

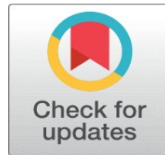
FROM BRICKS TO CLICKS: RETAIL TECHNOLOGY TRENDS TOWARDS CUSTOMER VALUE CREATION IN ORGANISED CHAINS WITH REFERENCE TO BANGALORE

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ABSTRACT

This transformation of bricks to clicks has redesigned retailing, one of the organized apparel markets, and has the potential of leading digital innovation in the retail world. Consumers now strongly require smooth, individualized and immersive shopping experiences, which is causing retailers to implement innovative technologies that include Artificial Intelligence (AI), Internet of Things (IoT), Augmented Reality (AR), Virtual Reality (VR) and interactive digital screens.

AI facilitates one-on-one recommendations, trend prediction and chat bot services whereas IoT makes sure that there is real-time stock management via RFID tags and smart shelves. Displaying digital screens offer active advertising placements in-store and AR/VR can enable the use of virtual dressing rooms and fully interactive brand environments, connecting online and offline shops. The tech-friendly growth of Bangalore with its diverse consumer base and equally competitive apparel market creates an interesting set towards examining how well such technologies are being adopted, and how effectively.

Although there have been heavy investments in such innovations, there is little empirical evidence on the direct effect of the innovations on the customer value creation in the form of satisfaction, engagement, loyalty, trust and purchase confidence.

This research paper fills the above-mentioned gap as it examines the perception of customers and the current situation with retailers along with their practices to find out the real potential of retail technologies in organized chains. The emerging concepts will help innovative retailers, technology providers, or policymakers formulate strategies that will not only generate more customer value but also provide sustainable competitiveness in the dynamic retail environment of Bangalore.

Keywords: AI in the Retail Contexts, IOT in the Retail Contexts, Augmented Reality, Virtual Reality, Digital Retail Store



1. INTRODUCTION

The retail industry is undergoing a major transformation as traditional brick-and-mortar stores are increasingly adopting digital technologies. This shift, often described as moving from “bricks to clicks,” is changing the way customers interact with retailers. Today’s consumers expect shopping experiences that are personalized, interactive, and seamless, both online and offline. To meet these rising expectations, organized apparel retailers are investing in advanced technologies

such as Artificial Intelligence (AI), Internet of Things (IoT), Augmented Reality (AR), Virtual Reality (VR), and digital displays. These innovations help improve inventory management, enhance customer engagement, and provide greater shopping convenience.

Bangalore, popularly known as the “Silicon Valley of India,” provides a unique setting for this study. The city has a young, tech-savvy, and cosmopolitan consumer base with higher disposable incomes compared to many other regions. Shoppers in Bangalore are more exposed to global retail standards and are quick to adopt new trends. At the same time, leading apparel chains in the city such as Lifestyle, Reliance Trends, Shoppers Stop, H&M, and Zara are experimenting with digital tools like AI-driven chatbots, AR-enabled trial mirrors, VR showrooms, and IoT-powered smart shelves to deliver modern experiences.

Despite these efforts, there is limited academic research that explores how these technologies are truly impacting customer value in Bangalore’s organized apparel sector. Most existing studies come from Western markets, making it difficult to apply their findings directly to Indian consumers. Moreover, while many reports discuss the operational benefits of technology, fewer studies analyze how customers perceive and respond to these changes.

This study aims to fill that gap by investigating how advanced retail technologies is shaping customer satisfaction, trust, loyalty, and engagement in Bangalore’s apparel stores. By combining insights from both consumers and retail professionals, the research provides a clearer picture of how technology can be used effectively to create value in India’s growing organized retail sector.

1.1. SCOPE OF THE STUDY

- Covers only organized apparel retail chains in Bangalore.
- Studies both consumer perceptions and store professionals’ views.
- Focuses on AI, IoT, AR/VR, and digital displays.
- Involves shoppers in malls and retail hubs.

1.2. LIMITATIONS

- Findings apply only to Bangalore, not rural or other cities.
- Excludes unorganized retail and online-only stores.
- Fast-changing technology may reduce long-term relevance.
- Results may vary depending on customer familiarity with technology.

