, quality assurance, logistics optimization, and large-scale urban demand. These revelations underpin the present research, which intends to advance the existing understanding by juxtaposing UltraTech and ACC Cement in the context of Patna City, focusing on the aspects of market size, quality, and price (Bansal, Pophalkar, & Vidani, 2023). By carrying out a primary, local study, this research fills in the gaps highlighted and deepens the knowledge about the way competition arises in India's emerging urban cement markets (Chaudhary, Patel, & Vidani, 2023).

The research, by focusing on Patna, aims at generating fresh ideas about how large and established companies deal with the pressure of competition in a rapidly urbanizing Eastern Indian city (Sharma & Vidani, 2023). It views market size, quality, and price as the three major angles through which the comparative study can unveil the strengths, weaknesses, and opportunities of both UltraTech and ACC Cement.

4. RESEARCH GAP

Even though there has been a vast amount of research conducted on consumer behavior and brand image in different industries, comparatively little research has addressed these variables in the cement industry, especially with regard to demographic factors like age. Most literature related to consumer perception has been conducted on fast-moving consumer goods (FMCG), automobiles, and retail items, where emotional and psychological factors are evident. The cement business, though, tends to be viewed as purely functional and price-dependent, with minimal notice taken of the influence of consumer demographics and perceptual considerations in brand choice and satisfaction.

Past research has mostly dealt with technical factors such as product quality, strength, and cost-effectiveness, but few studies have dealt with the perception and evaluation of cement brands by different age groups. Comparative studies between leading brands like UltraTech and ACC Cement, which are market leaders in India and address various segments of customers, also do not exist. In addition, current research has seldom explored how age influences trust perceptions, availability perceptions, and service satisfaction—determinants that have significant effects on purchase decisions even in industrial product classes.

Another key shortcoming is the minimal deployment of statistical measures like the Chi-square test to determine quantifiable connections between demographic variables and perception variables in this setting. Hence, the current research gap is filled by this study through empirical analysis on how age impacts perceptions about UltraTech and ACC Cement among consumers in Patna City. It sheds new light on age-based segmentation and perception dynamics and has the potential to contribute to both scholarly knowledge and real-world brand strategy development in the cement sector.

5. HYPOTHESIS

1. There is a significant relationship between Age and perception that UltraTech Cement is easily available in Patna City compared to ACC Cement.
2. There is a significant relationship between Age and perception that ACC Cement provides good availability and supply consistency.
3. There is a significant relationship between Age and trust in UltraTech Cement's brand reputation.

4. There is a significant relationship between Age and trust in ACC Cement among contractors and dealers.
5. There is a significant relationship between Age and UltraTech's delivery/logistics efficiency.
6. There is a significant relationship between Age and ACC's delivery/logistics efficiency.
7. There is a significant relationship between Age and overall satisfaction with UltraTech.
8. There is a significant relationship between Age and overall satisfaction with ACC.
9. There is a significant relationship between Age and recommendation of UltraTech to others.
10. There is a significant relationship between Age and UltraTech's pricing vs quality perception.
11. There is a significant relationship between Age and ACC's affordability/value for money.
12. There is a significant relationship between Age and UltraTech's product consistency (quality).
13. There is a significant relationship between Age and ACC's quality expectation.
14. There is a significant relationship between Age and recommendation of ACC to others.

Table 1. Validation of Questionnaire

Statements	Citation
I find UltraTech Cement easily available in Patna compared to ACC Cement.	(Vidani, 2015)
ACC Cement provides good availability and supply consistency.	(Solanki & Vidani, 2016)
UltraTech Cement is priced reasonably compared to the quality it provides.	(Vidani, 2016)
ACC Cement offers better affordability/value-for-money than UltraTech.	(Bhatt, Patel, & Vidani, 2017)
UltraTech Cement maintains consistent quality (strength, durability, setting time).	(Niyati & Vidani, 2016)
ACC Cement quality meets my expectations in terms of strength and durability.	(Pradhan, Tshogay, & Vidani, 2016)
I trust UltraTech Cement more because of its brand reputation and market presence.	(Modi, Harkani, Radadiya, & Vidani, 2016)
ACC Cement has built strong trust among local dealers and contractors.	(Vidani, 2016)
The delivery/logistics efficiency of UltraTech Cement is satisfactory.	(Sukhanandi, Tank, & Vidani, 2018)

