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Assessing the Role of Gamification in Shaping Consumer Purchase Decisions: A Multi-Criteria Decision-Making Approach Using the Analytical Hierarchy Process

Kavita Berwal[1], Dr. Anil Kanwa [2]

[1](Research Scholar, Baba Mastnath University, Rohtak)
[2](Professor, Baba Mastnath University, Rohtak)

ABSTRACT: Gamification is an innovative marketing strategy that applies game-design elements in non-game contexts to influence consumer engagement, motivation and purchasing behaviour. The rapid growth of e-commerce, mobile shopping applications, and digital marketing platforms has led organisations to increasingly adopt gamification mechanisms such as rewards, points, badges, leaderboards, challenges, and personalised experiences to attract and retain consumers. However, the relative importance of these elements in influencing consumer purchase decisions needs to be systematically evaluated.

The current study aims to identify, evaluate, and rank the significant factors of gamification that affect consumer purchase decisions using the Analytical Hierarchy Process (AHP). A literature review identified ten gamification factors: rewards and incentives, points and scoring systems, badges and achievements, leaderboards and competition, challenges and quests, levels and progression, discounts and cashback, personalisation and customisation, social interaction and engagement, and feedback and instant gratification. The proposed empirical design comprises 13 experts, whose pairwise judgements will be aggregated using the geometric mean method. AHP is used to calculate relative priority weights and to verify the consistency of judgements.

The AHP calculator output shows that the highest priority weight, 33.9%, was assigned to discounts and cashback, followed by rewards and incentives (19.2%) and points and scoring systems (11.0%). The principal eigenvalue reported was 10.547, and the consistency ratio was 4.1%, indicating acceptable consistency in the comparison matrix.

1. INTRODUCTION

The rapid growth of digital technology has brought about dramatic changes in consumer behaviour, marketing practices and the overall business environment. The growing use of the internet, smart phones, digital payment systems, e-commerce platforms and social media has changed the traditional way of buying and selling goods and services. Consumers are no longer limited to physical stores or traditional promotional methods, but can browse products, compare prices, read customer reviews, participate in promotional activities and complete purchases on digital platforms. Online shopping apps, social commerce, mobile commerce and digital marketplaces have opened up new avenues for organisations to connect with consumers and shape their purchasing decisions. However, with the increasing growth of online business and market competition, it has also become difficult for the organisations to attract the attention of consumers, build customer loyalty and maintain long-term relationships with the customers. Consequently, companies are always developing new ways of digital marketing to increase consumer engagement, improve consumer satisfaction, establish brand connections and ensure that customers keep coming back.

With this change in the business environment, gamification was a new marketing strategy to enhance consumer engagement and influence buying behaviour. Gamification is the use of game design elements and game-like mechanics in non-game

contexts to motivate individuals, promote participation and change desired behaviour. Gamification in digital marketing and e-commerce involves integrating interactive and fun elements into online shopping platforms, mobile apps, loyalty programs and promotional campaigns. Such features may include reward points, discounts, cash backs, badges, leader boards, challenges, achievements, levels, personalised offer and instant feedback. These are elements added by organisations to the shopping process in a bid to make traditional online shopping more interactive, engaging, enjoyable and rewarding.

The importance of gamification in digital marketing is intrinsically linked to the changing expectations of consumers. Today's consumers expect more from shopping platforms than just good products and competitive prices. They want convenience, entertainment, personalisation, recognition and other values. Traditional promotional methods may not be sufficient to keep consumers interested in the highly competitive online market. Gamification allows organisations to embed interactive activities that encourage consumers to explore products, participate in promotional campaigns, undertake shopping-related challenges, earn points and obtain rewards. Suppose you are on an e-commerce platform. It can award you reward points for each purchase you make, cashback on select products, badges for participating in shopping activities or discounts for playing promotional games. These activities can encourage consumers to spend more time on digital platforms and foster a greater engagement with the brand.

Monetary and non-monetary benefits of gamification can affect the consumer purchase decision. Monetary benefits are financial incentives like discounts, cash back, reward points, coupons etc. These benefits add to the perceived economic value of a purchase. Such benefits may be a motivation for consumers to buy, to choose a particular product or to come back to a particular shopping platform. But non monetary benefits include achievement badges, leaderboards, challenges, levels, social recognition, personalised experiences and interactive feedback. These can fulfilll the psychological and social needs of the consumers by creating feelings of accomplishment, competition, participation, recognition, and enjoyment. Gamification is thus not just about financial incentives, but about creating a fun digital environment that can affect consumers' attitudes, motivations and purchase behaviour.

The relationship between consumer motivation and purchase activities is one of the main components in gamification. Programs to promote the product may attract consumers by offering rewards and incentives. Points and scoring systems may motivate consumers to collect the benefits through repeated purchases. Badges and achievements are a way to reward people for completing certain actions. Leaderboards promote a sense of competition by displaying the performance or achievements of the participants . Challenges and quests motivate consumers to engage in certain activities so that they can earn rewards or access to more perks. The progress and level systems also give a feeling of advancement, as consumers can reach different stages through participation. Discounts and cashback make the purchase financially more attractive, while personalisation and customisation enable organisations to deliver experiences that are in line with the consumer's preference. Social interaction and engagement encourage participation by means of sharing, communication and community based activities. Interactive shopping experience is enhanced by instant responses, acknowledgements or rewards through feedback and instant gratification.

