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Assessing the influence of in-store technologies on consumer buying behaviour: A study of 3 leading modern chain stores

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Abstract

This study explores how in-store technologies impact consumer buying behaviour across three major Indian chain stores: McDonald's, Shoppers Stop and Lenskart. With rising consumer expectations and digitization in retail, these brands integrate tech-driven tools such as self-ordering kiosks, virtual try-on smart mirrors, AR/VR features, self-checkouts, mobile apps and digital payments etc. to enhance shopping speed, convenience and personalization. The research, based on responses from 240 consumers segmented into generational cohorts, evaluates satisfaction levels, adoption patterns and behavioural influence, offering insights for technology-aligned retail strategies.

Keywords: In-store technologies, consumer buying behaviour, digital retail, generational cohorts, Indian chain stores

1. Introduction

India's retail landscape has been evolving from neighbourhood kirana stores to the more modern and technologically advanced, organized chain outlets that are driven by technology like Artificial Intelligence and Augmented Reality tools providing consumer personalization, ease, choice and speed. Modern chain stores are now utilizing smart mirrors, virtual try-ons, real-time inventory and self-checkouts etc. that meet the demands for efficient service and transparency

1.1 The Shift from Traditional to Modern Chain Stores

As kirana stores have evolved by adopting digital tools and organized stores that have expanded from metros to nationwide physical retail has also matured into a consumer centric eco-system. Certain elements that are crucial for driving customer satisfaction and gaining loyalty. In-store technologies like RFID-enabled smart shelves are providing inventory accuracy that reduces stock outs while increasing shopper trust and purchase. With this AR tools and smart mirrors are offering immersive virtual trials that are enhancing consumer confidence and engagement.

1.2 Rise of Consumer-Focused In-Store Technologies

These innovations are not only reducing friction at checkout but are also adding an element of excitement and personalization to the shopping experience.

The study examines about how these in-store technologies are influencing and changing consumer buying behaviour in three major Indian chain stores- McDonald's, Shoppers Stop, Lenskart, across demographics. It investigates their impact on customer delight, user interface and on buying purchase decisions and aims to guide the retailers in creating tech-enabled physical environments which resonate with consumer's ever evolving, needs.

1.3 Importance of the Topic Under Study

With the rapid digitization of retail, understanding how consumers interact with in-store technologies has become crucial for enhancing customer satisfaction and driving sales. The study of new-age techniques—such as digital kiosks, virtual try-ons, mobile apps, and smart checkouts—helps retailers identify what innovations resonate with different age groups. This research is important as it provides insights into consumer preferences, highlights generational differences in tech adoption, and supports data-driven strategies for improving customer experience and competitiveness in India's evolving retail landscape.

1.4 review of literature

Scholars like Simon (2023) ^[12] and Grewal *et al.* (2023) ^[8] emphasize how technologies like self-checkouts and AI tools streamline shopping and boost satisfaction. Studies by Riegger *et al.* (2021) ^[11] and Tomar & Saha (2016) ^[14]

highlight personalization and technology advocacy as drivers of loyalty. Case-based findings include McDonald's digital QSR systems (Ghosh, 2023) [7], Shoppers Stop's smart mirrors (Apparel Resources, 2018) [1], Lenskart's 3D try-ons (Lenskart Blog, 2021) [10].

1.5 To study was carried out with the following objectives

- 1) To assess how these new-age in-store technologies influence various aspects of consumer buying behaviour.
- 2) To compare new-age technology adoption and impact on customer buying behaviour across McDonald's, Shoppers Stop and Lenskart chain stores.

2. Materials and Methods:

The present study was conducted between **January and June 2025** to examine the impact of in-store new-age technologies on consumer buying behavior across three selected Indian retail chains: McDonald's, Shoppers Stop and Lenskart. The study focused on urban consumers segmented into four generational cohorts- Generation Z (13-27 years), Millennials (28-43 years), Generation X (44-59 years), and Baby Boomers (60-75 years).

Experimental Design

The study followed a comparative cross-sectional design, collecting responses at a single point in time from consumers visiting each of the three stores. A random sampling technique was used to select a total of 240 respondents (120 males and 120 females), with equal representation across the four age groups. The structured questionnaire employed closed-ended questions based on a five-point Likert scale, focusing on satisfaction and behavioral impact related to store technologies.

