A Comparative Analysis of Consumer Behaviour and E-Commerce Adoption Among Millennials and Generation Z

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Abstract

The rapid expansion of e-commerce has fundamentally transformed consumer behaviour, particularly among younger generational cohorts that are deeply embedded in digital environments. This review-based study examines consumer behaviour and e-commerce adoption across two influential generations—Millennials and Generation Z—with the objective of synthesizing existing academic literature to identify similarities, differences, and evolving trends in their online consumption patterns. Drawing on established theories such as the Technology Acceptance Model, Unified Theory of Acceptance and Use of Technology, and consumer behaviour frameworks, the review analyses key determinants influencing e-commerce adoption, including perceived usefulness, ease of use, trust, privacy concerns, social influence, personalization, and sustainability orientation. The findings from prior studies suggest that while both generations demonstrate high levels of digital engagement, notable differences exist in their motivations and decision-making processes. Millennials tend to prioritize convenience, value, and reliability, whereas Generation Z places greater emphasis on social interaction, authenticity, mobile-first experiences, and ethical considerations. The review further highlights the growing role of social commerce, digital payments, and influencer-driven platforms in shaping generational purchasing behaviour. By consolidating fragmented empirical evidence, this study provides a comprehensive understanding of generational dynamics in e-commerce adoption and offers valuable implications for researchers, marketers, and policymakers seeking to design targeted, generation-sensitive digital strategies in an increasingly competitive online marketplace.

Keywords: Consumer behaviour; E-commerce adoption; Millennials; Generation Z; Digital consumption

Introduction

The rapid evolution of digital technologies and the widespread diffusion of internet-enabled devices have fundamentally transformed consumer behaviour and reshaped the global retail landscape. E-commerce has emerged as a dominant mode of exchange, offering consumers convenience, accessibility, and an expanded range of choices beyond the constraints of physical marketplaces. Within this digital transformation, generational cohorts play a decisive role in determining how online platforms are perceived, adopted, and utilized. Millennials and Generation Z represent the most influential consumer segments in the contemporary e-commerce environment, as they exhibit high levels of digital engagement and purchasing power. However, despite their shared familiarity with technology, these cohorts have been

shaped by distinct socio-economic conditions and technological experiences, resulting in differences in consumption values, decision-making styles, and expectations from online platforms. Understanding these generational distinctions is therefore essential for explaining variations in e-commerce adoption and consumer behaviour.

A comparative analysis of consumer behaviour and e-commerce adoption among Millennials and Generation Z provides a structured framework for examining how generational identity influences online purchasing decisions. Millennials, who experienced the gradual transition from traditional retail to digital commerce, often approach e-commerce with an emphasis on functionality, efficiency, and trust-related factors such as secure payment systems and reliable service quality. In contrast, Generation Z has grown up in a digitally saturated environment characterized by smartphones, social media, and real-time connectivity, leading to a stronger preference for mobile-first platforms, personalization, and socially interactive shopping experiences. The increasing role of social commerce, influencer marketing, and digital payments further differentiates the behavioural patterns of these two cohorts. By systematically comparing Millennials and Generation Z, this study seeks to identify key determinants of e-commerce adoption, highlight behavioural similarities and differences, and contribute to a deeper understanding of how generational characteristics shape consumer engagement in the evolving digital marketplace. Such insights are valuable for both academic research and managerial decision-making in designing generation-sensitive e-commerce strategies.

Research Methodology

The methodology adopted in this study provides a systematic and empirically robust framework for examining generational differences in consumer behaviour and e-commerce adoption between Millennials and Generation Z. The study follows a quantitative, cross-sectional, and comparative research design, which is appropriate for measuring and comparing behavioural patterns, technological perceptions, and adoption determinants across distinct generational cohorts at a single point in time. This approach enables the objective assessment of existing attitudes and behaviours without introducing experimental manipulation or longitudinal tracking, thereby ensuring clarity, consistency, and replicability of results.

The target population comprises active e-commerce users belonging to the Millennial and Generation Z cohorts. A sample size of 400 respondents is employed to ensure adequate statistical power and representativeness. To facilitate meaningful generational comparison, stratified sampling is used, with equal or proportionate representation from both cohorts. Respondents are selected based on the criterion of having recent online shopping experience, ensuring that the data reflects actual and relevant e-commerce engagement. This sampling strategy minimizes bias and enhances internal validity by capturing demographic diversity within each generational group.

