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Leveling Up Loyalty: How Autonomy, Competence, and Relatedness Drive Engagement in Gamified Retail

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Abstract
This study examines how autonomy, competence, and relatedness influence consumer engagement and loyalty in gamified retail platforms, using Self-Determination Theory and the S-O-R framework. Data from 423 students in Mumbai were analyzed using PLS-SEM. Results show that all three psychological needs significantly enhance consumer engagement, with competence having the strongest impact. Engagement strongly predicts loyalty highlighting its mediating role. The study offers insights into how marketers create engaging, loyalty-driven gamified experiences.

Keywords
Gamification, Consumer Engagement, Customer Loyalty, Self-Determination Theory (SDT), Autonomy, Competence, Relatedness, PLS-SEM and Retail Platforms.

Introduction:

Indian marketers over its life cycle have learned to carve out a niche for their product in the global competitive world. The implications of product differentiation, price sensitivity, embracing digital marketing and moving towards sustainability have been well engraved in ecosystem. But what poses a new challenge is understanding the extended psychology of the consumers in terms of non-monetary incentives that ensure their engagement and contribute towards brand loyalty.

In the fast-moving world, traditional tactics of offering discounts, cash backs or referral codes seem to be ineffective and call for a paradigm shift for the marketing strategist. Investigating through the lens of generational cohorts and influence in society, it has been imperative to dive deeper into the factors that impact psychological behavior rather than focusing on monetary incentives alone. In response marketing strategists are now investigating gamification to enhance consumer experience. It focuses on making the shopping experience more pleasant, interactive and long-lasting.

Elements of benchmarking milestones, receiving digital badges, or seeing one's rank on a leaderboard not only are creative and fun-filled, but they also drown much deeper in the human psychology strived to create a vivid experience.

It leverages a human mind to craft a memorable experience. The intrinsic motivators like autonomy and competence in terms of having control over their experience that are customized adds a sense of belonging and personalization. Benchmarking the milestones and achieving targets or extra points activates the brain dopamine system that can lead to sustained engagement.

Gamification enables the routine shopping experience to be transformed in enjoyable activities and adds thrill to the shopping environment, it often leads to positive emotions being nurtured. The immersive experience makes the consumers feel empowered and connected in terms of

personalization, contributing significantly to returning to the shopping ecosystem and not the products and services offered alone.

Furthermore, Brand Loyalty strives for both intrinsic and extrinsic factors that determine consumer behavior and engagement in the long run. The study rests its theoretical framework on Self-determination theory that helps understand the intrinsic factors and Stimulus-Organism-Response (S-O-R) framework the external ones.

The Self Determination Theory seeks to put forth how individual behavior is strived towards action. It perceives that for any psychological growth or action, autonomy, competence and relatedness are essential. It recognizes motivation to be intrinsic that leads to inner satisfaction and extrinsic that relates to outcome achievement. When applied by marketing strategists it works to be a powerful tool to enhance consumer engagement and loyalty in the long run. The elements of gamification such as leaderboards, challenges, progress tracking foster intrinsic motivation while adding features of referring to a friend, social media tags etc. works towards extrinsic motivation. Thus, the strategists that successfully integrate the two concepts can ensure longer engagement and commitment. Thus, the experience is striving towards fulfilling the psychological needs of the consumer.

While SDT theory lays focus on leveraging psychological needs, the Stimulus-Organism-Response (S-O-R) framework focuses on how environmental cues such as gamified features impact internal states like engagement, ultimately shaping behavioural outcomes including customer loyalty. The proposed research thereby aims to understand and quantify the impact of gamification on leveraging brand loyalty by integrating the principles of SDT with the S-O-R model. It laid its focus on consumers who have engaged with gamified retail platforms (e.g., retail applications featuring challenges, point systems, or progress tracking).