Data Collection

Primary data were collected using a pre-tested questionnaire, administered both in physical form at retail outlets and digitally via Google Forms. Respondents were

asked to rate their satisfaction and experiences with various digital features such as self-order kiosks, virtual try-ons, app-based ordering, and digital promotions.

Statistical Methods Used

Descriptive statistics, including frequencies and percentages, were used to analyze demographic characteristics and general trends. To assess satisfaction differences across groups and test hypotheses, the independent sample t-test was applied.

The independent sample t-test was applied using the formula:

$$t = \frac{\bar{d}}{\sqrt{\frac{S^2}{n}}} \sim t_{n-1 \text{ d.f.}}$$

Where:

$\bar{d}$ = Difference between sample means

n = Sample size

S^2 = Variance of differences

d.f. = Degrees of freedom

Software Used

Statistical analysis was carried out using SPSS (Version 26), while Microsoft Excel 2019 was used for data entry, charting, and tabulation.

This methodology aligns with standard practices in consumer behavior and retail research (Singh & Aggarwal, 2022).

3. Results and Discussion

This section presents the analysis of consumer responses to new-age in-store technologies using both descriptive (frequencies and percentages) and inferential statistics (t-tests). The results are interpreted across generational cohorts and store formats to assess the influence of technologies on buying behaviour and to test the stated hypotheses.

Table 1: Percentage Distribution of demographic Profile of respondents (n=240)

Particulars		Frequency (f)	Percentage
Generation Cohort (age)	Baby Boomers (60-75 years)	44	18.33
	Generation X (44-59 years)	64	26.67
	Generation Z (13-27 years)	76	31.67
	Millennials (28-43 years)	56	23.33
Gender	Male	120	50
	Female	120	50
Education Qualification:	Graduate	104	43.33
	Post Graduate & above	98	40.83
	Up to XII	38	15.83

The statistical breakdown presented in table 1 reveals that 240 respondents grouped into four generational cohorts (Gen Z to Baby Boomers) to compare tech adoption patterns. Data was gathered through structured surveys distributed in-store and online mode and was analysed using

SPSS and Excel. Descriptive (frequencies, percentages) and inferential statistics (t-tests) were used to assess satisfaction levels and feature impact, ensuring a comprehensive understanding of technology-driven retail experiences is measured.

Table 2: Respondent distribution of new-age technologies impact on CBB in McDonald's

S. N.	Variable	Generation	S.D.	D	N	A	S.A.
1	I find the self-order kiosks convenient	Generation X	2	14	18	6	24
		Millennials	4	8	10	20	14
		Baby Boomers	4	4	14	12	10
		Generation Z	8	14	18	24	12
2	Digital payments improve my transaction experience	Generation X	4	2	20	16	2
		Millennials	2	16	16	10	20
		Baby Boomers	4	8	16	32	16
		Generation Z	2	10	10	22	12
3	The mobile app enhances my ordering experience	Generation X	2	4	24	16	18
		Millennials	4	6	10	20	4
		Baby Boomers	4	10	8	22	12
		Generation Z	8	8	8	38	14
4	Location-based offers on mobile influence my decision	Generation X	2	8	4	16	14
		Millennials	2	16	14	14	18
		Baby Boomers	4	12	18	28	14
		Generation Z	6	8	8	20	14
5	Digital menu carousel are attractive and tempting	Generation X	6	4	12	24	10
		Millennials	4	6	12	38	16
		Baby Boomers	2	12	18	20	12
		Generation Z	6	4	10	18	6

* S.D.=Strongly Disagree, D=Disagree, N=Neutral, A=Agreed and S.A.=Strongly Agree