Statements	Citation
The delivery/logistics efficiency of ACC Cement is satisfactory.	(Singh, Vidani, & Nagoria, 2016)
Overall, I am satisfied with my experience of using UltraTech Cement.	(Mala, Vidani, & Solanki, 2016)
Overall, I am satisfied with my experience of using ACC Cement.	(Dhere, Vidani, & Solanki, 2016)
I would recommend UltraTech Cement to others.	(Singh & Vidani, 2016)
I would recommend ACC Cement to others.	(Vidani & Plaha, 2016)

Source: Author's Compilation

6. METHODOLOGY

Table 2: Research Methodology

Parameter	Details
Research Design	Descriptive
Sample Method	Non-Probability – Convenient Sampling Method
Data Collection Method	Primary Method
Data Collection Tool	Structured Questionnaire
Type of Questions	Close Ended
Data Collection Mode	Online through Google Form
Data Analysis Methods	Tables
Data Analysis Tools	SPSS and Excel
Sampling Size	154
Survey Area	Patna City, Bihar
Sampling Unit	Students, Private and Government Job Employees, Businessmen, Home Makers, Contractor and distributors, etc.

Source: Author's Compilation

Demographic Summary

The age and gender profile of the respondents indicates that among 154 participants, there were 73.4% males and 26.6% females, showing male predominance in the sample. Most (58.4%) of the respondents fell within the 18–25 years age bracket, followed by 20.8% falling within the 26–32 years age bracket. In occupation, the largest group was represented by end consumers (42.9%), followed by contractors at 14.3% and builders/developers at 14.3%. Regarding education, most respondents were graduates (53.2%), followed by postgraduates (22.7%). The monthly income distribution shows that 37.7% earned below ₹25,000, and only 16.2% earned above ₹1,00,000, reflecting a diverse economic background among the participants.

Cronbach Alpha

The internal consistency of the items was tested for reliability using Cronbach's Alpha. The table below indicates that Cronbach's Alpha is 0.933 when there are 14 items, which denotes an excellent degree of reliability. This implies that the questionnaire items are strongly consistent and reliable enough for further analysis.

Table 3. Results of Hypothesis Testing

Sr. No.	Alternate Hypothesis	Result p =	> / < 0.05	Accept / Reject Null Hypothesis	χ^2 (R value)	Relationship
1	There is a significant relationship between Age and perception that UltraTech Cement is easily available in Patna compared to ACC Cement.	0.031	< 0.05	Reject Null Hypothesis	28.128	Significant
2	There is a significant relationship between Age and perception that ACC Cement provides good availability and supply consistency.	0.001	< 0.05	Reject Null Hypothesis — Highly Significant	—	Highly Significant
3	There is a significant relationship between Age and trust in UltraTech Cement's brand reputation.	0.008	< 0.05	Reject Null Hypothesis	—	Significant
4	There is a significant relationship between Age and trust in ACC Cement among contractors and dealers.	0.022	< 0.05	Reject Null Hypothesis	—	Significant
5	There is a significant relationship between Age and UltraTech's delivery/logistics efficiency.	0.043	< 0.05	Reject Null Hypothesis	—	Significant

Sr. No.	Alternate Hypothesis	Result p =	> / < 0.05	Accept / Reject Null Hypothesis	χ^2 (R value)	Relationship
6	There is a significant relationship between Age and ACC's delivery/logistics efficiency.	0.024	< 0.05	Reject Null Hypothesis	—	Significant
7	There is a significant relationship between Age and overall satisfaction with UltraTech.	0.000	< 0.05	Reject Null Hypothesis — Highly Significant	—	Highly Significant
8	There is a significant relationship between Age and overall satisfaction with ACC.	0.017	< 0.05	Reject Null Hypothesis	—	Significant
9	There is a significant relationship between Age and recommendation of UltraTech to others.	0.005	< 0.05	Reject Null Hypothesis	—	Significant
10	There is a significant relationship between Age and UltraTech's pricing vs quality perception.	0.551	> 0.05	Accept Null Hypothesis	—	Not Significant
11	There is a significant relationship between Age and ACC's affordability/value for money.	0.074	> 0.05	Accept Null Hypothesis	—	Not Significant
12	There is a significant relationship between Age and UltraTech's product consistency (quality).	0.063	> 0.05	Accept Null Hypothesis	—	Not Significant
13	There is a significant relationship between Age and ACC's quality expectation.	0.063	> 0.05	Accept Null Hypothesis	—	Not Significant