Literature Review

a. Gamification in Retail

Empirical research over the past few years has increasingly indicated that gamification makes shopping experience more interesting and enjoyable and can be a critical driver of customer satisfaction and brand loyalty. To cite, the study by Bauer et al. (2020) illustrated that the presence of game elements in a virtual shopping platform affects customer satisfaction positively and induces repeated consumer interactions with the respective brands, even if there are no explicit monetary rewards (Bauer et al., 2020). Gamification has emerged as a prominent strategy in retail, leveraging game design elements to make the shopping experience more engaging and enjoyable for consumers (Silva et al., 2023). These elements—such as point systems, badges, leaderboards, and challenges—act as rewards that motivate customers to participate actively in shopping, thus increasing both engagement and brand interaction (Choirisa et al., 2024). Zandi et al. (2024) conducted a study in a grocery retail setting using a mobile app that integrated features like puzzles, scoreboards, and eco-friendly challenges. Their findings demonstrated a significant positive correlation between gamification strategies and enhanced customer experience, aligning with self-determination theory. The study also showed that gamified systems could encourage eco-friendly shopping behaviors and foster social interaction among shoppers, leading to longer time spent in-store and more exploratory shopping behaviors

The literature consistently supports the positive impact of gamification on customer experience.

b. Self-Determination Theory (SDT)

According to Self-Determination Theory (SDT) customers possess three universal psychological needs which include autonomy, competence, and relatedness. These needs are central to determining the level of engagement of consumers in retail gamification (Hamari et al., 2014). Autonomy in gamified shopping is enabled through giving individual choices or customization choices, which give consumers some level of control over their experience (Ryan & Deci, 2017). Competence is enabled through giving accomplishments or measures of progress that give consumers a sense of competence (Gupta et al., 2022). Lastly, relatedness is enabled through creating a sense of being together through social aspects of shopping because community traits bring consumers together (Ng et al., 2012; Ryan & Deci, 2020).

c. Stimulus-Organism-Response (S-O-R) Model

The Stimulus-Organism-Response (S-O-R) model is a simple framework for the analysis of consumer behavior, which describes how external stimuli (here, gamified features) influence inner states (e.g., consumer engagement), resulting in observable responses (e.g., customer loyalty) (Harrison et al., 2019). The theory describes the psychological response process by which gamified features stimulate psychological responses, thus motivating consumers to display specific behaviors. The S-O-R model emphasizes the significance of external cues in their interaction with internal responses but emphasizes interdependence among various conditions for behavior.

d. Hypothesis Development

The interconnectedness of autonomy, competence, and relatedness, as defined by Self-Determination Theory (SDT), is crucial in stimulating consumer engagement and, in turn, improving customer loyalty. As presumed by SDT, the three fundamental psychological needs are critical in promoting intrinsic motivation.

1. Autonomy and Consumer Engagement

Autonomy refers to the degree to which individuals feel they can control their actions. For gamified shopping experiences, providing consumers with options and opportunities for self-directed action increases feelings of autonomy. Autonomy in e-commerce may vary from individualized shopping experiences or user-generated content based on the consumer's interest and preferences. Empirical research indicates that when brands employ avenues that enable autonomy, there is a significant rise in consumer engagement levels (Martini et al., 2022; Al-Zyoud, 2020).

H1: There is a significant positive relationship between consumer engagement and customer loyalty Autonomy and Consumer Engagement.

2. Competency and Consumer Engagement

Competence as a psychological need is the ability to engage with different tasks and challenges. Gamification elements such as achievements, levels, or challenges are used to enhance consumers' perceptions of their own competence and capability in the use of e-commerce platforms. The improved perception fosters engagement because consumers are more likely to invest time and effort in platforms where they experience competence (Glavee-Geo et al., 2019; Shahid & Arshad, 2021).

H2: There is a significant positive relationship between Competence and Customer Engagement.

3. Relatedness and Consumer Engagement

Relatedness is the need to form connections with others. In gamified environment, brands can encourage social interaction between consumers with social sharing features, leaderboards, and social engagement activities. This invokes a feeling of belonging and reinforces emotional bonds to the brand; thus, the engagement level is enhanced (Almeida et al., 2018; Yang & Zhao, 2020). For instance, social interaction between consumers in brand communities has been found to be positively contributing to consumer engagement (Abdul-Ghani et al., 2019).

H3: There is a significant positive relationship between Relatedness and Consumer Engagement.

