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From ad blindness to digital engagement: A systematic review of gamified mechanisms in online advertising

Thanakit Vongmahasetha[a] | **Suwicha Wittayakom**[a]

[a]School of Business Administration, Bangkok University, Pathum Thani, Thailand.

Abstract Digital advertising increasingly struggles to capture user attention as content saturation, multitasking behavior and habitual avoidance undermine the effectiveness of conventional formats. In highly cluttered digital environments, users frequently develop ad fatigue and ad blindness, whereby advertising content is ignored even when it is visually salient. In response, advertisers have adopted gamified and interactive mechanisms that emphasize user agency and experiential engagement. However, empirical evidence on the effectiveness of these mechanisms remains fragmented across platforms, formats and theoretical perspectives. This systematic review synthesizes sixteen empirical studies published between 2015 and 2025 to examine how gamified and interactive mechanisms influence attention, ad avoidance and engagement in online, mobile and social media advertising contexts. Drawing on the stimulus–organism–response framework, flow theory and the Persuasion Knowledge Model, the review integrates findings across advergames, interactive mobile ads, augmented reality lenses, skippable formats and task-based units such as questvertising. The synthesis indicates that mechanisms involving challenge, narrative involvement, microtask completion, user choice, interactivity and perceptual immersion foster positive cognitive and affective states, including intrinsic motivation and perceived autonomy. These states enhance attention allocation, disrupt habitual avoidance and reduce persuasion resistance. The findings further show that design features such as game–product congruence, balance between challenge and skill and augmented reality novelty support favorable brand outcomes, including recall, attitude and engagement intentions. Nevertheless, important gaps remain. Most studies rely on short-term experimental designs, provide limited direct measurement of ad blindness and offer insufficient cross-platform and cross-cultural comparisons. In addition, the evidence base is constrained by the relatively small number of empirical studies available for synthesis. Despite these limitations, the review offers an integrated perspective on how interactive mechanisms transform advertising from passive exposure into meaningful user engagement and provides guidance for designing user-centered digital advertising strategies that address attention scarcity, ad fatigue and avoidance.

Keywords: gamified advertising, interactive advertising, digital advertising effectiveness, ad avoidance, user engagement, PRISMA

1. Introduction

Digital advertising has become a central component of contemporary marketing ecosystems, as businesses across sectors increasingly rely on data-driven, mobile-first and algorithmically optimized channels to reach consumers in highly competitive environments (Prakash et al., 2024; Ramachandran et al., 2025). The rapid expansion of smartphones, social media platforms and immersive technologies such as augmented reality has reshaped not only how brands communicate but also how individuals attend to and process digital content. Global advertising spending continues to shift steadily toward digital formats, driven by personalization capabilities, scalable targeting and the integration of interactive media within everyday consumer routines (Kumar & Gupta, 2016; Singha, 2024). As a result, digital advertising now operates within an attention-scarce environment in which competition is not only between brands, but also between content streams that continuously vie for limited cognitive resources. For advertisers, these developments present both unprecedented opportunities for engagement and growing challenges associated with declining user attention.

Despite advancements in digital media technology, consumers are now routinely exposed to hundreds of advertising stimuli per day. The abundance of in-feed banners, autoplay videos and sponsored posts has intensified perceptions of clutter and intrusiveness, which undermines the user experience and reduces advertising effectiveness (Brajnik & Gabrielli, 2010; Jankowski et al., 2016). These conditions have strengthened habitual avoidance strategies, including rapid scrolling, selective attention, ad skipping and the development of ad blindness, where users overlook advertising content even when it is visually prominent (Szladovics, 2023; Tayeb et al., 2024). Ad fatigue and cognitive overload further diminish responsiveness, especially

on mobile platforms where interaction requires continuous screen manipulation (Tayeb et al., 2024). Importantly, ad blindness reflects not only a failure of perceptual attention but also a learned coping response to repeated exposure, making it particularly resistant to traditional exposure-based advertising strategies. Research on interactive ad avoidance shows that users actively reposition or minimize ads to maintain focus on self-selected content, revealing a behavioral–technological dynamic unique to mobile environments (Morimoto, 2017).

Against this backdrop, the advertising industry has begun to explore gamified and interactive mechanisms that leverage user agency and digital interactivity to counter declining attention. These formats include advergames, augmented reality advertising lenses, playable ads, skippable interactive videos and emerging task-based units such as questvertising (Dolinski & Grzyb, 2025). From a business perspective, such formats are attractive because they offer opportunities for deeper engagement, longer exposure times and more memorable brand experiences than traditional display ads do. From a technological perspective, they capitalize on advancements in real-time rendering, mobile sensors, AR toolkits and personalized recommendation systems, enabling advertising experiences that are more immersive, adaptive and user-directed. Rather than interrupting consumption, these formats reposition advertising as an activity that users can explore, control or complete.

Theoretically, gamified and interactive advertising formats draw on mechanisms that can shift user processing styles from passive exposure to experiential engagement (Vashisht, 2023). Flow theory suggests that balancing challenge and user ability can generate focused attention and immersive states conducive to deeper processing (Jin, 2012). The Persuasion Knowledge Model posits that when persuasive intent is masked within enjoyable or task-based interactions, consumers may exhibit lower resistance and more favorable responses (Eisend & Tarrahi, 2022; Keck et al., 2008). Within the stimulus–organism–response framework, interactive elements such as user choice, narrative involvement, microtasks and sensory immersion can elicit positive cognitive and affective states that improve attention and engagement while reducing avoidance (Eisend & Tarrahi, 2022; Islam & Rahman, 2017). Together, these frameworks suggest that interactivity and gamification influence advertising effectiveness not merely through message exposure, but through the psychological states they activate during the interaction.