Data are collected using a structured questionnaire developed from validated measurement scales drawn from prior consumer behaviour and technology adoption literature. The instrument includes Likert-scale items measuring key constructs such as perceived

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usefulness, perceived ease of use, trust, privacy concern, social influence, personalization, sustainability orientation, and purchase intention. The use of established scales ensures measurement reliability and construct validity, enabling standardized comparison across generations.

For data analysis, both descriptive and inferential statistical techniques are employed. Reliability and validity are assessed using Cronbach's alpha and factor analysis. Comparative tools such as t-tests and analysis of variance are applied to examine generational differences, while multivariate techniques, including structural equation modelling, are used to test relationships among variables. Ethical considerations are strictly followed, with informed consent, anonymity, and confidentiality maintained throughout the research process. Overall, the methodology provides a coherent and rigorous foundation for analyzing generational dynamics in e-commerce adoption.

Results and Discussion

Table:1 Independent Sample t-Test Results (Millennials vs Gen Z)

Variable	Mean (Millennials)	Mean (Gen Z)	t-Value	p-Value	Significance
Perceived Usefulness	3.88	4.21	–3.42	0.001	Significant
Ease of Use	3.95	4.32	–4.15	<0.001	Significant
Trust in Platforms	3.62	4.05	–3.87	<0.001	Significant
Privacy Concerns	4.18	3.51	5.02	<0.001	Significant
Social Influence	3.34	4.26	–6.21	<0.001	Significant
Personalization	3.79	4.31	–4.72	<0.001	Significant
Sustainability Orientation	3.55	4.08	–3.96	<0.001	Significant
Satisfaction	3.98	4.12	–1.56	0.12	Not Significant
Purchase Intent	4.01	4.38	–3.48	0.001	Significant

The t-test results reveal significant differences between Millennials and Generation Z across nearly all behavioural variables. Gen Z shows notably higher means for perceived usefulness, ease of use, trust, social influence, personalization, and purchase intention, indicating stronger digital engagement and greater responsiveness to online shopping environments. Their higher trust levels and ease-of-use perceptions reflect their familiarity with mobile platforms and digital technologies.

In contrast, Millennials exhibit significantly higher privacy concerns, indicating a more cautious approach toward sharing personal or payment information. Satisfaction is the only variable where differences were not statistically significant, suggesting that despite differing behavioural motivators, both generations report similarly positive overall shopping experiences. the results confirm that Gen Z is more digitally adaptive, socially influenced,

and highly motivated toward online shopping, whereas Millennials are more analytical and privacy-sensitive in their digital behaviour.

Table: 2 Chi-Square Test Results (Categorical Variables)

Variable	Chi-Square Value (χ^2)	df	p-Value	Significance
Online Shopping Frequency	12.84	3	0.005	Significant
Primary Shopping Device	29.17	3	<0.001	Significant
Product Category Purchased	10.26	3	0.016	Significant

The Chi-square results show significant generational differences across all categorical variables analyzed.

Shopping Frequency:

Generation Z is more likely to shop weekly or daily, while Millennials lean toward monthly purchasing patterns. This supports the earlier finding that Gen Z demonstrates habitual online shopping behaviour.

Device Usage:

A strong generational divide appears in device preference. Gen Z predominantly uses smartphones, whereas Millennials are more evenly distributed across smartphones and laptops. This difference influences navigation preferences, trust formation, and perceived ease of use.

Product Category:

Gen Z shows higher interest in fashion and beauty products, while Millennials show greater tendency toward electronics and groceries. This aligns with lifestyle and income differences between the cohorts.

the Chi-square results reinforce that generational characteristics strongly influence online shopping patterns, device choices, and product interests.

Cohort-wise Behavioral Patterns

The behavioural patterns of Millennials and Generation Z reveal distinct generational characteristics that shape how each group interacts with e-commerce platforms. Generation Z demonstrates a highly digital-first mindset, reflecting their upbringing in a technology-saturated environment. Their online shopping behaviour is characterized by immediacy, convenience, and constant connectivity. They display strong responsiveness to social influence—particularly peer reviews, influencer endorsements, and social media trends—which significantly impacts their purchase decisions. Gen Z is also more comfortable with mobile-based shopping, preferring app-driven experiences, personalized recommendations, and algorithmically curated product suggestions. Their trust in digital platforms is comparatively higher, and they show fewer privacy concerns, indicating a willingness to experiment with new brands and technologies. This cohort values speed, seamless user experience, and interactive digital environments, making them more likely to engage in frequent and impulsive online purchases.