4. Consumer engagement and Customer loyalty

Through the lens of the Stimulus-Organism-Response (S-O-R) model, consumer engagement serves as a mediating variable between the psychological needs fulfilled by gamified shopping experiences and the resultant customer loyalty. Literature supports the assertion that increased engagement driven by fulfilling psychological needs leads to increased loyalty, as satisfied consumers are more likely to return and endorse for brands (Munawar et al., 2023; Shahid & Arshad, 2021).

H4: There is a significant positive relationship between consumer engagement and customer loyalty.

In summary, the integration of gamification in shopping experiences through the fulfilment of autonomy, competence, and relatedness significantly enhances consumer engagement. This heightened engagement subsequently fosters customer loyalty, illustrating a clear pathway through the S-O-R framework.

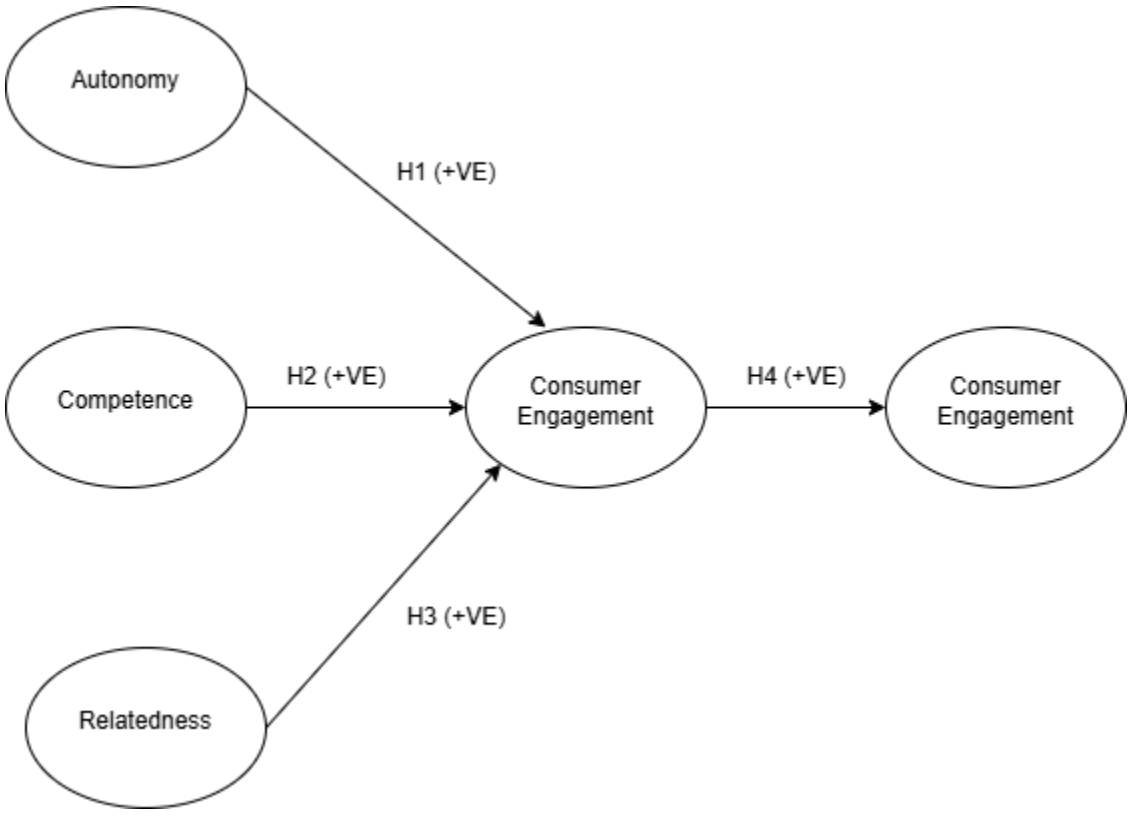

Figure 1

Research Methodology

This study adopts a quantitative research design to investigate the role of autonomy, competence, and relatedness in driving user engagement and loyalty within gamified retail platforms. A total of 423 responses were collected through a structured questionnaire from undergraduate and graduate students in Mumbai, selected using purposive sampling. The respondents were regular users of gamified retail applications such as Flipkart (SuperCoins, Game Zone), Amazon India (FunZone quizzes, rewards), Paytm (scratch cards, cashback games), Swiggy (Swiggy Super, in-app rewards), Zomato (Zomato Gold, in-app offers), Tata Neu, CRED, BigBasket, and Blinkit. These platforms were chosen due to their widespread adoption of gamification features aimed at enhancing customer engagement. The data collected was used to examine the influence of intrinsic motivational factors—autonomy, competence, and relatedness—on user engagement and loyalty, drawing from Self-Determination Theory (SDT).