Gamification and its connection to online consumer behaviour have been explored in a number of studies, examining a range of aspects. Tobón, Ruiz-Alba and García-Madariaga (2020) have done a systematic review of gamification and online consumer decisions and have found the most common mechanisms discussed were the rewards and the challenges and the most common gamification elements studied were the points, badges and leaderboards. Their work provides an important basis for the understanding of the role of game design features in online consumer decision-making. Wang et al. (2020) studied the impact of gamification on the perception of word-of-mouth contributors and the behaviour of word-of-mouth consumers, emphasising the significance of social engagement in digital environments. García-Jurado, Pérez-Barea and Fernández-Navarro (2021) examined online product reviewers and the effect of reputation scores and intrinsic motivation.

The literature also took into account the relation of gamification with online purchase intention . Wu and Santana (2022) explored the impact of intrinsic and extrinsic game factors on online purchase intention in their study, which points out the importance of motivational mechanisms in digital purchasing contexts. Yu and Huang (2022) explored the factors affecting consumer involvement in mini-games on mobile commerce platforms by drawing on utilitarian, hedonic and social values. These studies suggest that gamification can influence consumer engagement through various perceived value and motivation types, not through a single mechanism.

The recent research has broadened the discussion of gamification to e-commerce platforms, online shopping festivals, omnichannel retailing and interactive digital experiences. (Tsai, 2024) Gamified online-to-offline services and virtual-physical integration in cross-boundary retail alliances: Consumer purchase intention. Chen, Li and Yang (2024) investigated the achievement gamification affordances of e-commerce platforms in online shopping festivals, and the role of rewards and the visibility of achievements. Faganel et al. (2024) examined the role of gamification among online shoppers in Slovenia and Kaur and Puri (2024) investigated the impact of gamification on customer e-purchase intention. The studies reveal that gamification is becoming an important part of digital retail strategies, and its effects should be investigated in different consumer contexts and platform settings.

Gamification research has since broadened to include consumer engagement, brand loyalty, impulse buying, repurchase decisions and personalised digital experiences. Punwatkar & Verghese (2025) studied the relationship between gamification, consumer engagement, brand loyalty and purchase intention. Tobón and Abril (2025) examined the impact of gamification in apparel e-tailers on impulse buying and product returns. Zhang et al. (2025) studied the influence of gamification elements on users' perceptions and repurchase intention in the environment of game live broadcasting. Saha et al. (2025) studied the relationship between gamification and green product purchase intention, while Silitonga, Lim and Bongso (2025) examined the gamification mechanics and AI-driven personalisation on freemium game platforms. The results indicate that gamification is relevant for multiple dimensions of consumer behaviour, and not just immediate purchase intention.

Gamification has also been studied recently in relation to live commerce, virtual shopping, digital trust, and consumer decision making. Temirkhan, Suhud and Aujirapongpan (2026) explored the link between platform reputation, security, gamification transparency and consumer purchase intention and decisions. Wisedpanich and Wittayakom (2026) examined the relationship between gamification, engagement, trust, and social proof among Generation Z consumers in the live commerce context in Thailand. These developments suggest that the effect of gamification may be contingent on the digital environment, consumer traits, perceived trust and the nature of the shopping experience.

Previous studies have investigated different aspects of gamification and its impact on consumer engagement and purchase related behaviour . However, organisations still face practical difficulties in deciding which elements need more attention and investment. The impact of gamification features on consumer purchase decisions may not be uniform across all gamification features. For some consumers it may be discounts, cashback and financial incentives that motivate them most, while others may be motivated by points, achievement badges, competition, social interaction or personalised experiences. Thus it is important to identify and prioritise the relative importance of various gamification factors as opposed to treating all game-design elements as equally important.

In the present study the Analytical Hierarchy Process (AHP) is applied to solve this problem. AHP is a multi-criteria decision making method which is used for evaluation and ranking of multiple factors using systematic paired comparison . AHP allows to identify the relative importance of different criteria and it gives a structured ground to rank the factors on their priority weights. The study discusses ten gamification elements namely Rewards and Incentives, Points and Scoring System, Badges and Achievements, Leaderboards and Competition, Challenges and Quests, Levels and Progression, Discounts and Cashback, Personalisation and Customisation, Social Interaction and Engagement and Feedback and Instant Gratification. The use of AHP helps to understand which of these factors are perceived to be more important in affecting consumer purchase decision.

Therefore, the main objective of this research is to evaluate the role of gamification in consumer purchase decision making through identifying, evaluating and ranking the major gamification factors using AHP approach. The study is expected to contribute to the understanding of consumer-oriented gamification strategies and provide useful insights for e-commerce businesses, digital marketers and platform managers. Realising the relative priority of different gamification elements can help organisations to make better choices about the design of promotional campaigns, loyalty programs and interactive shopping experiences.

2. REVIEWS OF LITERATURE

The literature review provides the theoretical and empirical foundation to comprehend the relationship between gamification and consumer purchasing decisions. Previous studies have explored gamification from a number of different perspectives including online consumer decision making, consumer motivation, purchase intention, e-commerce engagement, brand loyalty, impulse buying, social interaction and personalised digital experiences. In the following review, the relevant studies are discussed

thematically and chronologically to identify the major developments of research and to establish the basis for the present AHP-based investigation.