Although empirical studies show promising outcomes—such as enhanced brand recall, increased attention allocation, increased engagement intentions and reduced avoidance—research remains fragmented across platforms, mechanisms and theoretical models (Hughes et al., 2019; Islam & Rahman, 2017; Mou et al., 2025; Vander Schee et al., 2020). Studies vary widely in their operationalization of engagement, measurement of attention and conceptualization of interactivity, making it difficult to draw integrated conclusions about how these mechanisms function across digital environments. Moreover, most studies rely on small-scale experiments, short-term designs or platform-specific contexts, limiting the generalizability of existing findings. Notably, few reviews have systematically integrated attention-related constructs such as ad blindness with gamification-focused explanations grounded in multiple psychological frameworks.

Given the accelerating adoption of interactive formats by advertisers, the growing reliance on AR and immersive media and the widespread concerns about ad fatigue and avoidance, there is a clear need for a comprehensive synthesis of the evidence. This systematic review addresses this gap by the following:

1. identifying and categorizing gamified and interactive mechanisms used in digital advertising.
2. examine their effects on attention, ad avoidance and engagement across online, mobile and social media contexts.
3. analyzing the psychological and behavioral pathways underpinning these effects via frameworks such as S–O–R, Flow and PKM.
4. highlights methodological gaps and proposes directions for future research.

By integrating insights across previously disconnected empirical domains, this review contributes to advertising research, human–technology interaction and digital marketing practice, offering guidance for designing user-centered advertising experiences that respond effectively to the challenges of ad blindness, ad fatigue and declining attention in the digital economy.

2. Literature Review

2.1. Digital advertising and the contemporary attention environment

Digital advertising has evolved into a multiplatform, data-driven ecosystem shaped by the growth of mobile devices, social media platforms and programmatic delivery systems (Rao, 2021; Yang, 2018). These technological developments have intensified competition within the attention economy, particularly in mobile-first regions where users encounter frequent advertising exposures across feeds, video streams and application interfaces. Although digital channels offer precise targeting and scalable reach, the continual expansion of advertising inventory contributes to perceived clutter and intrusiveness, triggering irritation, cognitive overload and psychological reactance (Nikolaevich & Leonidovna, 2025; Rejón-Guardia & Martínez-López, 2013). Users increasingly cope with these pressures through behavioral avoidance strategies, including rapid scrolling, habitual skipping and selective attention. Over time, these behaviors develop into automated patterns such as ad

blindness, in which users consciously or unconsciously ignore visible advertising content (Belanche et al., 2017b; Szladovics, 2023). Mobile interfaces further reinforce interactive avoidance, as users manipulate screen elements to push ads out of their focal region. These patterns illustrate that contemporary digital environments often undermine advertisers' ability to capture and sustain meaningful attention.

While this stream of research provides a detailed account of attention decline and avoidance behaviors in digital environments, it largely focuses on describing the problem rather than explaining how emerging advertising formats might actively disrupt or reverse these entrenched patterns.

2.2. Gamification and gameful design in advertising

Gamification has emerged as a promising response to attention decline in digital environments (Wiley et al., 2021). Defined as the application of game-derived elements such as rewards, challenges, goals and feedback to nongame contexts, gamification seeks to shift advertising interactions from passive exposure to voluntary engagement (Rahman et al., 2018). Within advertising, gameful design manifests in advergames, playable ad units, challenge-based formats and task-oriented mechanisms that promote intrinsic motivation through enjoyment, curiosity and self-directed interaction (Sarkar et al., 2022). Empirical research highlights that game–product congruence, narrative involvement and optimal challenge levels increase (Vashisht, 2023). Newer approaches such as quest-based advertising, including questvertising, demonstrate that simple microtask structures can meaningfully increase cognitive engagement and reduce avoidance (Dolinski & Grzyb, 2025). These findings suggest that gameful design can effectively counteract habituated filtering by transforming exposure into active processing, provided that the design elements align with user motivation and do not impose excessive cognitive load.

However, much of the gamification literature prioritizes engagement and brand outcomes, with comparatively limited attention to how gameful mechanisms interact with deeper attention-related processes such as habitual avoidance or ad blindness.

2.3. Interactive advertising and user-controlled formats

Interactive advertising emphasizes user participation through choice, personalization and interface engagement (Giombi et al., 2022). Such formats leverage advancements in digital technology—such as mobile sensors, AR toolkits, real-time rendering and dynamic content delivery—to create immersive and adaptive experiences (Li & Abu Bakar, 2025; Wang et al., 2019). Examples include rich media mobile ads, augmented reality filters, interactive carousels and skippable video ads that allow users to exercise control over whether or how they engage with promotional content. Perceived autonomy and personalization often reduce psychological resistance, reframing ads as self-relevant rather than externally imposed (Yeo et al., 2025). AR lenses, for instance, enhance engagement through novelty, playfulness and social value sharing (Alimamy & Jung, 2025). However, interactivity also presents a paradox: while it can improve engagement, it simultaneously empowers users to disengage, as seen in skipping patterns shaped by habits, time pressure and prior exposure. This duality positions interactivity as both an enabler and inhibitor of attention, depending on context and user motivation (Nguyen et al., 2020).

This dual role suggests that interactivity cannot be evaluated solely as a technological feature, but must be understood as a psychological process shaped by user motivation, perceived control and attention regulation.

2.4. Theoretical findings

2.4.1. Stimulus–organism–response framework

The S–O–R model provides a unifying foundation for understanding how advertising stimuli influence internal psychological states and subsequent behaviors. Intrusive or repetitive formats function as stimuli that evoke negative organismic states such as irritation, reactance or fatigue, which then drive avoidance behaviors. Conversely, gamified or interactive elements can evoke positive states such as enjoyment, curiosity and involvement, enhancing attention and engagement (Jacoby, 2002; Lee & Chen, 2021).

2.4.2. Flow theory

Flow theory explains how individuals achieve deep immersion when task challenges and personal skills are balanced (Nakamura & Csikszentmihalyi, 2012). Gamified advertisements leverage challenge, feedback and goal structures to guide users toward flow-like experiences that increase attentional focus, reduce distractions and promote deeper message processing (Tews & O'Hora, 2025).