We adopted previously validated measurement items from existing literature to develop the questionnaire. The instrument was then reviewed by subject-matter experts and pre-tested among a sample of undergraduate and graduate students to ensure clarity, relevance, and contextual suitability. Based on the feedback received, necessary modifications were made-some items were revised for better comprehension, while others were removed due to redundancy or low relevance. The final questionnaire consisted of items measured on a five-point Likert scale, ranging from "strongly disagree" to "strongly agree".

PLS-SEM was chosen over CB-SEM due to the predictive and exploratory nature of this study, which focuses on examining relationships within an existing theoretical framework rather than developing a new theory. PLS-SEM is particularly suitable for complex models with multiple constructs and indicators, and it does not require strict assumptions of multivariate normality, which was ideal given the data characteristics. Additionally, PLS-SEM is more robust when working with moderate sample sizes and is well-suited for models involving reflective constructs, as used in this research.

Data Analysis

Partial Least Squares Structural Equation Modelling (PLS-SEM) was used for data analysis using SmartPLS 4 software, following a two-step approach first assessing the measurement model, followed by evaluation of the structural model.

a. Measurement model

The measurement model was assessed to evaluate the reliability, convergent validity, and discriminant validity of the constructs used in the study.

Table 1: Outer model psychometric properties.

Construct	Item	Loading	CR	AVE	Mean	t-Value
Autonomy	AU1	0.675	0.835	0.505	12.931	12.931
	AU3	0.636			11.562	11.562
	AU4	0.706			14.676	14.676
	AU5	0.765			14.384	14.384
	AU6	0.762			18.304	18.304
Competence	CO1	0.763	0.867	0.519	16.179	16.179

	CO2	0.817			18.323	18.323
	CO3	0.602			10.209	10.209
	CO4	0.722			16.075	16.075
	CO5	0.685			16.613	16.613
	CO6	0.714			16.727	16.727
Consumer Engagement	CE1	0.69	0.778	0.538	14.136	14.136
	CE2	0.765			14.734	14.734
	CE3	0.686			13.119	13.119
	CE4	0.691			14.128	14.128
	CE5	0.791			17.577	17.577
	CE6	0.652			10.368	10.368
Customer Loyalty	CL1	0.722	0.794	0.564	27.205	27.205
	CL3	0.732			25.688	25.688
	CL5	0.747			24.966	24.966
Relatedness	RE2	0.703	0.862	0.51	20.931	20.931
	RE5	0.775			21.778	21.778
	RE6	0.773			22.607	22.607

To evaluate the measurement model, tests for reliability and validity were conducted. Composite Reliability (CR) values for all constructs exceeded the recommended threshold of 0.70, indicating acceptable internal consistency. Indicator loadings were examined, and only items with loadings above 0.60 and t-values significant at the 0.05 level were retained. Several items were removed due to low factor loadings and their negative impact on CR, including AU2 (Autonomy), CL2 and CL4 (Customer Loyalty), and RE1, RE3 and RE4 (Relatedness). Convergent validity was confirmed through Average Variance Extracted (AVE), with all constructs meeting the minimum cut-off value of 0.50, as proposed by Fornell and Larcker (1981).