2.1 Online Decision Making of Consumers and Gamification

The digital marketing research shows that gamification is receiving a great deal of attention as it has the potential to influence the consumer's interaction with online platforms and their purchase decision. Tobón, Ruiz-Alba and García-Madariaga (2020) in their paper titled "Gamification and Online Consumer Decisions: The Game Is Over?"

systematically reviewed the relationship between gamification and online consumer decision making. They reviewed 257 academic publications and found rewards and challenges were commonly discussed as gamification mechanisms. Points, badges, and leaderboards were the most studied game design elements. The study provided an important insight into the ways gamification has been embedded in online consumer settings and pointed to the need for investigating its relationship with consumer decision-making.

Wang et al. (2020) studied the influence of gamification on perceptions of word-of-mouth contributors and word-of-mouth consumers' behaviour. Their research has contributed to an understanding of how game mechanisms shape social participation and how consumers interact in digital environments. Online word-of-mouth is very important in the decision making process of consumers because people are often looking at the experiences, opinions and recommendations of other consumers before buying products. Gamification can improve these interactions through participation, contribution, recognition and information sharing. This view is relevant to the current study as social interaction and engagement is one of the factors considered in the AHP framework.

Together, these studies show that gamification can be studied as a promotional technique, but also as a mechanism that affects consumer interaction, participation and online decision-making. They also form the basis for the research of the individual gamification elements and their relative importance in the buying process.

2.2 Psychological aspects of gamification and motivation of consumers

One important dimension of the gamification is consumer motivation, because the effectiveness of the game-related features is dependent on the reasons why individuals are motivated to engage in the digital activities. Gamification mechanisms can offer external benefits like points, discounts, cashback and rewards, as well as internal or psychological benefits like achievement, enjoyment, recognition and sense of progress. Understanding these motivational dimensions is important to explain why consumers respond differently to different gamification features.

García-Jurado, Pérez-Barea and Fernández-Navarro (2021) examined the impact of reputation scores and intrinsic motivation on online product reviewers of the millennial generation. Their research focused on factors of motivation and online reputations in digital environments. One reason is that reputation scores can provide recognition and reflect the perceived credibility or status of individuals in an online community. The current study is relevant for gamification because features such as badges, recognition of achievements and leaderboards can provide similar forms of recognition and encourage engagement.

Abril and Tobón (2022) studied undesired impulse e-buying behaviour which assists to understand unplanned purchasing in digital shopping environments. In gamification, the impulse buying is of particular importance because promotional rewards, time-based challenges, and attractive offers can affect consumers' purchasing behaviour. However, the relationship between gamification and impulse buying should be approached with caution as higher engagement does not necessarily translate into a more considered or beneficial purchase decision.

Páez-Quinde et al. (2022) have researched gamification for dissemination of content on information and communication technologies (ICT). Their work forms part of a larger understanding of gamification as a mode of encouraging participation and interaction through digital mechanisms. The situation is not the same as the buying directly on the internet, but the study also gives a broader picture of how features of game design may be used in digital contexts.

Overall, findings suggest that external incentives and psychological motivations may both drive consumers' reactions to gamification. It provides a basis for incorporating monetary and non-monetary aspects in the present study, namely rewards and incentives, badges and achievements, challenges and quests, and levels and progression.

2.3 Gamefication

Purchase intention is an important concept in consumer behaviour as it reflects the willingness or likelihood of an individual to purchase a product or service. Digital marketing interactive features are increasingly being used by organisations to engage consumers, increase platform participation and influence their purchase-related intentions. Gamification can help in this process, offering incentives, building fun experiences and making users come back to shopping platforms again and again.

The impact of intrinsic and extrinsic game elements on intention to purchase online was investigated by Wu & Santana (2022). The contribution of their study is to take into account the various motivational dimensions through which gamification can impact on consumers. The extrinsic elements may include points, rewards and other tangible benefits, whereas the intrinsic elements may include enjoyment, achievement and participation. This differentiation is important for the present study, because consumers might respond differently to monetary and non-monetary gamification mechanisms.

Yu and Huang (2022) investigated the motivations behind playing mini-games on mobile commerce platforms. In their study they took into account utilitarian, hedonic and social values as important aspects of participation motivation. Utilitarian value refers to the practical benefits consumers get, whereas hedonic value refers to pleasure and entertainment. Social value is about being in contact with and relating to other people. These dimensions provide a useful lens through which to understand why consumers engage in gamified shopping activities. The current research framework also supports the inclusion of elements such as discounts and cashback, challenges and quests, and social interaction and engagement.

The results and themes of these studies suggest that gamification can be studied through different types of consumer motivation and perceived value. But the relative importance of individual gamification elements in influencing purchase decisions is an important issue for further research.

2.4 E-Commerce & Online Shopping Gamification

The growth of e-commerce has enabled organisations to include game design elements into online retail sites. There are various ways to implement e-commerce gamification such as shopping rewards, points accumulation, interactive games, product-related challenges, achievement badges, and personalised promotional offers. All these mechanisms are designed to make shopping more interactive and keep consumers engaged with the platform.

Tsai, 2024: Consumer purchase intention in cross-boundary retail alliance with integrated gamified online-to-offline (O2O) services and virtual-physical fusion experiences. The study is relevant for the development of omnichannel retailing considering the growing interaction of consumers with brands through digital and physical channels. Gamification in these environments may offer additional opportunities for consumer engagement and influence purchase related behaviour.