Sr. No.	Alternate Hypothesis	Result p =	> / < 0.05	Accept / Reject Null Hypothesis	χ^2 (R value)	Relationship
14	There is a significant relationship between Age and recommendation of ACC to others.	0.102	> 0.05	Accept Null Hypothesis	—	Not Significant

Source: Author's Compilation

7. RESULTS AND DISCUSSION

The current study sought to investigate the association between age and consumer attitudes towards UltraTech and ACC Cement across a range of important dimensions like availability, trust, delivery effectiveness, price, quality, and overall satisfaction. The findings from Chi-square tests indicated a number of statistically significant associations, which show that age is an important factor in determining cement brand attitudes among Patna City consumers.

Out of the analysis, the majority of the hypotheses were significant at $p < 0.05$, indicating that age has significant effects on the perceptions of consumers towards several aspects of both UltraTech and ACC Cement. Age was strongly related to the perception of UltraTech Cement's availability in Patna City being greater in comparison to ACC Cement ($p = 0.031$). This indicates that younger individuals, especially those aged 18 to 25 years (accounting for 58.4% of the entire sample), find UltraTech as more easily accessible. This can be due to the large network of UltraTech dealers and higher market penetration in Bihar's urban centres.

In the same vein, an extremely strong association ($p = 0.001$) existed between age and the belief that ACC Cement has good availability and supply consistency. It seems that availability is not limited to a single brand only; older customers might appreciate ACC Cement's established distribution base, which speaks to its long-standing regional presence in Eastern India. The outcomes for trust factors—i.e., UltraTech's brand reputation ($p = 0.008$) and ACC Cement's credibility among dealers and contractors ($p = 0.022$)—also demonstrate the role of age. Younger purchasers may link UltraTech with high brand recall and national reputation, whereas older customers could depend more on local credibility and word-of-mouth recommendations for assessing ACC Cement.

The research also identified strong correlations between age and logistics efficiency for both brands (UltraTech: $p = 0.043$; ACC Cement: $p = 0.024$). This indicates that customer satisfaction with cement delivery services is age-dependent, possibly because people have varying expectations—where young professionals are likely to prioritize punctuality and technology-driven tracking, whereas older users will prioritize reliability and constancy of service. Also, overall satisfaction levels revealed significant age differences for both UltraTech ($p = 0.000$, highly significant) and ACC Cement ($p = 0.017$, significant). This suggests that satisfaction is not even across age groups and that younger respondents could be more quality- and service-efficiency-demanding as well as brand-sensitive.

Yet, not all dimensions were affected by age. The associations between age and perceptions of UltraTech's price vs. quality ($p = 0.551$), ACC's affordability/value for money ($p = 0.074$), and consistency of product quality for both brands ($p = 0.063$) were statistically not significant. This indicates that perceptions of price fairness and product quality are the same across age groups, meaning that both brands have fixed price-quality positioning in the market. Likewise, recommendation and age of ACC Cement ($p = 0.102$) were not found to be significantly related, which means word-of-mouth support for ACC Cement is comparatively consistent across various age groups.

The study, on the whole, points out that age is a very important demographic factor that determines people's perceptions of availability, trust, satisfaction, and logistics efficiency. At the same time, it has a very small effect on pricing and quality evaluations. Younger consumers, who make up the majority of the sample, are more likely to be influenced by brand reputation and visibility (thus preferring UltraTech), while older respondents care more about consistency and local trust (thus preferring ACC Cement). The information derived from the research results urges cement companies to segment their consumers by age and specifically target each age group with different messages, products, or services. For example, by conveying the message of being innovative and a brand leader, UltraTech could attract and retain the loyalty of the younger audience. On the other hand, ACC Cement could gain the trust of elderly and working-class segments in Patna by giving them the assurance of brand stability, reliability, and personalized service.