Analysis of table 2 reveals that McDonald's digital innovations have varying impacts across generations. Self-order kiosks were most favoured by Generation X (24 strongly agree), reflecting their preference for control and speed, while Millennials (20 agree, 14 strongly agree) also responded positively. Digital payments saw the strongest acceptance among Generation Z (32 agree, 16 strongly agree), followed by Millennials and Gen X, whereas Baby Boomers showed hesitancy with 20 neutral responses. Mobile app-based ordering was highly effective for Gen Z (38 agree, 14 strongly agree) and Gen X (16 agree, 18 strongly agree), though Baby Boomers showed limited

engagement (10 neutrals, 6 disagree). Location-based offers were well received by Gen Z (28 agree, 14 strongly agree), Gen X (14 agree, 18 strongly agree) and even Boomers (16 agree, 14 strongly agree), indicating cross-generational appeal. Digital menu carousels gained the highest enthusiasm from Gen Z (38 agree, 16 strongly agree), followed by Millennials and Gen X, while Boomers were less responsive. Overall, Gen Z and Gen X emerged as the most responsive to McDonald's new-age techniques, with Millennials showing moderate approval and Baby Boomers engaging more cautiously, highlighting the need for age-sensitive tech implementation strategies.

Table 3: Respondent distribution of new-age technologies impact on CBB in Shoppers Stop

S. N.	Variable	Generation	S.D.	D	N	A	S.A.
1	Smart mirrors virtual try-on saves trying out time	Generation X	4	4	4	22	22
		Millennials	0	8	22	14	20
		Baby Boomers	4	4	20	6	10
		Generation Z	6	14	14	32	10
2	Digital screens help me explore product ranges	Generation X	4	8	12	16	4
		Millennials	0	12	16	22	14
		Baby Boomers	2	14	22	24	14
		Generation Z	2	8	8	14	24
3	Billing process is smoother with handheld devices	Generation X	4	0	14	16	10
		Millennials	2	10	4	20	20
		Baby Boomers	8	10	16	30	12
		Generation Z	0	4	18	24	18
4	Online order + store pickup saves time	Generation X	6	6	10	14	8
		Millennials	2	10	12	24	16
		Baby Boomers	4	14	20	22	16
		Generation Z	2	10	6	22	16
5	Mobile app promotions influence my buying	Generation X	8	8	20	24	16
		Millennials	4	8	4	20	20
		Baby Boomers	4	8	6	16	10
		Generation Z	0	12	10	20	22

S.D.=Strongly Disagree, D=Disagree, N=Neutral, A=Agreed and S.A.=Strongly Agree

Table 3 highlights that new-age technologies at Shoppers Stop, such as smart mirrors, digital screens, handheld billing devices, mobile app promotions and click-and-collect, positively influenced consumer buying behaviour. Smart mirrors received high approval, with 30.83% agreeing and 25.83% strongly agreeing that they saved time, confirming their role in enhancing convenience. Digital product screens were similarly effective, with 31.67% agreeing and 23.33% strongly agreeing, supporting the idea that interactive tools aid in exploration. Handheld billing devices stood out, with 62.5% of respondents in agreement, showcasing strong consumer preference for quicker checkouts. Click-and-collect services were well received (34.17% agree, 23.33% strongly agree), though 16.67% disagreed, indicating room for improvement in the service experience. Mobile app promotions were highly persuasive, with 33.33% agreeing and 28.33% strongly agreeing, underlining their impact on purchase decisions. Overall, technologies that enhance convenience, speed and personalization had the greatest impact, particularly among digitally adaptive cohorts like Millennials and Gen Z, affirming the effectiveness of Shoppers Stop's tech-driven engagement strategies.

Table 4: Respondent distribution of new-age technologies impact on CBB in Lenskart

S.N.	Variable	Generation	S.D.	D	N	A	S.A.
1	3D Try-on feature helps in choosing frames	Generation X	6	8	12	8	10
		Millennials	0	6	14	18	26
		Baby Boomers	4	12	18	32	10
		Generation Z	2	10	6	20	18
2	Virtual assistant/chat improves my experience	Generation X	0	8	10	40	6
		Millennials	8	2	10	18	6
		Baby Boomers	8	6	20	30	12
		Generation Z	2	8	8	24	14
3	AI-driven suggestions match my needs well	Generation X	2	10	22	34	8
		Millennials	0	4	12	32	16
		Baby Boomers	6	2	14	12	10
		Generation Z	8	2	8	20	18
4	Mobile app provides good product variety	Generation X	4	2	16	14	8
		Millennials	0	4	18	28	14
		Baby Boomers	4	10	20	28	14
		Generation Z	2	10	8	12	24
5	Checkout process is fast and tech-driven	Generation X	4	0	6	20	14
		Millennials	2	10	22	32	10
		Baby Boomers	4	10	6	20	16
		Generation Z	0	4	16	24	20