Chen, Li and Yang (2024) *"Achievement Gamification Affordances in E-Commerce Platforms: An Empirical Study Involving Online Shopping Festival"* Chen, Li and Yang (2024) have studied the role of achievement-related gamification affordances in e-commerce platforms. Their research explored the impact of reward-giving mechanisms and visibility of achievements on consumers' satisfaction of psychological needs, which in turn affected purchase intention and continued use of the platform. The study is very relevant to the present research because it demonstrates the importance of rewards and achievements in the online shopping environment.

Faganel et al. (2024) examined the gamification of online shoppers in Slovenia. Their work contributes to the understanding of the application of gamification in the online shopping context and offers a consumer-centric perspective on the use of game-related features in digital retail environments.

Kaur and Puri (2024) explored the influence of gamification on the customer intention to e-purchase. Their research is relevant to the association of interactive digital marketing features and consumers' online purchase intention. Gamification can make online shopping more engaging for organisations by adding rewards, interactive activities and other game-related mechanisms to the purchasing process.

Tembulkar spoke in 2024 on gamification as a driver of consumer behaviour and engagement. This is an important perspective since consumer engagement is a key mediating outcome through which digital marketing activities can influence brand relationships and purchase behaviour.

Moutzala & Spais (2024) studied gamification, consumer happiness, gourmet food packaging design, and mobile points of sale. Their research suggests that gamification could be used more widely than traditional online shopping websites and highlights the potential for adding interactive features to other consumer-facing marketing environments.

Overall, the studies show that gamification is being used in a variety of e-commerce and retail settings. They also propose that the effectiveness of gamification may be dependent on the platform, the type of consumer interaction and the specific game-design elements employed.

2.5 Consumer Engagement and Brand Loyalty Through Gamification

For organisations operating in competitive digital markets, key results are consumer engagement and brand loyalty. Engagement is the extent to which consumers interact, participate and show interest in a brand or digital platform. Brand loyalty is defined as the consumer's tendency to buy a specific brand over and over again or to continue a relationship with a specific brand. Gamification can contribute to these outcomes by providing multiple opportunities for interaction, rewarding participation and giving consumers a feeling of achievement and recognition.

Punwatkar and Verghese (2025) investigated the effect of gamification on consumer engagement, brand loyalty and purchase intention. Their study moves us one step closer to understanding the relationship between marketing features related to the game and important consumer outcomes. Interactive and rewarding mechanisms can encourage consumers to engage more actively with brand-related activities and build a stronger relationship with digital platforms.

Tobón and Abril (2025) studied gamification in apparel e-tailers from the perspective of impulse buying and product returns. Their research is relevant for the online fashion retailing industry, where purchase decisions are often influenced by the promotional activities, product displays and digital shopping experiences. The addition of product returns also reflects the importance of looking beyond the point of purchase in terms of consumer behaviour.

Zhang et al. (2025) investigated the influence of gamification elements on user perception and repurchase decision in the setting of game live broadcast. Their study adds to the ongoing debate on gamification in live digital environments, where interactive features can create sustained engagement and impact consumers' future purchasing decisions.

Saha et al. (2025) investigated the relationship between gamification and intention to purchase green products. This study is relevant as it relates gamification with sustainability-driven consumer behaviour. Interactive activities and reward mechanisms may incentivise consumers to participate in environmentally responsible products and purchasing practices.

2025, Lim, Bongso and Silitonga, 2025). Gamification mechanics and AI-based personalisation in freemium game platforms. Their findings suggest that personalisation is becoming more important in digital environments. Platforms may utilise personalised experiences to deliver content, recommendations and incentives that better match individual preferences.

Ridwan, Musa and Haeruddin (2025) explored the online purchase decision-making behaviour of Generation Z consumers. Their work is relevant to the evolving digital consumption patterns of young consumers who are often engaging with mobile apps, social media and online shopping platforms. When trying to assess the possible effect of gamification on purchase decisions, it is important to understand these consumer characteristics.

These studies, taken together, illustrate the link between gamification and engagement, loyalty, impulsive purchases, repurchase behaviour, sustainability-related buying, and personalised digital experiences. They also argue for the inclusion of several dimensions of gamification in the current study, not just rewards or discounts.

2.6 Recent Trends in Gamification and Consumer Purchase Decisions

The trends in digital commerce have been moving toward the integration of gamification in VR shopping, live commerce, AI-driven personalisation, digital trust and interactive online experiences. These developments show that gamification is being used more and more in combination with other digital technologies and marketing practices.

Grande et al. (2026) examined gamified virtual reality shopping experiences. This research area reflects the growing importance of immersive digital technologies to the retail industry. The virtual reality environments can give consumers interactive experiences that go beyond traditional product browsing and can create more opportunities for engagement and interaction related to purchase.

Temirkhan, Suhud and Aujirapongpan (2026) investigated the effect of platform reputation, security, gamification and transparency on consumer purchase intention and decision. The significance of their study lies in the fact that it takes into account gamification and other factors that may influence consumers' trust in digital commerce. Security & Transparency. This is a hint that a good shopping experience should make consumers feel secure about the platform and the transactions as well.

Wisedpanich, W. and Wittayakom, K. (2026), "A Structural Model of Purchase Intention of Generation Z Consumers in Thai Live Commerce: Gamification, Engagement, Trust and Social Proof", Journal of Research in Interactive Marketing, Vol. In their study they covered how gamification could be related to consumer engagement, trust and social proof. Findings of the study suggested that other consumer-related factors such as engagement and social proof might play mediating role in the relationship between gamification and purchase intention. Thus, the effect of gamification on purchase decisions should not be assumed to be a direct positive one in all circumstances, but may depend on the wider consumer and platform environment.