8. THEORETICAL IMPLICATIONS

The current study investigating the interaction between age and consumer attitudes towards UltraTech and ACC Cement makes a valuable theoretical contribution to consumer behavior, brand attitude, and demographic segmentation in industrial and construction industry-related product markets. In contrast to fast-moving consumer goods, being a semi-industrial product, cement is commonly seen as a rational and utilitarian buying experience. But this study illustrates how psychological and demographic attributes like age are important in influencing the way consumers assess brands, even in cement.

From a theory of consumer behavior, the results confirm the use of demographic segmentation theory (Kotler & Keller, 2016), which states that age, income, gender, and lifestyle have considerable impacts on purchasing decisions. The strong correlation between age and perception factors like availability, trust, satisfaction, and logistics efficiency confirms that people of different ages perceive value and reliability differently. For instance, younger consumers (18–25 years) may prioritize accessibility and modern branding cues—aligning with psychological learning theories, where repeated exposure to advertisements and retail visibility strengthens brand recall. In contrast, older consumers may base their judgments on experiential learning and relational trust built over years of dealing with local dealers and contractors.

The findings also add to the Theory of Planned Behavior (Ajzen, 1991), positing that age affects brand choice attitudes, perceived behavioral control, and subjective norms. The young consumers' predisposition toward UltraTech might be due to its robust national identity and online marketing power, while older consumers' favor for ACC Cement can be driven by established trust networks and word-of-mouth recommendations. So, age is an intervening variable that influences attitudes and buying intentions via rational as well as emotional paths.

Moreover, this research modifies Brand Equity Theory (Aaker, 1991) by demonstrating that age affects those components which are brand awareness, perceived quality, and brand trust. The data showed that there were very different opinions on a brand's reputation and service satisfaction in different age groups. This means that brand equity is not something that stays the same with different demographics; instead, it changes with consumer maturity and generational experiences. The younger people are more likely to think of UltraTech as an innovative and reliable brand because it is very visible in the market, whereas the older ones may perceive ACC Cement's brand equity through a long history of trust and product consistency since its founding in 1936.

Moreover, the study did not find any significant differences in areas such as pricing and quality perceptions, which is in line with the theoretical expectations of the Expectancy-Value Theory (Fishbein & Ajzen, 1975). According to the theory, some purely functional aspects of products—like price and basic quality—could be agreed upon by people of different ages since consumers' expectations are determined by market standardization and brand parity in the cement sector.

9. PRACTICAL IMPLICATIONS

The results of this research on age and consumer attitude towards UltraTech and ACC Cement have some significant practical implications for cement industry marketers, manufacturers, distributors, and strategists in Patna and the broader Bihar market. While cement may at times be viewed as a functional and low-involvement product, the study unequivocally proves that consumer attitudes differ considerably along different age groups, which affect brand selection, satisfaction, and trust.

To begin with, the findings identify that availability and accessibility are understood differently by age segments. Young adults (18–25 years), who were the largest proportion of the sample, prefer convenient access and handy availability, often linking these with trustworthiness. For UltraTech, this offers a chance to enhance its urban retail presence in Patna and online information accessibility so that the brand continues to be highly accessible in physical and virtual marketplaces. ACC Cement, meanwhile, can concentrate on increasing its dealer network and fortifying supply chain effectiveness in Patna's peri-urban and satellite towns to increase its perceived availability among older and more traditional customers.

Second, the study's result regarding a strong correlation between age and brand trust has important managerial value. Cement purchase decisions, particularly for single home builders or small-scale contractors in Bihar, are highly dependent on trust and word-of-mouth. Therefore, firms need to develop trust-based marketing programs that resonate with various generational mindsets. For younger customers, trust can be developed through online transparency, customer testimonials, influencer partnerships, and project highlights on social media. For mature consumers, trust establishment must emphasize long-term consistency, post-purchase service, and local dealer interaction.

Thirdly, the research highlights the significance of logistics and delivery speed, which were strongly linked with age-related attitudes for both brands. Cement firms ought to invest in real-time tracking systems of delivery, mobile applications, and automated systems of order management to meet speed- and technology-hungry young consumers in Patna. While so, for aged segments like contractors or bulk purchasers, relationship-based service, timely communication, and keeping predictable supply schedules intact should be prioritized.