2.4.3. Persuasion knowledge model

The Persuasion Knowledge Model describes how consumers activate coping strategies when they identify with persuasive intent (Friestad & Wright, 1994). By embedding promotional messages within playful, task-based or personalized

experiences, gamified and interactive formats may temporarily suppress persuasion knowledge, allowing for more favorable cognitive and emotional responses (Ham & Nelson, 2019).

Taken together, the stimulus–organism–response framework, flow theory and the Persuasion Knowledge Model offer complementary yet fragmented explanations of how gamified and interactive advertising influences attention, engagement and resistance. Prior studies tend to apply these perspectives independently, leaving limited theoretical integration across cognitive, motivational and persuasive processes.

2.5. Research gap

Although gamified and interactive advertisements show strong potential for addressing attention deficits, the literature remains fragmented. Research varies widely in how it conceptualizes and measures engagement, attention and avoidance, resulting in inconsistencies across studies (Belanche et al., 2017a; Kelly et al., 2020). Ad blindness is underexamined in gamified contexts, and few studies compare mechanisms across mobile, social and web platforms despite their different interaction dynamics (Szladovics, 2023; Szladovics & Palmer, 2024). The evidence from Asian and emerging markets remains limited, and longitudinal insights into the durability of engagement effects are rare. These gaps highlight the need for a systematic and integrative review that unifies empirical findings and clarifies the psychological and technological pathways through which gamified and interactive mechanisms influence attention, avoidance and engagement.

These limitations point to the need for a systematic and integrative review that synthesizes fragmented empirical evidence and clarifies how gamified and interactive mechanisms operate across attention, avoidance and engagement processes in digital advertising.

3. Materials and Methods

This study adopted a systematic literature review approach to synthesize empirical evidence on gamified and interactive mechanisms in digital advertising. All procedures followed the PRISMA 2020 guidelines to ensure methodological rigor, transparency and reproducibility (Page et al., 2021). The review involved database selection, search strategy development, application of eligibility criteria, multistage screening, quality assessment, data extraction and thematic synthesis, allowing the review to progress from broad identification to focused analytical integration.

3.1. Database selection

Scopus was selected as the primary database because of its extensive coverage of peer-reviewed research in advertising, marketing, psychology, communication and digital media. Its interdisciplinary scope is particularly relevant for advertising research, which spans behavioral, technological and managerial domains.

To enhance the robustness of the search strategy, the review was extended to the Web of Science Core Collection, which provides complementary coverage of high-quality journals in communication, media studies, and related social science disciplines. The same keyword combinations, publication period (2015–2025), and eligibility criteria were consistently applied across both databases to ensure methodological comparability.

In addition, Google Scholar was used for backward and forward citation tracking to identify influential studies linked to seminal work in the field. This combined approach balanced database rigor with conceptual relevance, supporting comprehensive yet focused evidence identification.

3.2. Search strategy

A structured search strategy was constructed using combinations of keywords related to gamification, interactive advertising, digital formats and attention or engagement outcomes. The terms included gamification, advergame, gameful design, interactive advertising, online advertising, digital advertising, mobile advertising, ad avoidance, ad blindness, ad fatigue, attention and engagement. The search was limited to English-language peer-reviewed journal articles published between 2015 and 2025 to capture contemporary developments in mobile, social and immersive advertising technologies. Additional articles were identified through citation tracking of seminal studies on advergames, augmented reality advertising and interactive formats, allowing the identification of conceptually relevant studies that may not have been retrieved through keyword searches alone. Searches were conducted primarily in Scopus and extended to the Web of Science Core Collection in November 2025 using identical keyword combinations and eligibility criteria. Records retrieved from both databases were merged prior to duplicate removal and screening. This strategy prioritized conceptual precision over sheer volume to ensure alignment with the review objectives.

3.3. Inclusion and exclusion criteria

Eligibility was determined via predefined inclusion and exclusion criteria (Table 1). Studies were included if they empirically examined gamified or interactive mechanisms in online, mobile or social media advertising and reported user-

response outcomes such as attention, avoidance, engagement, recall or attitudes. Studies outside advertising contexts, nonempirical publications and works lacking measurable outcomes were excluded.

This filtering process reflects an outcome-oriented approach, ensuring that only studies capable of informing attention and engagement mechanisms were retained. Journal ranking metrics were not used as exclusion criteria; methodological robustness was evaluated at a later stage.

Table 1 Inclusion and exclusion criteria.

Criteria Type	Description
Inclusion	Empirical studies on online, digital, mobile, or social media advertising; studies examining gamified or interactive advertising mechanisms; studies reporting outcomes related to attention, avoidance, engagement, recall, or attitude; peer-reviewed journal articles; publications between 2015–2025; studies using experimental, quasiexperimental, survey, or behavioral data.
Exclusion	Conceptual or theoretical papers; editorials or dissertations; studies unrelated to advertising contexts; studies using games solely for education or health without an advertising component; studies lacking measurable attention, engagement, or persuasion outcomes; duplicated or inaccessible full texts.

Source: Authors' synthesis following PRISMA 2020.

3.4. Screening procedure

The screening proceeded in three stages. All records were imported into a reference management system, and duplicates were removed. Title screening excluded studies outside digital or interactive advertising. Abstract screening assessed the presence of gameful or interactive components and relevant advertising-related outcome variables (e.g., attention, engagement, recall, or attitude). Full-text screening verified the empirical nature, methodological quality, and conceptual alignment of the results with the review objectives. Screening was conducted independently by two rounds of review, and any ambiguities were resolved through discussion. Sixteen studies met all eligibility criteria and were included in the final synthesis, reflecting the application of strict and focused screening criteria rather than a lack of research activity in the broader domain.

3.5. Quality assessment

The methodological quality of the included studies was assessed using the Mixed Methods Appraisal Tool (MMAT), which is appropriate for systematic reviews involving heterogeneous empirical designs. The assessment focused on the clarity of the research design, the appropriateness of outcome measures, the transparency of sampling procedures, and the coherence between data analysis and interpretation.