Millennials, in contrast, exhibit more deliberate and pragmatic behavioural tendencies. While they are active online shoppers, their approach is grounded in careful evaluation and risk

assessment. Millennials place strong emphasis on functional benefits such as reliability, product accuracy, and transparent information. Their heightened privacy concerns reflect a more cautious stance toward data sharing, often shaped by early exposure to technology when security standards were less robust. Millennials rely more on detailed reviews, brand reputation, and past purchase experiences rather than social influence alone. Convenience remains important, but their decision-making is more structured and less driven by trends. They show steady but measured adoption behaviour, preferring platforms that demonstrate credibility, secure payment processes, and consistent service quality.

Across both generations, satisfaction levels remain high, indicating that e-commerce platforms effectively cater to diverse user expectations. However, the underlying motivations differ significantly: Gen Z seeks immediacy, personalization, and social validation, whereas Millennials value assurance, clarity, and informed decision-making. These cohort-specific behavioural patterns highlight the need for differentiated marketing and platform design strategies to optimize engagement across both generational segments.

Factor Analysis Results (EFA & CFA)

Factor analysis was conducted in two stages—Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA)—to validate the underlying structure of the measurement scales used in this study. EFA was employed to identify the latent factor structure based on participant responses, while CFA was used to verify how well the observed items fit the hypothesized multi-construct model. Both analyses contribute to establishing the reliability, construct validity, and dimensional integrity of the study's measurement framework.

Exploratory Factor Analysis (EFA)

EFA was performed using Principal Component Analysis with Varimax rotation to determine the latent structure of the 25-item instrument. Sampling adequacy was verified using the Kaiser–Meyer–Olkin (KMO) test, while Bartlett's Test of Sphericity assessed the suitability of the data for factor extraction.

Table:3 KMO and Bartlett's Test (EFA Suitability)

Test	Result	Interpretation
KMO Measure of Sampling Adequacy	**0.914**	Sampling adequacy is "Excellent"
Bartlett's Test of Sphericity	$\chi^2 = \mathbf{3278.42}$, p < 0.001	Correlations are sufficient for factor analysis

The high KMO value (0.914) indicates that the dataset is appropriate for factor analysis, while the significant Bartlett's test confirms inter-item correlation.

Following extraction, **nine factors** emerged with eigenvalues greater than 1, explaining **78.62% of total variance**, aligning well with the theoretical nine-construct model.

Table: 4 Exploratory Factor Analysis – Factor Loadings (Rotated Component Matrix)
(*Only loadings ≥ 0.60 shown for clarity*)

Construct / Item	Factor Loading
Perceived Usefulness (PU)	
PU1 Saves time	0.82
PU2 Improves buying decisions	0.79
PU3 Increases convenience	0.76
Ease of Use (EOU)	
EOU1 Easy navigation	0.81
EOU2 Simple checkout	0.78
EOU3 Overall ease	0.74
Trust (TR)	
TR1 Trust product accuracy	0.83
TR2 Trust platform reliability	0.80
TR3 Trust payment security	0.77
Privacy Concern (PC)	
PC1 Worry about data misuse	0.85
PC2 Unclear data practices	0.79
PC3 Concerns about sharing information	0.75
Social Influence (SI)	
SI1 Reviews influence purchase	0.88
SI2 Friends/family influence	0.81
SI3 Influencers impact choices	0.77
Personalization (PER)	
PER1 Helpful recommendations	0.82
PER2 Relevant suggestions	0.78
PER3 Personalized ads	0.74
Sustainability Orientation (SO)	
SO1 Prefer eco-friendly brands	0.87
SO2 Value ethical practices	0.80
Satisfaction (SAT)	

SAT1 Overall satisfaction	0.83
SAT2 Positive shopping experience	0.79
Purchase Intention (PI)	
PI1 Will continue online shopping	0.85
PI2 Likely to recommend	0.78

All items loaded strongly (>0.70 on average) on their respective factors with minimal cross-loadings, confirming clear construct boundaries.

Interpretation of EFA Results

The EFA findings indicate that the instrument demonstrates strong construct validity, with items clustering meaningfully around the nine predefined factors. High factor loadings support the internal consistency of each scale, and the absence of problematic cross-loadings suggests clean construct separation.

The total variance explained (78.62%) is well above the acceptable threshold of 60%, demonstrating that the model adequately captures the underlying behavioural dimensions of e-commerce adoption among Millennials and Gen Z.

These results establish a solid foundation for conducting CFA to further validate the measurement model.

4.5.2 Confirmatory Factor Analysis (CFA)

CFA was conducted using AMOS/SPSS to validate the factor structure derived from EFA. A nine-factor model was specified, and maximum likelihood estimation was applied. Several goodness-of-fit indices were used to assess model fit, including Chi-square/df ratio, Comparative Fit Index (CFI), Tucker–Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR).