Table 2 : Discriminant validity- Heterotrait monotrait ratio (HTMT)

	Autonomy	Competence	Consumer Engagement	Customer Loyalty	Relatedness
Autonomy					
Competence	0.796				

Consumer Engagement	0.743	0.79			
Customer Loyalty	0.594	0.691	0.834		
Relatedness	0.707	0.773	0.721	0.664	

Discriminate validity was evaluated using the Heterotrait-Monotrait ratio of correlations (HTMT), which is considered a robust method for assessing the distinctiveness of constructs. The results indicate that all HTMT values are below the recommended threshold of 0.85, depicting that every construct is empirically distinct from the rest. The highest HTMT value obtained was 0.834, between Consumer Engagement and Customer Loyalty, and is still within the acceptable range, and it shows that there is a close but distinct relationship between these two constructs. Other values, such as 0.796 between Autonomy and Competence, and 0.773 between Competence and Relatedness, further support the uniqueness of each construct. Lower HTMT values, such as 0.594 between Autonomy and Customer Loyalty, indicate clear differentiation. Overall, the results confirm strong discriminant validity within the measurement model, ensuring that the constructs used-Autonomy, Competence, Relatedness, Consumer Engagement, and Customer Loyalty are not only reliable but also conceptually distinct within the gamified retail context.

b. Assessment of Collinearity

Table 3: Variance Inflation Factor (VIF)

Construct	Item	VIF	Construct	Item	VIF
Autonomy	AU1	1.751	Consumer Engagement	CE1	1.68
	AU3	1.509		CE2	1.738
	AU4	1.698		CE3	1.537
	AU5	1.737		CE4	1.796
	AU6	2.069		CE5	2.144
Competence	CO1	1.633		CE6	2.093
	CO2	1.786	Customer Loyalty	CL1	1.639
	CO3	1.707		CL3	1.771
	CO4	1.943		CL5	1.494

CO5	1.84	Relatedness	RE2	1.578
CO6	2.01		RE5	1.738
			RE6	1.768

Before evaluating the structural model and the relationships between constructs, it is essential to assess collinearity among the indicators, as multicollinearity can distort the estimation of path coefficients in structural equation modelling. Multicollinearity is considered undesirable because it inflates the standard errors and weakens the statistical significance of predictors. To evaluate collinearity, the Variance Inflation Factor (VIF) was used. According to Hair et al. (2017), a VIF value below 3.3 is generally considered acceptable, indicating the absence of problematic multicollinearity.

In this study, all VIF values for the indicators across constructs - Autonomy, Competence, Consumer Engagement, Customer Loyalty, and Relatedness were found to range between 1.494 and 2.144, which are well below the threshold of 3.3. This indicates that multicollinearity is not a concern, and the data is suitable for further analysis of the structural model.

c. Structural model

Table 4: Hypothesis examination

	Expected Influence	**Beta**	**P values**	**Supported**
H1: Autonomy → Consumer Engagement	+ve	0.249	0.042	Yes
H2: Competence → Consumer Engagement	+ve	0.431	0.001	Yes
H3: Relatedness → Consumer Engagement	+ve	0.214	0.024	Yes
H4: Consumer Engagement → Customer Loyalty	+ve	0.834	0.000	Yes

The structural model was assessed to evaluate the hypothesized relationships between the constructs. The relationship between Autonomy to Consumer Engagement was found to be positive and statistically significant ($\beta = 0.249$, $p = 0.042$), indicating that higher perceived autonomy in gamified retail experiences contributes moderately to consumer engagement. Similarly, Competence showed a stronger and highly significant positive influence on Consumer Engagement ($\beta = 0.431$, $p = 0.001$), suggesting that when consumers feel more skilled or capable within the gamified environment, they are more likely to be engaged. The relationship between Relatedness and Consumer Engagement was also significant ($\beta = 0.214$, $p = 0.024$), though slightly weaker than the effects of competence and autonomy. Most notably, Consumer Engagement

showed a very strong and highly significant effect on Customer Loyalty (β = 0.834, $p < 0.001$). This finding highlights the central role of engagement as a mediator and key predictor of loyalty, affirming that higher engagement within gamified loyalty programs significantly boosts customers' commitment to the brand. Overall, all hypothesized paths in the model were statistically significant**,** supporting the theoretical framework based on Self-Determination Theory.