No studies were excluded solely on the basis of quality; however, variations in methodological quality were considered when interpreting the strength and limitations of the synthesized evidence. Table 2 presents the quality appraisal of the included studies.

Table 2 Quality appraisal of included studies.

Author (Year)	Study design	Quality level
Vashisht & S. (2015a)	Experiment	High
Vashisht & S. (2015b)	Experiment	High
Vashisht & S. (2017)	Experiment	High
Vashisht & Pillai (2017)	Experiment	High
Vashist (2018)	Experiment	High
Su et al. (2016)	Experiment	High
Belanche et al. (2017b)	Experimental / Behavioral	High
Schmidt & Maier (2022)	Experiment	High
Dolinski & Grzyb (2025)	Experiment	High
Hu & Wise (2024)	Experiment	High
Fanjul-Peyro et al. (2019)	Survey / Comparative	Moderate
Dodoo & Youn (2021)	Survey	Moderate
Guo et al. (2025)	Survey	Moderate
Al-Ababneh et al. (2025)	Survey	Moderate
Kornfield et al. (2025)	Qualitative	Moderate
Donthu et al. (2022)	Conceptual review	Moderate

Source: Authors' synthesis of studies retrieved from Scopus and Web of Science Core Collection; quality appraisal conducted using the MMAT framework.

3.6. Data extraction

Data extraction followed a structured protocol covering publication details, advertising formats, gamified or interactive mechanisms, theoretical foundations, research design, sample characteristics, measurement approaches and principal findings. Particular attention was given to how studies defined and operationalized attention, avoidance and engagement owing to substantial variability across advertising contexts. This approach ensured consistency in data coding and facilitated meaningful comparison across heterogeneous study designs. The extracted dataset supported cross-study comparisons of mechanisms such as advergames, AR lenses, skippable ads and interactive mobile formats.

3.7. Data synthesis approach

A thematic synthesis approach was used to integrate findings across studies. Given the diversity of advertising formats, measurement methods and theoretical perspectives, quantitative meta-analysis was deemed unsuitable. Thematic synthesis enabled the identification of recurring mechanisms; the mapping of these mechanisms to attention, avoidance and engagement outcomes; and the interpretation of underlying cognitive and motivational pathways. The stimulus–organism–response framework, flow theory and Persuasion Knowledge Model informed the analytical process and supported the development of an integrative conceptual understanding, allowing findings from disparate empirical contexts to be synthesized within a common analytical structure. Figure 1 illustrates the PRISMA-based screening and selection process applied in this review, from initial database identification to the final set of included studies.

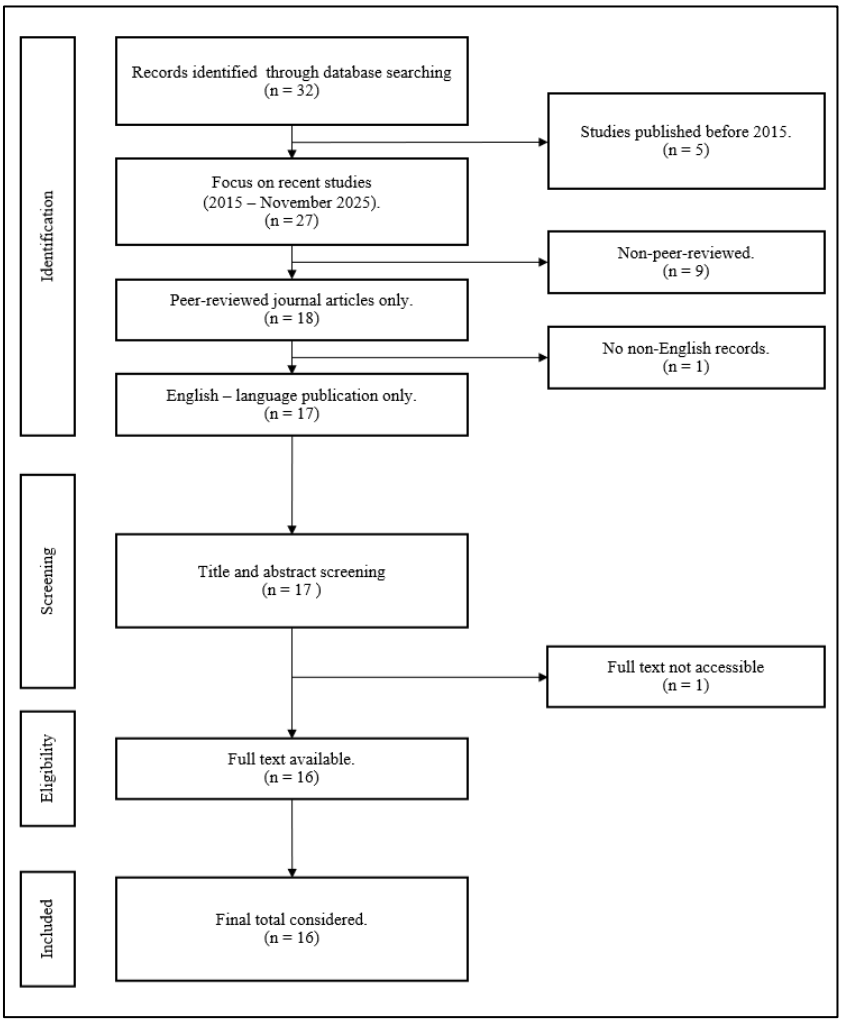

Figure 1 PRISMA flow diagram.

4. Results

Rather than reporting findings on a study-by-study basis, the results are synthesized to compare outcomes across advertising formats, gamified mechanisms, and contextual settings. This section presents the synthesized findings from the sixteen empirical studies included in the review. The results begin with an overview of publication patterns and advertising formats, followed by an analysis of gamified and interactive mechanisms. Subsequent sections explain how these mechanisms

influence attention, avoidance, engagement and persuasion outcomes and conclude with a thematic integration that identifies recurring psychological pathways across formats.