1.3. PROBLEM STATEMENT

Consumers in Bangalore expect modern, interactive, and personalized shopping experiences. Retailers have started using AI, IoT, AR/VR, and digital displays, but it is unclear if these tools actually improve satisfaction, trust, and loyalty. Without strong local evidence, retailers risk investing in technology without real benefits to customer value.

1.4. OBJECTIVES OF THE STUDY

The main objective of this study is to evaluate how advanced retail technologies influence customer value creation in organized apparel chains in Bangalore.

- To assess the current level and patterns of adoption of retail technologies — including AI, IoT, digital displays, AR, and VR — in Bangalore's organized apparel retail chains, highlighting disparities between traditional in-store practices (bricks) and emerging digital innovations (clicks).
- To analyze the impact of these retail technologies on customer satisfaction, engagement, loyalty, and trust, with a focus on how integrated physical-digital strategies contribute to enhanced customer value creation.
- To examine customer perceptions, expectations, and readiness towards technology-enabled shopping experiences in organized apparel stores, identifying factors influencing their acceptance of both in-store and online touchpoints.

1.5. THEORETICAL FRAMEWORK

The study is based on Technology Acceptance Model (TAM) and UTAUT (Unified Theory of Acceptance and Use of Technology).

- **Independent Variables:** AI, IoT, AR, VR, Digital displays.
- **Dependent Variables:** Customer satisfaction, loyalty, trust, engagement, purchase confidence.

2. LITERATURE REVIEW

2.1. THEMATIC OR CHRONOLOGICAL REVIEW OF PREVIOUS STUDIES

[Kovács and Keresztes \(2024\)](#) The study introduces Augmented Reality (AR) as an emerging technology that increases customer engagement and trust for online fashion consumption. The study, based on qualitative data of Gen Z consumers, talks about how AR applications influence purchasing behavior and brand credibility. Some of the main findings indicate that interactive AR experiences have significant influence over customer satisfaction and trust, which promote further participation on digital media. Engagement. But the study only focuses on the fashion category and hence confines the scope to other organized retail categories. Conditional comments convey the necessity of broadening the use of AR to beyond fashion so that its scope is pushed to the maximum extent in big, organized retail chains.

[Xu et al. \(2023\)](#) It introduces the part that has been taken by trust in technology-sharing behavior among companies' collaborative innovation. Based on evolutionary game theory as its approach, the study acquires trust behavior among companies in collaborative technology collaboration. The research establishes that mutual trust in greater proportion is directly linked to technology exchange, which can yield innovative outcomes in coalitions in retailing. Flawed in this specific strength, however, is that no such exploration in this article is made of how precisely this inter-organizational behavior impacts consumers indirectly. The conditionally put observations mention the bridge that would be created by introducing customer-focused analyses to future research in order to gain a deeper understanding of end-user implications.

[Gong \(2023\)](#) The research discusses the impact of digital transformation on retailing and supply chain management of e-commerce. Employing the systematic review strategy, it aggregates global studies to analyze technological innovations

like automation and data analysis in retail logistics. Its key findings are that digitalization makes supply chains efficient, responsive, and customer-satisfied by reducing lead times and streamlining inventory management. Nevertheless, the study mostly addresses operational and logistics efficiencies without considering direct consumer technology experience. The conditional comment supports the inclusion of consumer-side technologies to achieve a holistic view of technology-mediated value creation in chain retailing.

[Aslam et al. \(2023\)](#) The article presents cross-industry proof of AI innovations driving market transformation, e.g., in retailing. It provides a conceptual framework for analysis to provide the agility and responsiveness of AI in constructing customer service and business processes. Its conclusions are that AI application provides greater responsiveness in services and customer flexibility necessary for technological transformation of formalized retail chains. Yet, the overall industrial context of the study limits its scope to retail-specific application. The conclusions from the setting are conducting sector-specific empirical studies to provide pragmatic suggestions regarding AI application in formalized retail environments.