Lastly, at the macro strategic level, the study recommends that cement companies embrace an age-sensitive segmentation and CRM strategy in Patna City. Knowing the expectations of generations enables firms to customize offerings, communications, and loyalty programs. Not only does this add to customer satisfaction but also helps in sustainable brand equity and market share growth in a competitive and fast-growing sector. In conclusion, the practical implication depicts that cement businesses need to shift from mass marketing towards consumer-oriented, age-segmented strategies built on trust, accessibility, communication, and service experience.

10. CONCLUSIONS

The present research endeavored to ascertain how age correlates with consumer perception of UltraTech and ACC Cement in Patna City. It investigated consumer perception and satisfaction for both brands with respect to availability, trust, pricing, quality, logistics efficiency, and overall satisfaction. The results have shown significant findings that age not only influences consumer attitudes but also their preferences and satisfaction levels in the cement industry, which is traditionally viewed as a utilitarian and price-driven market.

The study has established that age is significantly related to perception factors such as availability, trust, logistics efficiency, and satisfaction. Mainly, younger consumers of the 18–25-year age bracket have associated UltraTech Cement with easy availability, trust, and efficient delivery—the effect of UltraTech's widespread marketing activities, distribution network, and brand visibility. On the other hand, senior respondents have manifested a positive inclination towards ACC Cement in terms of product consistency and trust in local dealers. The differences imply that consumer perceptions resulting from functional benefits are shaped by emotional and experiential associations that age evolves.

However, product pricing and quality have been identified as factors not correlating with age significantly, leading to the conclusion that these variables are perceived similarly by all generations. This steadiness is indicative of a mature market where both UltraTech and ACC Cement are on par in terms of product quality and pricing. The findings are in line with theoretical frameworks such as demographic segmentation, brand equity theory, and the theory of planned behavior.

In real terms, these revelations underscore the significance of formulating age-targeted marketing strategies in Patna. The cement businesses thus need to take up a two-pronged strategy—using digital media, influencer branding, and rapid delivery services to attract the youth, and on the other hand, building trust, personalized dealer interactions, and traditional communication for senior consumers. This research offers important insights for both the academic world and the business sector. As the construction market in Bihar and Patna is on the rise, being mindful of such demographic subtleties will be a prerequisite for brands who wish to maintain their competitive edge and loyal customer base.

11. RECOMMENDATIONS

Recommendations for Future Research / Future Scope of the Study

The current research investigated how age impacts consumer attitude towards UltraTech and ACC Cement in Patna City, in terms of availability, trust, quality, price, logistics efficiency, and satisfaction. Though the research revealed interesting insights, it brings with it quite a number of future research directions for further investigation.

To start, future research must broaden the demographic criteria beyond age to cover variables like income, education, occupation, and geography. These variables, in addition to age, may lend themselves to better understanding consumer segments' perception and selection of cement brands. A multi-demographics analysis would enable a more comprehensive segmentation model for the cement and construction materials sector in Bihar and Eastern India.

Secondly, subsequent studies can utilize larger and more representative sample sizes from different districts of Bihar—including Muzaffarpur, Gaya, and Bhagalpur—to understand how Patna's findings compare to other tier-2 cities. Increasing the sample across different states would enable regional differences due to local culture, weather conditions, building practices, and dealer networks to be uncovered.

Another significant area for future exploration involves psychological and behavioral factors influencing cement brand perception. Future research can integrate consumer personality traits, lifestyle, and emotional branding dimensions to uncover deeper motivations behind brand choice. Incorporating constructs such as perceived risk, brand attachment, and consumer innovativeness could enhance the understanding of how emotional and cognitive processes influence purchasing behavior.

Furthermore, future researchers may embrace sophisticated statistical and modeling methods, including structural equation modeling (SEM), to analyze the interrelation among variables like trust, satisfaction, and loyalty. Longitudinal studies may also monitor how perceptions change over time, particularly as digitalization, sustainability consciousness, and marketing innovations reshape the cement business in Bihar.

Lastly, the future perspective could involve cross-brand comparison studies with other industry leaders like Ambuja, Shree Cement, or Wonder Cement to benchmark brand thinking across the sector in Eastern India. This would help companies discover key differentiators and opportunities for improvement in their branding and customer interactions in the Patna market.

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