4.1. Descriptive overview

The sixteen included studies reflect a diverse yet convergent body of empirical work spanning from 2015--2025. Most studies originated from Asia and Europe, regions where mobile-first usage, data-driven advertising and interactive media adoption are deeply embedded within the digital economy. Experimental and quasiexperimental designs dominated the methodological landscape, reflecting the field's emphasis on short-term cognitive and behavioral responses to interactive formats. Several studies have also incorporated survey data or behavioral logs to capture naturalistic interaction patterns, particularly in mobile and social media environments. Although cross-cultural comparisons were not the primary focus of the included studies, an indicative pattern suggests that studies conducted in Asian contexts more frequently emphasized brand prominence and persuasion outcomes, whereas studies in Western contexts tended to focus on user control, autonomy, and experiential engagement.

A wide spectrum of advertising formats was investigated. Advergames appeared most frequently as controlled settings for testing game-based mechanisms, whereas mobile rich media ads, augmented reality lenses, skippable video ads and quest-based units represented alternative implementations of interactivity. Typical samples consisted of young adults or university students who align with the primary demographic for interactive digital content. Table 3 summarizes the descriptive characteristics of the included studies, capturing variation in formats, mechanisms, contexts and measured outcomes.

4.2. Gamified and interactive mechanisms identified

Across the literature, several categories of mechanisms have been implemented to encourage user participation and strengthen advertising impact.

Game-based mechanisms include rewards, challenges, goal pursuit and brand integration within gameplay environments. These mechanisms appeared prominently in advergame studies and contributed to experiential processing by embedding brand elements within play activities (Vashisht & S, 2015a, 2015b, 2017; Vashisht & Pillai, 2017; Vashist, 2018).

Interactive interface mechanisms include actions such as clicking, tapping, dragging and exploring. These mechanisms are common in mobile and web formats and typically increase perceived control, relevance and cognitive engagement (Hu & Wise, 2024; Schmidt & Maier, 2022; Su et al., 2016).

Augmented reality mechanisms rely on visual immersion, novelty and sensory stimulation. The AR lenses used in social media created playful and aesthetic experiences that captured attention and extended viewing time (Dodoo & Youn, 2021).

User control and personalization mechanisms allow users to choose or customize the content they encounter. These features reduce perceived intrusiveness and encourage self-directed engagement (Hu & Wise, 2024; Su et al., 2016).

Task-oriented mechanisms require users to complete microtasks, such as answering questions or performing simple actions before accessing content. These mechanisms promote deliberate attention and reduce automatic scrolling or skipping (Dolinski & Grzyb, 2025). Table 4 presents an organized summary of these mechanism clusters and their associated outcomes.

4.3. Mechanisms influencing attention and ad avoidance

Interactive and gameful mechanisms have demonstrated strong effects on attention and avoidance behaviors across all formats (Hu & Wise, 2024; Schmidt & Maier, 2022; Su et al., 2016).

In advergames, high levels of game involvement increase attention to embedded brand cues. When users are immersed in gameplay, brand elements become part of the cognitive focus and are processed more deeply, which improves recall (Vashisht & S, 2015a, 2017; Vashist, 2018).

Interactive mobile ads showed that simple interface actions such as tapping or sliding increased attentional focus. These actions help interrupt habitual avoidance, especially in mobile environments where disengagement tends to occur quickly (Guo et al., 2025).

Task-oriented formats such as questvertising were particularly effective in reducing avoidance. Users were required to focus on the content to complete a task, which prevented automatic skipping or fast scrolling. This approach also disrupted ad blindness by demanding active cognitive engagement (Dolinski & Grzyb, 2025).

In contrast, skippable video formats revealed that interactivity can sometimes facilitate avoidance. When users feel time pressure or are accustomed to skipping ads, the skip option encourages withdrawal rather than engagement (Belanche et al., 2017b).

AR formats consistently generated strong attentional effects. The novelty and sensory richness of AR features captured user attention more effectively than static or low-interactivity formats did and encouraged longer viewing times (Dodoo & Youn, 2021).

Table 3 Descriptive characteristics of the included studies.

No.	Study Title (Shortened)	Year	Country	Advertising Format	Mechanisms Examined	Key Outcomes
1	Are you able to recall the brand? (Vashisht & Pillai, 2017)	2017	Spain	Advergame	Brand prominence, game involvement, persuasion knowledge	Brand recall, brand attitude
2	Consumer interaction and privacy (Guo et al., 2025)	2021	China	In-feed interactive lead-gen ad	Perceived interactivity, perceived control, vulnerability	Self-disclosure intention
3	Effect of nature of the game on ad-persuasion (Vashisht & S, 2017)	2020	India	Advergame	Game nature, congruence, need for cognition	Ad persuasion, attitude
4	Effect of product involvement and brand prominence (Vashist, 2018)	2018	India	Advergame	Product involvement, brand prominence	Recall, attitude
5	Effects of brand placement strength (Vashisht & S, 2015a)	2019	India	Advergame	Brand placement strength, game involvement, experience	Recall
6	eGamers' influence in brand advertising strategies (Fanjul-Peyro et al., 2019)	2022	Spain & Korea	E-gaming advertising context	Gamer behavior, involvement, community influence	Attitude toward brand strategies
7	Impact of nature of advergames (Vashisht & S, 2015b)	2016	India	Advergame	Game nature, congruence, persuasion knowledge	Recall, attitude
8	Interactive Ad Avoidance on Mobile Phones (Schmidt & Maier, 2022)	2022	Germany	Mobile display ad	Interactive avoidance behaviors, scrolling position	Attention, recall, avoidance
9	Questvertising as a new format (Dolinski & Grzyb, 2025)	2025	Poland	Task-based interactive ads	Quest completion, active response	Recall, brand associations, reduced avoidance
10	Snapping and chatting away (Snapchat AR lens) (Dodoo & Youn, 2021)	2021	USA	AR advertising	Playfulness, entertainment, social interaction	Engagement, purchase motivation
11	The impact of formats and interactive modes (Su et al., 2016)	2016	Taiwan	Mobile rich media ads	Playfulness, user control, connectedness	AIDA effectiveness, engagement
12	Disentangling Control and Personalization (Hu & Wise, 2024)	2020	USA	Online display ads	Ad choice, personalization	Attitude, attention, perceived control
13	The Role of Digital Advertising for Organic Products (Al-Ababneh et al., 2025)	2023	Jordan	Social media ads	Interactivity, cultural relevance	Engagement, conversion
14	User adaptation to interactive advertising formats (Belanche et al., 2017b)	2017	Spain	Skippable video ads	Exposure, habit, time urgency	Skipping behavior, decision time
15	Designing Digital Mental Health Interventions (Kornfield et al., 2025)	2021	UK	Digital interactive system	Interactivity, engagement design	User needs, engagement (nonadvertising)
16	Journal of Advertising 50-year Review (Donthu et al., 2022)	2021	Global	Conceptual review	Research trends, themes	Field evolution (nonempirical)