[Nguyen et al. \(2023\)](#). The article provides an overview of the application of AI predictive analytics for customer offer personalization within retailing. Adopting the Western market as an example, it illustrates how data insights can be used in improving product recommendation with the final aim of value creation maximally. Important findings uncover the fact that predictive analytics optimizes customer satisfaction and loyalty by facilitating individualized retail experience. Utilization of Western data in the analysis limits its scope to multicultural markets such as India. Conditional comment uncovers the fact that the model needs to be adapted in the context of Indian retailing for wider regional use and implementation.

[Reddy and Kar \(2023\)](#) This paper thoughtfully reviews the future scope of emerging technologies like AI, IoT, and blockchain in enhancing retail supply chains. Using a systematic literature review approach, the authors map how these technologies contribute to improving operational efficiencies. The findings suggest that such advancements can create indirect customer value by ensuring better product availability and cost control. However, the study primarily focuses on backend processes rather than direct consumer services. It would be beneficial for future research to integrate customer experience dimensions to understand these technologies' full impact on organized retail chains.

[Uma and Anbuselvi \(2023\)](#) The study provides a fresh perspective on the pivotal role MSMEs play in driving industrial growth and employment in India. By using secondary data analysis, the research underscores that these enterprises can also become torchbearers for technological adoption in retail. The findings highlight that MSMEs have the potential to elevate service quality through tech-driven practices. Yet, the paper lacks focus on specific digital technologies relevant to retail settings. Future studies could bridge this gap by exploring how MSMEs integrate such technologies into customer service models in retail chains.

2.2. RESEARCH GAP

Based on the statistical analysis and interpretation of responses from 401 customers of organized stores in Bangalore, several practical and academic research gaps have been identified:

1) Gap in AR/VR adoption and awareness

Findings revealed that AR/VR had the lowest awareness and satisfaction levels among all technologies studied. Despite its potential to enhance trial experiences

through AR mirrors and VR fitting rooms, customers in Bangalore are not fully exposed to or comfortable with its usage. This indicates a gap between availability and customer readiness.

2) Mismatch between customer expectations and retailer focus

While digital displays showed the highest awareness and acceptance, many customers expressed neutral responses regarding whether these tools influenced loyalty or trust. This points to a gap in how retailers are leveraging visible technologies for deeper engagement rather than just promotional purposes.

3) Demographic influence underexplored in practice

It was evident from analysis that younger customers and middle-income groups are happier with retail technologies compared to older or higher-income shoppers. However, retailers often implement uniform strategies instead of tailoring experiences to demographic segments. This exposes a gap in personalized technology deployment.

4) Operational vs customer-centric view

Current literature emphasizes operational benefits (efficiency, inventory, sales tracking), but the analysis revealed that customers prioritize enjoyment, ease of use, and security. This uncovers a research gap in aligning customer perceptions with retailer technology investments.

5) Integration gap across technologies

The study highlighted that clients are accustomed to individual technologies (AI chatbots, IoT billing, AR/VR, digital screens), but very few experienced them as a combined, seamless journey. This signals a gap in creating holistic retail ecosystems instead of isolated interventions.

6) Adoption barriers at ground level

Although many respondents were aware of technologies, concerns about trust, cost sensitivity, and complexity of use remained evident in the analysis. This suggests a deficiency in research and practice focusing on barriers to acceptance in urban Indian retail.

3. RESEARCH METHODOLOGY

3.1. RESEARCH DESIGN

The study uses a descriptive research design. It aims to describe and analyze customer awareness, experience, and perceptions of retail technologies in Bangalore's organized apparel stores.

3.2. METHODOLOGICAL APPROACH

- A quantitative approach was followed. Data was collected in numbers using a structured questionnaire and analyzed with statistical tools.

3.3. SAMPLING METHOD AND SAMPLE SIZE

- The study adopted convenience sampling, focusing on customers visiting organized apparel shops in Bangalore.
- **Sample size:** 401 respondents, which is sufficient for reliable statistical analysis.

3.4. DATA COLLECTION METHODS

- **Primary data:** Collected through a Google Form questionnaire covering demographics, shopping behavior, and views on AI, IoT, AR/VR, and digital displays.
- **Secondary data:** Drawn from journals, books, and industry reports to support the study framework.

3.5. RESEARCH INSTRUMENTS

The tool used was a structured questionnaire consisting of:

- Demographics (age, gender, income, occupation, shopping frequency).
- Likert-scale questions on awareness, perceptions, satisfaction, trust, loyalty, and engagement related to technologies.