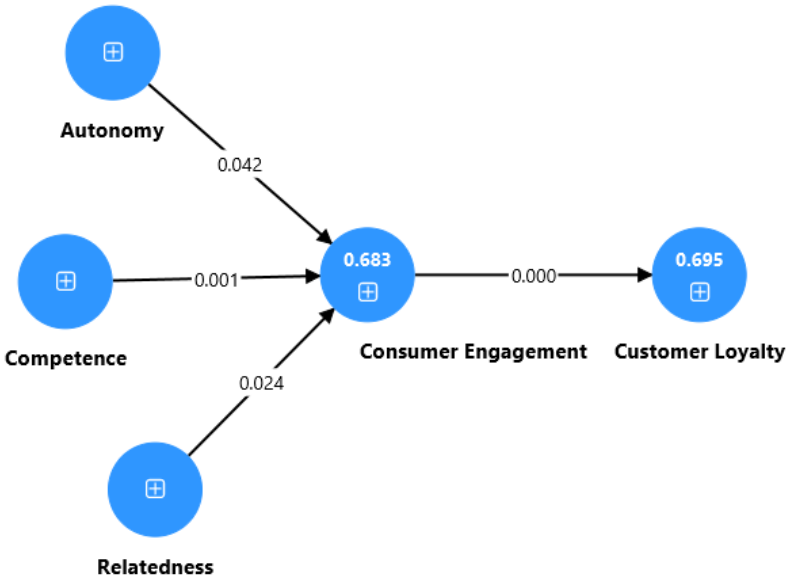

Figure 2

The R-square (R^2) value represents the proportion of variance in the dependent variable that is explained by the independent variables in the model. It is a key measure of the predictive power of the model. The R^2 value for Consumer Engagement is 0.683, indicating that 68.3% of the variance in Consumer Engagement is explained by Autonomy, Competence, and Relatedness. This suggests a strong level of explanatory power, meaning these predictors significantly influence Consumer Engagement in the context of gamified retail. The R^2 value for Customer Loyalty is 0.695, which means that 69.5% of the variance in Customer Loyalty is explained by Consumer Engagement. This also indicates a strong predictive relationship, confirming that higher levels of engagement significantly contribute to greater loyalty.

Conclusion

The results of this study reinforce the relevance of Self-Determination Theory in understanding consumer engagement within gamified retail platforms. Autonomy, competence, and relatedness each play a significant role in shaping the Consumer Engagement. This heightened engagement significantly contributes to customer loyalty, as demonstrated by the strong path coefficient (β = 0.834, $p < 0.001$) and high explanatory power ($R^2 = 0.695$). From the lens of the S-O-R framework, gamification acts as the external stimulus, consumer engagement represents the internal state, and loyalty emerges as the behavioral response. These findings provide valuable insights for marketers and retailers seeking to design engaging customer experiences and foster long-term loyalty through gamification strategies.

The empirical evidence presented in this study supports all proposed hypotheses and confirms the theoretical assumptions underlying both Self-Determination Theory and the S-O-R model.

Psychological needs, particularly competence, strongly influence consumer engagement in gamified retail settings. Notably, the sense of mastery and achievement significantly drives user interaction, suggesting that retail gamification strategies should focus on building mechanisms that allow consumers to feel capable and accomplished.
The study vividly highlighted that competence makes the consumers feel skilled, accomplished and craft their experiences. Autonomy and relatedness also play a significant role helping the strategist, UX designers and markers to level up the gamification elements and challenges for sustenance. The study provides clear insights to the retailers and marketers to strive towards creating an experience that transforms routine shopping activity into an enjoyable journey. This study not only extends the application of Self-Determination Theory in the context of retail gamification but also provides actionable insights for practitioners aiming to enhance customer experience and retention through tailored gamified elements.

Limitations

Despite its contributions, this study has several limitations. It uses a cross-sectional design, which limits causal inferences and understanding of behavioral change over time. The study focuses primarily on specific segments of consumers familiar with the gamification in retail which restricts the generalizability of findings, especially to non-tech-savvy populations. Data was self-reported, making it susceptible to bias and common method errors. Additionally, cultural and geographic specificity may limit broader applicability of findings. Lastly, while key psychological needs and customer loyalty were explored, other relevant factors like user interface design, perceived rewards, and brand perceptions were not considered, offering avenues for future research.

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