R. N., Mukthar, M. J. R. P. and (2026). Digital trust, ethical consumerism and gamification within Halal 4.0 cosmetics. This research is a new area in which gamification is discussed together with trust and ethical issues of digital consumption. Other factors such as the credibility of the platform, consumer values, and the type of products being advertized may affect consumers' reactions to gamification, these studies suggest.

Recent literature therefore suggests that gamification is evolving from a basic promotional tool to a broader digital engagement strategy that can overlap with personalisation, immersive technologies, consumer trust and social influence. The developments underline the importance of a structured evaluation of the individual gamification elements and their relevance for the purchase decision of the consumer.

2.7 Research Gap

The literature review shows that the gamification has been studied from several perspectives such as online consumer decision making, consumer motivation, purchase intention, e-commerce participation, brand loyalty, social interaction, impulse buying, repurchase behaviour and personalised digital experiences. Rewards, challenges, points, badges and leaderboards are key elements in gamification research, as demonstrated by previous studies (e.g. Tobón et al., 2020). Additional studies have been done to study the effect of intrinsic and extrinsic motivation, consumer engagement in mobile commerce games and the correlation between gamification and online purchase intention. Further research in 2024 and 2025 expanded the discussion to cover online shopping festivals, e-commerce platforms, brand engagement, live broadcasting, green purchasing and AI-driven personalisation. Most recent studies have been done on gamification in virtual reality shopping and live commerce, trust, social proof, platform reputation, security and transparency.

Despite these developments, there are some areas that require further investigation. First, previous research has been conducted on gamification through disparate individual elements and consumer outcomes, but not within a single integrated decision-making framework that evaluates a wider set of gamification factors. Second, monetary and non-monetary gamification features are often considered in different contexts, which creates a need for a systematic comparison of their relative importance. Third, although prior literature has investigated consumer engagement, purchase intention, loyalty and repurchase behaviour, organisations still need to understand which gamification elements should be given priority when designing digital marketing strategies. Fourthly, the literature emphasises the importance of rewards, points, achievements, personalisation, social interaction and instant feedback, but the relative ranking of these factors is a significant managerial question.

To overcome these gaps, the present study uses the Analytical Hierarchy Process (AHP) to identify and rank ten gamification factors affecting consumer purchase decisions. The factors chosen are Rewards and Incentives, Points and Scoring System, Badges and Achievements, Leaderboards and Competition, Challenges and Quests, Levels and Progression, Discounts and Cashback, Personalisation and Customisation, Social Interaction and Engagement, Feedback and Instant Gratification. The relative importance of these factors is systematically evaluated through pairwise comparisons and the calculation of priority weights. Thus, the study adds to the literature by offering a multi-criteria decision-making perspective to assist in explaining the prioritisation of gamification features in digital marketing and e-commerce strategies.

3. RESEARCH OBJECTIVES

1. To identify the main gamification factors that influence consumer purchase decisions.

2. To assess the relative importance of identified gamification factors using Analytical Hierarchy Process (AHP).

3. To rank the identified gamification factors based on the relative priority weights.

4. To identify the most important gamification elements for developing consumer-oriented marketing strategies.

3.1 Research Design

The research design is descriptive and analytical, aimed at identifying and prioritising the gamification factors that affect consumer purchase decisions. The main multi-criteria decision-making technique is selected as AHP.

3.2 Identification of Gamification Factors

Ten factors are identified from the literature: rewards and incentives; points and scoring system; badges and achievements; leaderboards and competition; challenges and quests; levels and progression; discounts and cashback; personalisation and customisation; social interaction and engagement; and feedback and instant gratification.

3.3 Analytical Hierarchy Process (AHP)

AHP (Saaty, 1980) is a structured decision-making method that uses pairwise comparisons to assess multiple criteria. Defining the objective and criteria, gathering judgements, computing priority weights and checking consistency are included.

3.4 Expert Selection and Data Collection Process

The proposed empirical design involves 13 experts with expertise in marketing, consumer behaviour, digital commerce and gamification. Purposive sampling is proposed. Each expert independently compares 10 factors in 45 pairwise comparisons. Hence, the total number of individual judgements is 13 x 45 = 585. 13 actual response matrices are to be used to construct the final consolidated matrix.

3.5 Saaty's Basic Scale

A nine-point scale is used. 1 = equal importance; 3 = moderate importance; 5 = strong importance; 7 = very strong importance; 9 = extreme importance 2,4,6,8 = intermediate values. When the second factor is more important, the reciprocal values are given.

3.6 Pairwise Comparison Matrix

For ten factors, a 10 × 10 reciprocal comparison matrix is constructed. The number of independent comparisons is $n(n-1)/2 = 10(9)/2 = 45$. The diagonal elements equal 1, and $a_{ji} = 1/a_{ij}$.

3.7 Aggregation of Expert Judgments

For 13 experts, each corresponding pairwise judgment is aggregated using $GM_{ij} = (a_{ij}(1) \times a_{ij}(2) \times \dots \times a_{ij}(13))^{(1/13)}$. The consolidated matrix is then used to calculate the priority weights.

3.8 Calculation of Priority Weights

Priority weights are calculated using the principal eigenvector method: $Aw = \lambda_{max} w$, where A is the pairwise comparison matrix, w is the priority vector and λ_{max} is the maximum eigenvalue. The weights are normalised so that their sum equals 1.