3.6. ETHICAL CONSIDERATIONS

- Participation was voluntary.
- Anonymity and confidentiality of responses were maintained.
- Data was used only for academic purposes.

3.7. DATA ANALYSIS PLAN

- **Objective 1:** Descriptive statistics to measure awareness and usage of technologies.
- **Objective 2:** ANOVA test to compare satisfaction across demographic groups.
- **Objective 3:** Correlation analysis to study relationships between demographics and technology perceptions.
- **Tools:** Microsoft Excel was used for analysis, calculating means, frequencies, ANOVA, and correlations.

4. DATA ANALYSIS AND INTERPRETATION

Table 1

Table 1 Demographic Profile of the Respondents			
Sl. No	Age Group	No. of Respondents	Percentage
1	Below 20	38	9.5
2	21-30	215	53.6
3	31-40	68	17
4	41-50	53	13.2
5	Above 50	27	6.7
Total		401	100.00%
Sl. No	Gender	No. of Respondents	Percentage
1	Male	148	36.9
2	Female	196	48.9
3	Prefer not to say	57	14.2
Total		401	100.00%

Sl. No	Occupation	No. of Respondents	Percentage
1	Student	165	41.1
2	Sales/Marketing	46	11.5
3	IT Professional	31	7.7
4	Engineer	45	11.2
5	Business Owner	17	4.2
6	Healthcare/Doctor	44	11
7	Teacher	39	9.7
8	CA	2	0.50
9	Account	2	0.50
10	Others	10	2.5
Total		401	100.00%
Sl. No	Income Range	No. of Respondents	Percentage
1	<₹20,000	182	45.4
2	₹20,001–40,000	105	26.2
3	₹40,001–60,000	68	17
4	>₹60,001 & above	46	11.5
Total		401	100.00%

Interpretation

This study's respondents are predominantly young adults (21-30) and students, accounting for over half and 41.1% of the sample, respectively. The gender split shows more females (48.9%) than males, with a significant group preferring not to disclose. Correspondingly, nearly half of the respondents fall into the lowest income bracket (<₹20,000). Overall, the findings are highly reflective of the views and circumstances of a young, low-income demographic.

- 1) AI-powered recommendations
- 2) AR/VR fitting experiences
- 3) Interactive digital displays
- 4) IoT-enabled features

Table 2

Table 2 Rate Which Technology You Believe Improves Your Shopping Experience the Most		
Rate which technology you believe improves your shopping experience the most (1=Not at all, 5=Extremely):	VALUE	Rank
AI-powered recommendations	2525	II
AR/VR fitting experiences	2531	I
Interactive digital displays	2462	III
IoT-enabled features	2435	IV

Source Primary Data

Interpretation

Almost half (46.88%) expressed a strong sense of skepticism by rating AI-powered recommendations as "not at all useful." Simultaneously, 37–42% gave mid-level ratings ranging from 2 to 4, indicating a moderate level of usefulness. A noteworthy 38.40% of respondents thought it was "extremely useful," suggesting that they place a high value on these tools. The general trend shows a divided opinion, with distinct differences between people who oppose AI-powered

suggestions and Those who believe they are very helpful. This implies that although the technology has potential, issues with dependability and trust must be resolved for broader adoption.

Table 3

Table 3 I Am Satisfied with the Level of Technology Used in Organized Apparel Stores I Visit

Sl. No	Agreement Level	No. of Respondents	Percentage
1	Strongly agree	56	14
2	Agree	141	35.2
3	Neutral	105	26.2
4	Disagree	57	14.2
5	Strongly disagree	42	10.5
Total		401	100.00%

Source Primary Data

Interpretation

35.2% indicate satisfaction with store technology, and 14% strongly agree. 10.5% strongly disagree, 14.2% disagree, and 26.2% are neutral. Room for growth exists, and satisfaction is moderate.

Table 4

Table 4 How Would You Rate the Impact of Technologies Like AI, IOT, AR/VR, SND Digital Displays on Enhancing Your Shopping Experience in Organized Retail Stores in Bangalore?