Source: Authors' synthesis of the included studies retrieved from Scopus and Web of Science Core Collection.

Table 4 Mechanistic clusters and associated outcomes.

Mechanism Cluster	Mechanisms	Advertising Formats	Psychological Processes	Outcomes	Studies
Game-Based Mechanisms	Rewards, challenge, gameplay involvement, game–product congruence, brand prominence	Advergames	Immersion, involvement, experiential processing	Attention (P), Recall (P), Attitude (P), Resistance (N)	1, 3, 4, 5, 7
Interactive Interface Mechanisms	Click, tap, drag, selection, exploration	Mobile ads, online display ads	Perceived control, relevance, autonomy	Attention (P), Avoidance (N), Attitude (P)	8, 11, 12
User Control and Personalization	Ad choice, personalized content, selectable formats	Display ads and mobile ads	Autonomy, reduced persuasion resistance	Engagement (P), Attitude (P), Reactance (N)	11, 12
Task-Based Mechanisms	Quest completion, microtask, answer-to-proceed	Questvertising	Cognitive activation, deliberate focus	Avoidance (N), Recall (P), Engagement (P)	9
Augmented Reality (AR) Mechanisms	Playfulness, immersion, novelty, social interaction	AR lenses (Snapchat)	Sensory engagement, enjoyment	Engagement (P), Purchase intention (P)	10
Behavioral Adaptation Mechanisms	Habit, time urgency, prior exposure	Skippable video ads	Automatic coping, avoidance learning	Skipping behavior (P), Attention (N)	14
General Interactivity and Engagement Design	System interactivity, user-driven engagement design	Interactive digital environments*	Engagement architecture	Engagement (P)	15
Field-Level Themes	Gamification, branding, signaling	Conceptual review*	Theoretical mapping	Not applicable	16

Source: Authors' synthesis of the included studies retrieved from Scopus and Web of Science Core Collection. *Note:* P = positive, N = negative.

4.4. Influence on engagement and persuasion outcomes

Gameful and interactive mechanisms also contributed significantly to engagement and persuasion-related outcomes.

Game-based formats produce strong engagement through enjoyment, challenge and narrative involvement. These experiential conditions increase receptivity to brand messages and encourage deeper processing (Vashisht & S, 2015a, 2015b, 2017; Vashisht & S. Pillai, 2017; Vashist, 2018).

Interactive advertising formats enhance engagement through feelings of control and relevance (Hu & Wise, 2024; Su et al., 2016). When users can personalize or choose the content presented to them, they show more positive attitudes and stronger intentions to interact with the brand (Guo et al., 2025; Hu & Wise, 2024).

Augmented reality formats produce high levels of sensory engagement. Users often described AR interactions as enjoyable or novel, which increased their willingness to consider the advertised product. Immersive experiences also appeared to soften resistance to persuasion by shifting focus toward exploration (Dodoo & Youn, 2021).

Task-based formats generate engagement through the satisfaction of completing a small goal. This sense of accomplishment strengthened attitudes toward the brand and reinforced the memory of the promoted content (Dolinski & Grzyb, 2025).

4.5. Integrated psychological pathways across mechanisms

Three recurring pathways were observed across gamified and interactive formats. First, user participation shifted from passive to active. When advertisements require users to make choices, perform actions or complete tasks, attention increases naturally, and avoidance tendencies weaken (Dolinski & Grzyb, 2025; Hu & Wise, 2024; Su et al., 2016; Vashisht & S, 2015a, 2015b, 2017; Vashisht & Pillai, 2017; Vashist, 2018).

Second, motivational and experiential states influence engagement. Mechanisms that elicit curiosity, enjoyment or immersion create favorable conditions for deeper cognitive processing and flow-like involvement (Dodoo & Youn, 2021; Su et al., 2016; Vashisht & S, 2015b, 2017; Vashisht & Pillai, 2017).

Third, resistance to persuasion was reduced. Mechanisms that presented advertising as playful, exploratory or self-directed lowered the activation of persuasion knowledge and improved openness to brand messages (Guo et al., 2025; Hu & Wise, 2024).

These pathways help explain why different mechanisms, despite variation in format, produced similar effects across studies.

4.6. Summary of mechanisms and remaining gaps

Despite the strong potential of gameful and interactive mechanisms to increase attention and engagement, several gaps have been identified.

Few studies have examined ad blindness directly or assessed how interactive mechanisms influence habitual filtering (Belanche et al., 2017b; Schmidt & Maier, 2022).

Cross-platform comparisons are limited, making it difficult to generalize findings across mobile, social and web environments (Belanche et al., 2017b; Schmidt & Maier, 2022; Su et al., 2016).