3.9 Consistency Ratio

The consistency index is $CI = (\lambda_{max} - n)/(n-1)$, and the consistency ratio is $CR = CI/RI$. For a ten-factor matrix, Saaty's RI is 1.49. A CR below 0.10 is generally considered acceptable.

4. DATA ANALYSIS AND RESULTS

4.1 Overview of Available AHP Results

The uploaded AHP-OS calculator output contains 45 pairwise comparisons and reports priority weights calculated using the principal eigenvector method. It reports a principal eigenvalue of 10.547 and a consistency ratio of 4.1%. The matrix represents the consolidated judgments of 13 experts. Accordingly, the results below are reported as the available calculator output.

4.2 Decision Matrix

The resulting weights are based on the principal eigenvector of the decision matrix:

Table 1: Decision Matrix

	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10
Rewards and Incentives	1	3	5	5	3	5	0.33	3	5	3
Points and Scoring System	0.33	1	3	3	3	3	0.2	2	3	2
Badges and Achievements	0.2	0.33	1	2	2	3	0.14	0.33	2	0.5
Leaderboards and Competition	0.2	0.33	0.5	1	2	2	0.14	0.33	2	0.5
Challenges and Quests	0.33	0.33	0.5	0.5	1	2	0.2	0.5	2	1
Levels and Progression	0.2	0.33	0.33	0.5	0.5	1	0.14	0.33	1	0.5
Discounts and Cashback	3	5	7	7	5	7	1	5	7	5
Personalisation and Customisation	0.33	0.5	3	3	2	3	0.2	1	3	2
Social Interaction and Engagement	0.2	0.33	0.5	0.5	0.5	1	0.14	0.33	1	0.5
Feedback and Instant Gratification	0.33	0.5	2	2	1	2	0.2	0.5	2	1

Source: Researcher's Calculation using AHP Priority Calculator

The pairwise comparison decision matrix was developed using the Analytical Hierarchy Process (AHP) to evaluate the relative importance of ten gamification factors influencing consumer purchase decisions. The matrix consists of ten criteria, namely Rewards and Incentives (G1), Points and Scoring System (G2), Badges and Achievements (G3), Leaderboards and Competition (G4), Challenges and Quests (G5), Levels and Progression (G6), Discounts and Cashback (G7), Personalisation and Customisation (G8), Social Interaction and Engagement (G9), and Feedback and Instant Gratification (G10). Each factor was systematically compared with the remaining factors using Saaty's fundamental scale of relative importance. The diagonal elements of the matrix were assigned a value of 1, indicating equal importance when a factor is compared with itself, while reciprocal values represent the inverse relationships between factors. The matrix reveals that Discounts and Cashback (G7) demonstrate particularly strong relative importance, receiving comparison values of 7 against Badges and Achievements (G3), Leaderboards and Competition (G4), Levels and Progression (G6), and Social Interaction and Engagement (G9). This suggests that direct monetary benefits are perceived as substantially more influential in shaping consumer purchase decisions than several non-monetary gamification features. Similarly, Rewards and Incentives (G1) exhibit considerable importance, with comparison values of 5 against Badges and Achievements (G3), Leaderboards and Competition (G4), Levels and Progression (G6), and Social Interaction and Engagement (G9). In contrast, Levels and Progression (G6) demonstrate comparatively lower importance, particularly against Discounts and Cashback (G7), as reflected by the reciprocal value of 0.14. The matrix also highlights the relative importance of Personalisation and Customisation (G8), which receives comparison values of 3 against Badges and Achievements (G3), Leaderboards and Competition (G4), Levels and Progression (G6), and Social Interaction and Engagement (G9). Overall, the pairwise comparisons suggest that financially rewarding gamification features, particularly Discounts and Cashback and Rewards and Incentives, are perceived as more influential in consumer purchase decisions than competition-oriented and progression-based features. The resulting decision matrix serves as the foundation for calculating the principal eigenvector, determining the priority weights, and establishing the final ranking of the identified gamification factors. Furthermore, the reported Consistency Ratio (CR) of 0.041 (4.1%) falls below the acceptable threshold of 0.10, indicating that the pairwise judgments exhibit an acceptable level of consistency and can be used for subsequent AHP analysis.

4.3 Priorities

These are the resulting weights for the criteria based on your pairwise comparisons:

Table 2: Priorities

Cat		Priority	Rank	(+)	(-)
G1	Rewards and Incentives	19.20%	2	6.70%	6.70%
G2	Points and Scoring System	11.00%	3	3.80%	3.80%
G3	Badges and Achievements	5.40%	6	2.30%	2.30%
G4	Leaderboards and Competition	4.40%	8	1.90%	1.90%
G5	Challenges and Quests	4.70%	7	1.50%	1.50%
G6	Levels and Progression	2.90%	10	0.80%	0.80%
G7	Discounts and Cashback	33.90%	1	12.70%	12.70%
G8	Personalisation and Customisation	9.20%	4	3.20%	3.20%
G9	Social Interaction and Engagement	3.00%	9	0.70%	0.70%
G10	Feedback and Instant Gratification	6.20%	5	1.80%	1.80%