*S.D.=Strongly Disagree, D=Disagree, N=Neutral, A=Agreed and S.A.=Strongly Agree

Table 4 highlights generational differences in the acceptance of new-age technologies implemented in Lenskart stores. The 3D try-on feature was most favoured by Generation X (90% agreement: 36% agree, 52% strongly agree), followed by Millennials (63%), indicating strong acceptance of AR tools among middle-aged shoppers. Gen Z showed moderate approval (42% agree, 13.3% strongly agree), while Baby Boomers were more reserved, with only 30% in agreement. The virtual assistant feature also received high support from Gen X (80%) and Gen Z (70%), while Boomers remained largely neutral (33.3%). AI-driven suggestions were well received by Millennials (63.3%) and Gen X (64%), with Gen Z showing mixed responses (56% agree, 36.7% neutral) and Boomers more sceptical (40% neutral, 20%

disagree). The mobile app's product variety was most appreciated by Gen X (70%) and Gen Z (63.3%), while Boomers (58.3%) and Millennials (60%) showed slightly lower yet favourable responses. Finally, the fast and tech-driven checkout process saw broad approval across all groups, especially Gen X (73.3%) and Boomers (56.7%), reflecting growing acceptance of seamless digital transactions. Overall, Gen X consistently showed the strongest positive perception of Lenskart's technologies, with Millennials and Gen Z moderately engaged and Baby Boomers showing cautious but notable adoption.

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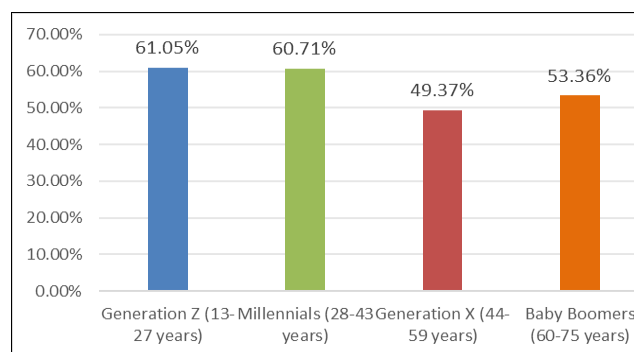


Fig 1: Impact of new-age technologies on Different Generations in McDonald's

Based on the bar graph as shown in Figure 1 for McDonald's, the impact of new-age technologies on consumer buying behaviour shows a clear generational trend. Generation Z (61.05%) and Millennials (60.71%) exhibit the highest levels of satisfaction, indicating that these younger cohorts are more responsive and adaptive to tech-driven experiences such as digital kiosks, contactless payments and app-based ordering. Baby Boomers follow at 53.36%, suggesting moderate acceptance, while Generation X reflects comparatively lower satisfaction at 49.37%, highlighting a generational gap in technology receptiveness. Overall, the data illustrates that technological enhancements are most effective in influencing the buying behaviour of younger consumers.

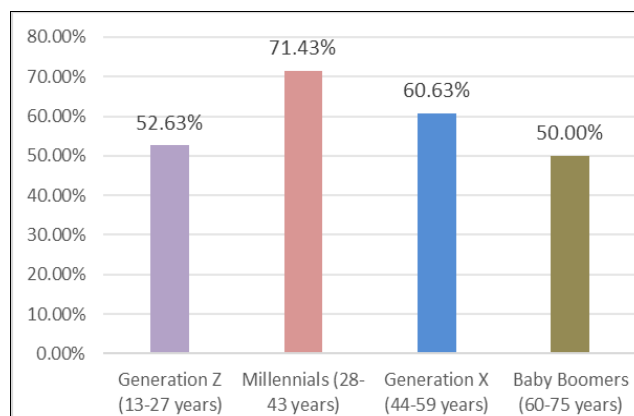


Fig 2: Impact of new-age technologies on Different Generations in Shoppers Stop

At Shoppers Stop, as shown in figure 2 the new-age technologies appear to have the strongest impact on Millennials, with 71.43% expressing satisfaction or high satisfaction, the highest among all cohorts. Generation X follows with 60.63%, showing notable engagement with in-store tech such as digital trial rooms, self-checkout, or loyalty app integrations. Generation Z, despite being digitally native, shows moderate satisfaction at 52.63%, which may suggest expectations not fully met or preferences for more immersive experiences. Baby Boomers reflect the lowest satisfaction at 50%, indicating limited influence of technology on their shopping behaviour. This distribution highlights a generational divide, with Millennials being the most positively influenced by tech-driven retail enhancements.