Sl. No	RATINGS	No. of Respondents	Percentage
1	5	64	16
2	4	126	31.4
3	3	115	28.7
4	2	68	17
5	1	28	7
Total		401	100.00%

Source Primary Data

Interpretation

Most respondents rated the impact of technologies as good (31.4%) or moderate (28.7%), while 16% gave the highest rating. Only 7% felt that technology had very little impact. This shows that customers in Bangalore generally view AI, IoT, AR/VR, and digital displays as positive contributors to their shopping experience, though some remain neutral or less convinced.

Table 5

Table 5 AI-Powered Recommendations Make My Shopping Experience More Relevant and Enjoyable

Sl. No	Agreement Level	No. of Respondents	Percentage
1	Strongly agree	54	13.5
2	Agree	143	35.7
3	Neutral	93	23.2
4	Disagree	74	18.5
5	Strongly disagree	37	9.2

Total	401	100.00%
Source Primary Data		

Interpretation

13.5% strongly agree and 35.7% agree that AI enhances shopping relevance. 23.2% are neutral, whereas 18.5% disagree and 9.2% strongly disagree. AI is well-received, albeit by not all shoppers.

Table 6

Table 6 I Am More Likely to Revisit a Retail Store That Uses Technology to Personalize My Experience

Sl. No	Agreement Level	No. of Respondents	Percentage
1	Strongly agree	51	12.7
2	Agree	147	36.7
3	Neutral	105	26.2
4	Disagree	68	17
5	Strongly disagree	30	7.5
Total		401	100.00%

Source Primary Data

Interpretation

36.7% would go back to such stores, and 12.7% strongly agree. 17% disagree, 7.5% strongly disagree, and 26.2% are neutral. Although not every client is helped by personalization, it makes them loyal.

Q: Would you recommend AR, VR, and digital display tools to your friends and family?

Interpretation: This is a quantitative score between 1 and 10. The overall rating is 6.5, which indicates a moderate degree of recommendation.

Q: What suggestions or comments do you have about how organized retail stores in Bangalore can use technologies like AI, IoT, AR/VR, or digital displays to improve your shopping experience?

Interpretation

The answers show that Bangalore customers are on the whole favorable towards the implementation of cutting-edge technologies like AI, IoT, AR/VR, and digital signage in organized retail outlets. AI is regarded as a powerful technology to provide personalized suggestions, streamline inventory, and enhance checkout experiences, while IoT is appreciated for its capability in real-time inventory tracking and smart shelves. AR/VR technologies were welcomed for allowing virtual try-ons and virtual shopping, although there were reservations regarding accessibility for older and less tech-engaged consumers. Digital screens are seen as effective for dynamic pricing, promotions, and product information. Some respondents, however, remained neutral or offered no suggestions, while a few mentioned job loss concerns and machine dependence. As a whole, the results indicate that customers embrace technology for convenience, personalization, and engagement but are interested in maintaining human contact and access within retail settings.

5. SUMMARY OF FINDINGS AND SUGGESTIONS

5.1. SUMMARY OF KEY FINDINGS

The study, which investigated the influence of advanced retail technologies on customer value creation in organized apparel chains in Bangalore, yielded several key findings:

- 1) **Positive Impact of Technology:** The majority of respondents rated the impact of technologies like AI, IoT, AR/VR, and digital displays as a positive contributor to their shopping experience, with 31.4% rating it as "good" and 16% giving the highest rating. Overall, customer satisfaction with the current level of technology use is moderate, with 49.2% of respondents agreeing or strongly agreeing.
- 2) **Drivers of Engagement:** Statistical analysis showed that Awareness of AI-based tools (like personalized recommendations) and IoT technologies (like smart shelves) are the significant drivers of consumer engagement. Awareness of AR/VR and digital displays did not significantly influence engagement outcomes.
- 3) **AI and Revisit Intention:** There is a positive, though small, correlation ($r=0.216$) between perceiving AI-powered recommendations as enjoyable and a customer's likelihood to revisit a store that uses technology to personalize the experience. This suggests that AI-driven personalization positively influences customer loyalty and revisit intention.
- 4) **Demographic Influence:** The study's sample showed that young adults (21–30 years) are the most numerous group (53.6%), indicating that technology adoption is driven mainly by young people. Additionally, the ANOVA test indicated that a respondent's occupation is significantly associated with their level of agreement that technology influences their choice of a retail store.
- 5) **Gaps in Adoption and Focus:**
 - AR/VR had the lowest awareness and satisfaction levels, pointing to a gap between the technology's potential and customer readiness for use in virtual dressing rooms and fitting rooms.
 - A mismatch exists between customer expectations and retailer focus; while digital displays had high awareness, customers were neutral on whether they influenced loyalty or trust, suggesting retailers use them more for promotion than for deeper engagement. There is a significant gap in aligning retailer technology investments (which often focus on operational benefits) with customer perceptions (who prioritize enjoyment, ease of use, and security)