Source: Researcher's Calculation using AHP Priority Calculator

The priority results obtained through the Analytical Hierarchy Process (AHP) indicate the relative importance of the ten identified gamification factors influencing consumer purchase decisions. The findings reveal that Discounts and Cashback (G7) emerged as the most influential factor, securing the highest priority weight of 33.9% and Rank 1. This suggests that consumers are more likely to be influenced by direct monetary benefits, such as discounts, cashback offers and financial savings, when making purchasing decisions. Rewards and Incentives (G1) secured the second position with a priority weight of 19.2%, indicating that reward-based benefits also play a significant role in encouraging consumer purchases. Points and Scoring System (G2) ranked third with 11.0%, highlighting the importance of point accumulation and scoring mechanisms in motivating consumer participation and purchase behaviour. Personalisation and Customisation (G8) occupied the fourth position with a weight of 9.2%, suggesting that personalised shopping experiences and customised offers contribute to consumer engagement and purchasing decisions. Feedback and Instant Gratification (G10) ranked fifth with 6.2%, reflecting the importance of immediate responses and instant rewards in enhancing the shopping experience. Similarly, Badges and Achievements (G3) secured the sixth position with 5.4%, followed by Challenges and Quests (G5) with 4.7%, and Leaderboards and Competition (G4) with 4.4%, ranking seventh and eighth, respectively. Social Interaction and Engagement (G9) received a priority weight of 3.0% and ranked ninth, while Levels and Progression (G6) recorded the lowest priority weight of 2.9%, securing the tenth position. These findings indicate that monetary incentives and tangible financial benefits are perceived as more influential in shaping consumer purchase decisions than social, competitive and progression-oriented gamification features. The AHP analysis was based on 45 pairwise comparisons, corresponding to the ten selected criteria. The principal eigenvalue was calculated as 10.547, and the eigenvector solution converged after five iterations with a delta value of 2.2×10^{-8}, indicating numerical convergence. Furthermore, the Consistency Ratio (CR) was found to be 4.1% (0.041), which is below the generally accepted threshold of 10%. This confirms that the pairwise comparison judgments demonstrate an acceptable level of consistency. Overall, the results establish Discounts and Cashback, Rewards and Incentives, and Points and Scoring System as the three leading gamification factors influencing consumer purchase decisions, whereas Levels and Progression, Social Interaction and Engagement, and Leaderboards and Competition have comparatively lower priority.

4.4 Consolidated Result:

The consolidated results graph illustrates the priority weights of the ten gamification factors influencing consumer purchase decisions, as determined through the Analytical Hierarchy Process (AHP).

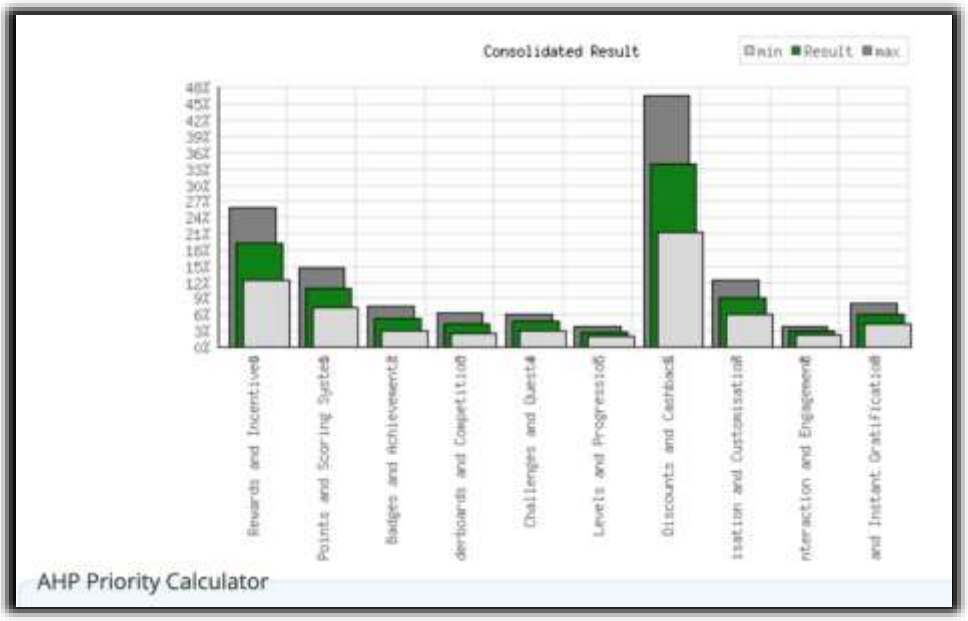


Figure 1: Consolidated Result

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Source: AHP Priority Calculator

The graph presents three categories: minimum values (grey), consolidated results (green), and maximum values (grey). The green bars represent the resulting priority weights of each factor, while the minimum and maximum bars indicate the range of variation in their respective values. The findings clearly demonstrate that Discounts and Cashback (G7) has the highest consolidated priority weight of approximately 33.9%, indicating that consumers place considerable importance on direct financial benefits, including discounts, cashback offers and monetary savings, while making purchasing decisions. Rewards and Incentives (G1) emerge as the second most influential factor, with a consolidated weight of 19.2%, highlighting the importance of reward-based mechanisms in motivating consumers. Points and Scoring System (G2) occupies the third position with 11.0%, suggesting that point accumulation and scoring mechanisms also contribute significantly to consumer engagement and purchase motivation. Similarly, Personalisation and Customisation (G8) records a consolidated weight of 9.2%, followed by Feedback and Instant Gratification (G10) with 6.2%. The remaining factors, namely Badges and Achievements (G3), Challenges and Quests (G5), Leaderboards and Competition (G4), Social Interaction and Engagement (G9), and Levels and Progression (G6), receive comparatively lower priority weights of 5.4%, 4.7%, 4.4%, 3.0%, and 2.9%, respectively. The graphical representation also highlights variations between the minimum, consolidated and maximum values, indicating differences in the relative importance assigned to individual gamification factors. Overall, the results suggest that consumers place greater emphasis on tangible financial benefits and reward-oriented features than on social interaction, competition and progression-based mechanisms. Thus, the graph reinforces the AHP findings that Discounts and Cashback, Rewards and Incentives, and Points and Scoring System are the three most influential gamification factors in shaping consumer purchase decisions.