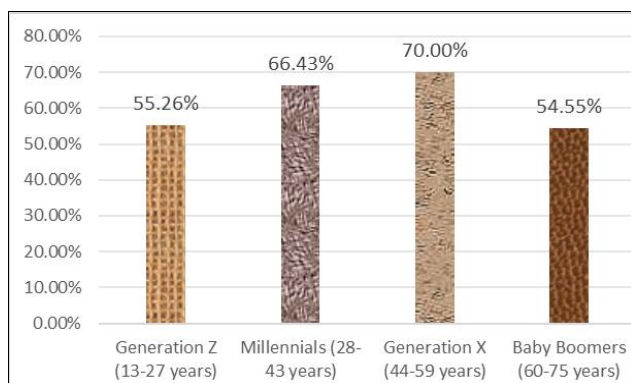


Fig 3: Impact of new-age technology on Different Generations in Lenskart.

Figure 3 depicts the case of Lenskart, new-age technologies such as 3D virtual try-ons, AI-powered frame recommendations and assisted in-store diagnostics have made a notable impact across generations, with Generation X showing the highest satisfaction at 70%. Millennials follow closely at 66.43%, highlighting their strong preference for convenience-enhancing tech. Generation Z, while generally tech-savvy, records a moderate 55.26% due to expectations of more immersive or mobile-integrated experiences. Baby Boomers show 54.55% satisfaction, reflecting cautious but growing comfort with optically focused retail technologies. Overall, the data indicates that tech interventions at Lenskart resonate well with mid-age shoppers seeking both utility and ease.

Table 5: Comparison of score for new age technologies impact on CBB among various selected stores (n=240)

Comparison groups	Mean difference	T value	P value
McDonald's - Shoppers Stop	0.5583	2.601	0.01
McDonald's - Lenskart	0.3167	-1.153	0.25
Shoppers Stop - Lenskart	0.875	-3.435	0.001

The results in Table 5 show that McDonald's had a significantly higher impact of new-age technologies on consumer buying behaviour compared to Shoppers Stop (mean difference = 0.5583, $t = 2.601$, $p = 0.01$), indicating its stronger use of technology to enhance customer engagement. However, the difference between McDonald's and Lenskart was not statistically significant (mean difference = 0.3167, $t = -1.153$, $p = 0.25$), suggesting a

similar level of technological influence in both stores. In contrast, Shoppers Stop had a significantly higher score than Lenskart (mean difference = 0.875, $t = -3.435$, $p = 0.001$), highlighting that Lenskart's technological interventions were less effective in influencing consumer buying behaviour compared to Shoppers Stop and McDonald's.

Descriptive analysis using frequencies and percentages

showed clear variations in consumer responses across generational cohorts and retail stores. For example, Gen Z and Millennials showed higher agreement levels with mobile apps, kiosks and smart mirrors, while Baby Boomers leaned more toward neutral or disagree responses. These patterns were further examined through statistical tests (t -values and p -values), which confirmed significant differences, supporting both stated hypotheses. McDonald's showed a greater impact than Shoppers Stop ($p = 0.01$) and Shoppers Stop scored significantly above Lenskart ($p = 0.001$), validating Hypothesis 2. Gen Z and Millennials exhibited stronger satisfaction levels compared to Gen X and Baby Boomers, confirming Hypothesis 1. Thus, both consumer age and brand context significantly influenced the effectiveness of in-store technologies.

Across the three brands, younger generations displayed higher engagement with in-store technologies, while Boomers showed more conservative adoption. McDonald's led in positive consumer response due to fast, visual and contactless services. Lenskart, despite advanced tools, requires better alignment with user readiness. Successful tech implementation must cater to user comfort, perceived usefulness and generational preferences.

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