5.2. SUGGESTIONS

Based on the findings, the following suggestions are offered to organized apparel chains in Bangalore:

- 1) **Prioritize and Deepen AI/IoT Integration:** Since AI and IoT are significant drivers of customer engagement, retailers should increase investment in these areas. This includes enhancing AI for highly personalized product recommendations and using IoT for real-time inventory visibility (via smart

shelves and RFID) to ensure seamless stock management and quicker service.

- 2) **Increase AR/VR Exposure and Comfort:** Retailers must actively address the low awareness and comfort levels associated with AR/VR. They should implement guided trials, in-store demonstrations, and simple interfaces for virtual fitting rooms to integrate the technology into the shopping journey and reduce customer hesitancy.
- 3) **Use Digital Displays for Deeper Value:** Move beyond purely promotional use of digital displays. Retailers should leverage them to provide interactive information that builds trust and loyalty, such as displaying product provenance, customer reviews, or loyalty program status, thereby closing the 'loyalty and trust' gap.
- 4) **Tailor Technology to Demographics:** Acknowledge that different demographic groups, particularly the dominant young adult segment, have varying levels of technology acceptance. Retail strategies should be segmented to avoid a uniform approach, for example, offering the latest, cutting-edge technologies to the tech-savvy younger clientele and simpler, convenience-focused tools to older or less-familiar segments.
- 5) **Focus on Customer-Centric Outcomes:** Technology investments should be clearly tied to improving customer-prioritized aspects such as enjoyment, ease of use, and data security, not just operational efficiency. Transparency about how customer data is used to personalize experiences can also help address trust concerns.
- 6) **Create a Seamless, Integrated Ecosystem:** Retailers need to move from isolated technological interventions to a holistic physical-digital (omnichannel) ecosystem. The use of AI, IoT, and digital displays should flow together to create a single, seamless, and convenient customer journey from online browsing to in-store purchase.

6. CONCLUSION AND RECOMMENDATIONS

6.1. SUMMARY OF THE STUDY

- The research examined 401 Bangalore shoppers' awareness, experience, and perceptions of AI, IoT, AR/VR, and digital displays.
- Findings confirmed that AI and IoT are major drivers of engagement, AR/VR offers strong potential, and digital displays dominate visibility.

6.2. CONCLUSION DRAWN

- Technology adoption in retail is youth-driven, with students and younger professionals leading acceptance.
- AI personalization increases loyalty, AR/VR enhances purchase confidence, and IoT improves convenience but remains underused.
- Data security and trust issues remain key barriers to widespread adoption in organized retail.

6.3. LIMITATIONS OF THE STUDY

- The study was limited to Bangalore's organized retail, restricting generalization to other cities or rural markets.

- It excluded unorganized retail and online-only players, omitting other portions of the retail ecosystem.
- Cross-sectional the survey's design fails to capture long-term behavioral changes in technology adoption.

6.4. SUGGESTIONS FOR FUTURE RESEARCH

- Extend research to multiple Indian cities to compare adoption patterns across demographics.
- Conduct longitudinal studies to examine how perceptions develop alongside new technology over time.
- Explore retailer-side challenges such as cost, training, and integration in adopting emerging tools.
- Include hybrid models combining online and offline retail to understand omnichannel consumer journeys.
- Study psychological and cultural barriers influencing trust and technology adoption in Indian retail.

CONFLICT OF INTERESTS

None.

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