4.5 Discussion of Results

The most important factor was discounts and cashback with a priority weight of 33.9%. This means that the direct financial benefits are of highest relative importance in the comparison matrix provided.

Next, rewards and incentives accounted for 19.2%, highlighting the importance of reward-based mechanisms such as loyalty benefits and promotional incentives.

Points and scoring systems were third at 11.0%. Thus, relatively high importance is attached to the quantifiable recognition for shopping activities.

Fourth was Personalisation and customisation with 9.2% saying individual shopping experiences are important.

Instant gratification and feedback was fifth at 6.2 percent. Badges and achievements came in sixth with 5.4% and challenges and quests came in seventh with 4.7%.

The eighth was leaderboards and competition (4.4%), the ninth was social interaction and engagement (3.0%) and the tenth was levels and progression (2.9%).

In general, the matrix places relatively more weight on monetary benefits, reward and points mechanisms than on social and progression elements. These are relative AHP priorities, not measured causal effects on actual purchasing.

4.6 Consistency Analysis

Particulars	Reported value
Number of criteria	10
Number of pairwise comparisons	45
Principal eigenvalue	10.547
Random Index	1.49
Consistency Ratio	0.041
CR in percentage	4.1%
Acceptable threshold	Below 10%
Consistency status	Acceptable

The consistency ratio of 4.1% is lower than the recommended threshold of 10%, indicating that the comparison matrix is consistent. This consistency result is valid for the matrix.

4.7 Analysis of Results

The results indicate that the highest relative priority is discounts and cashback, followed by rewards and incentives and points and scoring systems. The prominence of reward-oriented mechanisms is consistent with the wider gamification literature which identifies rewards and points as important mechanisms in online consumer environments. There is also a meaningful priority given to personalisation, reflecting the relevance of tailored digital experiences. Lower rankings for leaderboards, social interaction and progression does not mean that these elements are not effective. Their relevance may be dependent on the consumer segment and platform context. Wisedpanich and Wittayakom's (2026) recent live-commerce research also suggests that social proof could be an important pathway linking gamification and purchase intention.

5. IMPLICATIONS FOR MANAGEMENT

5.1 Focus on Financial Incentives

E-commerce organisations could consider discounts and cashback as major components of gamified shopping campaigns, while tracking their profitability and long-term customer value.

5.2 Enhance Reward Programs

Reward points, loyalty benefits and promotional incentives may be used to encourage repeat participation.

5.3 Evolution of Point-Based Systems

Digital platforms can implement point accumulation mechanisms for encouraging consumer interaction.

5.4 Personalised Marketing Strategies

Companies can tailor offers and shopping experiences to suit consumer tastes.

5.5 Immediate Feedback from Consumers

Instant notifications, reward confirmations and progress updates may improve the interactive shopping experience.

5.6 Selective Use of Competitive Factors

Leaderboards and social competitions can be added as per the preferences of the target consumer group.

6. IMPLICATIONS FOR THEORY

6.1 Theory of Self-determination

Self-Determination Theory explains the effect of autonomy, competence and relatedness on individual motivation. Gamification mechanisms such as badges, points, rewards and challenges may support these psychological needs and encourage consumers to participate.

6.2 Stimulus-Organism-Response Model

The Stimulus-Organism-Response framework explains how external stimuli affect internal psychological states and subsequent behavioural responses. For the objective of this study, rewards, points, badges, discounts and challenges are stimuli, enjoyment, motivation, engagement and perceived value are organism states, and purchase intention or purchasing behaviour is responses. AHP incorporates a prioritisation view by evaluating the relative importance of the identified stimuli.

7. LIMITATIONS AND FUTURE RESEARCH OPPORTUNITIES

- The AHP methodology is based on the subjective judgements of experts.
- The study considered ten selected gamification factors, but other mechanisms may also influence the purchasing behaviour.
- Consumer preferences may vary by age, income, shopping frequency and digital familiarity.
- The relative priority weights do not result in actual purchases.

• Fuzzy AHP can be used in future research to handle the uncertainty in expert judgements and AHP can be combined with structural equation modelling to test behavioural relationships.

8. CONCLUSION

This study examined the effect of gamification on consumer purchase decisions using the Analytical Hierarchy Process. Ten major gamification factors were identified and evaluated by pair wise comparisons. The AHP results indicate that discounts and cashback obtained the highest priority weight of 33.9%, followed by rewards and incentives at 19.2% and points and scoring systems at 11.0%. Fourth was personalisation and customisation, and fifth was feedback and instant gratification. Levels and progression had the lowest reported priority weight of 2.9 %. The consistency ratio of the comparison matrix is 4.1%. These results provide a preliminary relative ranking of gamification elements.

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