Table:5 Model Fit Indices (CFA)

Fit Index	Recommended Value	Obtained Value	Interpretation
χ^2/df	< 3.0	**2.41**	Good fit
CFI	≥ 0.90	**0.947**	Excellent fit
TLI	≥ 0.90	**0.936**	Excellent fit
RMSEA	< 0.08	**0.062**	Acceptable fit
SRMR	< 0.08	**0.054**	Good fit

The model meets all recommended thresholds, confirming that the measurement model fits the data well.

Table:6 Convergent Validity and Reliability (CR & AVE)

Construct	CR	AVE	Convergent Validity
Perceived Usefulness	0.88	0.71	Achieved
Ease of Use	0.86	0.68	Achieved
Trust	0.89	0.72	Achieved
Privacy Concern	0.87	0.69	Achieved
Social Influence	0.90	0.76	Achieved
Personalization	0.86	0.67	Achieved
Sustainability Orientation	0.88	0.72	Achieved
Satisfaction	0.85	0.66	Achieved
Purchase Intention	0.89	0.72	Achieved

All constructs show CR values above 0.70 and AVE values above 0.50, confirming excellent convergent validity.

Table:7 Discriminant Validity (Fornell–Larcker Criterion)

(*Diagonal = √AVE; must be larger than inter-construct correlations*)

Construct	PU	EOU	TR	PC	SI	PER	SO	SAT	PI
PU	**0.84**								
EOU	0.42	**0.82**							
TR	0.40	0.38	**0.85**						
PC	−0.36	−0.29	−0.40	**0.83**					

SI	0.44	0.41	0.38	−0.32	**0.87**				
PER	0.46	0.49	0.37	−0.21	0.55	**0.82**			
SO	0.41	0.33	0.28	−0.17	0.38	0.47	**0.85**		
SAT	0.48	0.45	0.42	−0.25	0.44	0.51	0.46	**0.81**	
PI	0.52	0.48	0.45	−0.30	0.50	0.54	0.42	0.56	**0.85**

Diagonal values (√AVE) exceed all corresponding inter-construct correlations, confirming strong discriminant validity.

Interpretation of CFA Results

The CFA results validate the factor structure identified through EFA. All model fit indices fall within acceptable or excellent ranges, demonstrating that the nine-construct measurement model accurately represents the data. Convergent validity is supported by high CR and AVE values, showing that items within each construct are strongly correlated. Discriminant validity is also confirmed, indicating that the constructs are empirically distinct from one another.

Collectively, the EFA and CFA results demonstrate that the measurement scales used in this study are statistically reliable, conceptually coherent, and structurally valid. This provides a strong foundation for proceeding with correlation, regression, and structural analyses in subsequent sections.

4.6 Structural Model Results (SEM / PLS-SEM)

The structural model was developed to examine the predictive relationships among the key constructs influencing e-commerce adoption intention among Millennials and Generation Z. Building on the validated measurement model (EFA and CFA), a structural equation modelling (SEM) approach—specifically **Partial Least Squares SEM (PLS-SEM)**—was employed. PLS-SEM is appropriate for exploratory behavioural research, complex multi-construct frameworks, and non-normally distributed data. The structural model assesses (1) the strength and significance of hypothesized relationships, (2) the explanatory power of the model, and (3) the generational differences in path relationships.

The structural model includes nine latent variables: Perceived Usefulness (PU), Perceived Ease of Use (EOU), Trust (TR), Privacy Concerns (PC), Social Influence (SI), Personalization (PER), Sustainability Orientation (SO), Satisfaction (SAT), and Purchase Intention (PI). Bootstrapping with 5,000 resamples was applied to generate t-values and p-values to assess the significance of the hypothesized paths.

Hypothesis Testing Results

This section summarizes the outcomes of the hypotheses developed for the study and evaluates them using results obtained from the t-tests, Chi-square tests, and PLS-SEM structural model analysis. The hypotheses focus on relationships between psychological, technological, and social factors that influence e-commerce adoption among Millennials and Generation Z. Statistical significance was determined based on p-values (< 0.05 threshold), t-statistics, and path coefficients obtained from the structural model.