Research from emerging markets has remained scarce, despite the rapid adoption of interactive formats in these regions (Al-Ababneh et al., 2025; Guo et al., 2025).

Most evidence was derived from short-term experimental designs, leaving the long-term effects of interactive mechanisms insufficiently explored (Dolinski & Grzyb, 2025; Vashisht & S, 2015a, 2015b, 2017; Vashisht & Pillai, 2017; Vashist, 2018).

These gaps suggest the need for broader methodological approaches and deeper theoretical integration to fully understand how gameful and interactive mechanisms shape user responses in digital advertising environments.

5. Discussion

This review synthesizes findings from sixteen empirical studies examining gamified and interactive mechanisms in digital advertising contexts. The collective evidence demonstrates that gameful, interactive and immersive formats address key challenges related to attention scarcity, ad fatigue and habitual avoidance (Belanche et al., 2017b; Rejón-Guardia & Martínez-López, 2013; Schmidt & Maier, 2022; Tayeb et al., 2024) while also strengthening engagement and persuasion outcomes (Hu & Wise, 2024; Su et al., 2016; Vashisht & S, 2015a, 2015b, 2017; Vashisht & Pillai, 2017; Vashist, 2018). The following discussion integrates these findings with relevant theories, extends them through contemporary digital ecosystem perspectives and outlines practical and research implications.

5.1. Synthesis of key insights

The reviewed studies reveal that gamified and interactive mechanisms reshape the attention process more fundamentally than traditional advertising models assume. Digital ad fatigue and habitual avoidance emerge largely from users' defensive responses to intrusive or irrelevant ads (Belanche et al., 2017a; Rejón-Guardia & Martínez-López, 2013; Schmidt & Maier, 2022; Tayeb et al., 2024). Studies indicate that mechanisms involving user action, sensory exploration or meaningful choice disrupt these automated avoidance scripts by introducing self-driven motivation into the encounter (Dolinski & Grzyb, 2025; Hu & Wise, 2024; Su et al., 2016; Vashisht & S, 2017; Vashisht & Pillai, 2017).

Advergame studies highlight that gameplay involvement, challenge and game–product congruence facilitate deeper cognitive processing and improved recall (Vashisht & S, 2015a, 2015b, 2017; Vashisht & Pillai, 2017; Vashist, 2018). These effects arise because brand cues become embedded within task-related focus rather than being perceived as external persuasion attempts (Vashisht & S, 2015b; Vashisht & Pillai, 2017).

Interactive mobile advertising extends this pattern. Even minimal interface actions such as tapping or choosing content versions enhance perceived control and relevance (Hu & Wise, 2024; Su et al., 2016), which reduces reflexive avoidance (Belanche et al., 2017b; Schmidt & Maier, 2022). Users pay more attention to content when they feel that they are actively shaping the experience (Guo et al., 2025; Su et al., 2016).

Augmented reality contributes a distinct pathway. AR-based advertising engages attention not through challenge or goal pursuit but through sensory intensity, embodied interaction and aesthetic novelty (Dodoo & Youn, 2021; Li & Abu Bakar, 2025). These characteristics enable AR to compete with surrounding visual clutter by providing perceptual salience that naturally draws attention (Dodoo & Youn, 2021).

Task-based formats such as questvertising further demonstrate that requiring simple microtasks creates deliberate cognitive checkpoints that interrupt habitual scrolling or skipping (Dolinski & Grzyb, 2025), thereby increasing recall and engagement (Dolinski & Grzyb, 2025; Keck et al., 2008).

Overall, the findings provide broader insight: active user involvement, whether instrumental or exploratory, fosters attention more effectively than exposure-based strategies do (Tews & O'Hora, 2025; Vashisht, 2023). Digital engagement increases when advertisements offer structure, agency or sensory stimulation that aligns with the user's goals or curiosity. This shift from passive exposure to active decision-making directly contributes to reducing ad blindness in digital ecosystems (Szladovics & Palmer, 2024).

Importantly, ad blindness can be understood as arising from two distinct but interacting mechanisms. From a bottom-up perspective, attention failure occurs when repetitive or visually homogeneous advertising stimuli lose salience due to

habituation and perceptual clutter, resulting in diminished sensory capture. From a top-down perspective, ad blindness reflects an intentional, goal-driven avoidance strategy, whereby users actively suppress advertising content to preserve cognitive resources and task focus. The reviewed studies suggest that gamified and interactive mechanisms operate across both levels. Novel sensory features, immersive visuals and augmented reality elements disrupt bottom-up habituation by restoring perceptual salience, while user control, task engagement and playful interaction soften top-down resistance by reframing advertising encounters as self-directed and experiential rather than intrusive. This dual-pathway disruption helps explain why interactive formats are more effective than traditional exposure-based advertising in mitigating ad blindness within contemporary digital environments (Belanche et al., 2017b; Schmidt & Maier, 2022; Szladovics, 2023; Szladovics & Palmer, 2024).

5.2. Theoretical contributions

Integrating the findings with established theories provides a multifaceted explanation for why gamified and interactive mechanisms succeed where traditional formats fail.

The stimulus–organism–response framework offers a holistic perspective (Islam & Rahman, 2017; Jacoby, 2002). Interactive and game-based stimuli evoke internal states such as enjoyment, involvement, curiosity and perceived autonomy. These organismic states have been consistently associated with increased attention and reduced avoidance (Su et al., 2016; Vashisht & S, 2015b, 2017; Vashisht & Pillai, 2017). Importantly, the theory emphasizes that outcomes arise from the psychological states activated by the design features, not the features alone (Jacoby, 2002).

Flow theory deepens this understanding. Several studies have shown that when tasks incorporate optimal levels of challenge and skill, users experience immersive engagement that sustains attention and supports message processing (Jin, 2012; Nakamura & Csikszentmihalyi, 2012). AR formats follow a related pathway, using sensory immersion and perceptual novelty to create flow-like attention without relying on task difficulty (Dodoo & Youn, 2021; Li & Abu Bakar, 2025). Both approaches shift cognitive resources toward the advertising experience.