Table:8 Summary of Hypothesis Testing Results

Hypothesis Code	Statement	Statistical Evidence Used	Result
H1	Perceived usefulness significantly influences purchase intention.	SEM (β = 0.21, p < 0.001)	**Supported**
H2	Perceived ease of use positively affects perceived usefulness.	SEM (β = 0.37, p < 0.001)	**Supported**
H3	Perceived ease of use significantly influences purchase intention.	SEM (β = 0.14, p = 0.012)	**Supported**
H4	Trust significantly influences purchase intention.	SEM (β = 0.19, p < 0.001)	**Supported**
H5	Privacy concerns negatively impact purchase intention.	SEM (β = –0.11, p = 0.038)	**Supported**
H6	Social influence significantly affects purchase intention.	SEM (β = 0.27, p < 0.001)	**Supported**
H7	Personalization positively influences satisfaction.	SEM (β = 0.33, p < 0.001)	**Supported**
H8	Satisfaction significantly influences purchase intention.	SEM (β = 0.24, p < 0.001)	**Supported**
H9	Sustainability orientation significantly influences purchase intention.	SEM (β = 0.10, p = 0.045)	**Supported**
H10	Significant generational differences exist between Millennials and Gen Z.	t-tests & Chi-square (p < 0.001 multiple variables)	**Supported**

Interpretation of Hypothesis Testing

The results indicate strong empirical support for all the proposed hypotheses. Each behavioural construct shows a statistically significant contribution to either purchase intention or satisfaction, validating the overall conceptual framework of the study.

H1 (Perceived Usefulness → Purchase Intention)

Findings confirm that perceived usefulness significantly drives purchase intention. Consumers who believe online shopping improves efficiency and decision-making are more inclined to adopt it. This supports the Technology Acceptance Model (TAM), reinforcing usefulness as a central determinant of digital adoption.

H2 & H3 (Ease of Use → Usefulness & Purchase Intention)

Perceived ease of use has both a direct and indirect impact on purchase intention. Users who find platforms easy to navigate perceive them as more useful and show stronger adoption behaviour. This dual pathway confirms TAM's structural assumptions.

H4 (Trust → Purchase Intention)

Trust significantly predicts purchase intent, highlighting the importance of platform reliability, secure payment systems, and truthful product descriptions. Trust remains a foundational construct influencing consumer commitment across both generations.

H5 (Privacy Concerns → Purchase Intention)

As expected, privacy concerns negatively affect purchase intention. Millennials, in particular, exhibit stronger apprehension regarding data security. Although the negative coefficient is moderate, its significance indicates that privacy remains a barrier to full digital adoption.

H6 (Social Influence → Purchase Intention)

Social influence was found to be the strongest predictor of purchase intention. The prominence of reviews, peer opinions, and influencer recommendations demonstrates the social nature of modern e-commerce. Gen Z's heightened responsiveness amplifies this effect, consistent with their high social media engagement.

H7 & H8 (Personalization → Satisfaction → Purchase Intention)

Personalization enhances satisfaction, which in turn increases purchase intention. These findings confirm the relevance of customer experience principles in e-commerce. Tailored recommendations and curated product lists contribute to a positive emotional reaction that drives long-term loyalty.

H9 (Sustainability Orientation → Purchase Intention)

Sustainability orientation, though a modest predictor, significantly influences purchase intention. Gen Z consumers, in particular, show strong preference for eco-friendly and ethically sourced products. This suggests growing importance of value-driven consumption in shaping digital purchasing behaviour.

H10 (Generational Differences)

t-test and Chi-square analyses reveal significant differences between Millennials and Gen Z in device preferences, social influence sensitivity, privacy concerns, and personalization acceptance.

- **Gen Z**: Higher ease of use, social influence, personalization, sustainability orientation
- **Millennials**: Higher privacy concerns, stronger trust-driven behaviour

These distinctions confirm that generational identity significantly shapes digital consumption behaviour.

Conclusion

This comparative analysis concludes that while Millennials and Generation Z share a strong orientation toward digital consumption, meaningful differences exist in their e-commerce adoption behaviour and underlying motivations. Millennials tend to prioritize convenience, value, and trust, reflecting their experience of adapting to digital commerce over time, whereas Generation Z demonstrates a more experiential and socially influenced approach, emphasizing mobile usability, personalization, and social validation. The findings underscore that factors such as perceived usefulness, ease of use, trust, and social influence are critical drivers of e-commerce adoption across both cohorts, though their relative importance varies by generation. These distinctions highlight the limitations of uniform digital marketing and platform design strategies. Instead, businesses must adopt differentiated, generation-specific

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approaches that align with the unique expectations and behavioural patterns of each cohort. By recognizing generational diversity in consumer behaviour, organizations can enhance customer engagement, strengthen long-term relationships, and remain competitive in an increasingly dynamic e-commerce landscape.

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