The Persuasion Knowledge Model provides a complementary lens. This explains why individuals resist ads when they recognize manipulative intent (Friestad & Wright, 1994; Ham & Nelson, 2019). Interactive and personalized designs reduce the activation of persuasion knowledge by reframing advertisements as self-directed experiences (Guo et al., 2025; Hu & Wise, 2024). When users exercise choice or engage in playful interaction, they perceive the encounter as less intrusive, which facilitates more positive attitudes and greater engagement (Hu & Wise, 2024; Su et al., 2016).

Together, these frameworks reveal that gamified and interactive formats reshape the psychological basis of attention by activating experiential, autonomous or immersive processing modes that weaken resistance and promote deeper engagement.

5.3. Practical implications

This review has several implications for advertisers, platform designers and digital creative agencies. First, advertising strategies should prioritize formats that encourage active involvement. Forced exposure and repetitive impressions do little to counter habitual avoidance, whereas even small forms of interaction increase attention and persuasion outcomes (Hu & Wise, 2024; Su et al., 2016; Vashisht & S, 2017; Vashisht & Pillai, 2017; Vashist, 2018).

Second, user control is a strategic asset. Mobile environments amplify avoidance behaviors, yet studies consistently show that providing minimal control, such as selecting ad variants or interacting with elements, reduces perceived intrusiveness (Belanche et al., 2017b; Guo et al., 2025; Hu & Wise, 2024; Su et al., 2016). Advertisers should integrate interactivity in ways that enhance autonomy rather than add superficial complexity.

Third, alignment between game mechanics and brand identity is crucial. Game–product congruence strengthens processing depth and attitudinal outcomes, indicating that gamification should support the brand narrative rather than serve as a detached entertainment layer (Vashisht & S, 2015a, 2015b, 2017).

Fourth, augmented reality is particularly effective, with audiences oriented toward immersive, shareable experiences. AR provides sensory novelty that reframes ads as engaging content rather than persuasive messaging, making it suitable for high-involvement or experiential campaigns (Dodoo & Youn, 2021; Li & Abu Bakar, 2025).

Finally, task-based formats provide scalable opportunities for microengagement. Quest-type interactions offer lightweight but meaningful involvement that can be embedded across mobile or social placements without requiring extensive development resources (Dolinski & Grzyb, 2025).

These insights also have implications for platform-level design. Interactive advertising can be optimized through adaptive interfaces, AI-driven personalization, attention prediction algorithms and real-time content adjustment, which aligns well with the technological priorities of digital ecosystems (Nguyen et al., 2020; Rao, 2021; Wang et al., 2019).

5.4. Research gaps and future directions

There are limited direct measurements of ad blindness. Most studies rely on recall or behavioral proxies instead of attention-tracking or neural measures, which reduces precision (Schmidt & Maier, 2022; Szladovics, 2023; Szladovics & Palmer, 2024). Future work should incorporate eye-tracking, biometric or computational attention analytics.

Cross-platform comparisons are scarce. Given that mobile, social and web environments differ in interaction rhythms and cognitive load, comparative designs are essential for determining mechanism-specific versus platform-dependent effects (Belanche et al., 2017b; Schmidt & Maier, 2022; Su et al., 2016).

Longitudinal evidence is limited. Most studies analyze immediate responses, leaving unanswered questions about wearout, novelty decay and long-term habituation. Research should examine how engagement evolves across repeated exposures (Dolinski & Grzyb, 2025; Vashisht & S, 2015a, 2015b, 2017; Vashisht & Pillai, 2017; Vashist, 2018).

Cultural differences remain underexplored. Variations in privacy norms, playfulness orientations and interactivity preferences may moderate the effectiveness of gamified mechanisms. Comparative multicountry studies would improve generalizability (Al-Ababneh et al., 2025; Fanjul-Peyro et al., 2019; Guo et al., 2025).

Finally, few studies have examined combinations of mechanisms. Real-world ads frequently integrate task structures, personalization, narrative and AR features simultaneously. Investigating synergistic or competing effects among these mechanisms would produce a more realistic understanding of interactive persuasion in complex digital ecosystems (Dodoo & Youn, 2021; Dolinski & Grzyb, 2025; Hu & Wise, 2024; Su et al., 2016).

5.5. Conceptual integration

An integrated interpretation of the evidence indicates that gamified and interactive mechanisms create a psychological transition from defensive attention to exploratory engagement (Hu & Wise, 2024; Su et al., 2016; Vashisht & S, 2015b, 2017; Vashisht & Pillai, 2017). When advertisements provide opportunities for action, sensory immersion or personalized choice, users shift toward internally motivated processing modes (Dodoo & Youn, 2021; Dolinski & Grzyb, 2025; Hu & Wise, 2024; Li & Abu Bakar, 2025; Su et al., 2016). This shift reduces cognitive filtering, weakens avoidance scripts and supports deeper message processing (Belanche et al., 2017b; Schmidt & Maier, 2022; Szladovics & Palmer, 2024).

The collective findings suggest a conceptual model in which interactive elements function as catalysts that reposition users within the advertising encounter. Rather than capturing attention through external pressure, these mechanisms create environments in which attention emerges naturally from user motivation and curiosity (Jin, 2012; Nakamura & Csikszentmihalyi, 2012; Tews & O'Hora, 2025; Vashisht, 2023). Such environments diminish resistance, support richer engagement and provide a viable strategy for overcoming ad blindness in saturated digital ecosystems (Rejón-Guardia & Martínez-López, 2013; Schmidt & Maier, 2022; Szladovics, 2023; Szladovics & Palmer, 2024).

This reframes gamification and interactivity not as supplementary features but as foundational strategies for aligning digital advertising with contemporary user behavior. They represent a structural response to the mismatch between traditional exposure-based advertising and the active, agency-rich styles of interaction that define the modern digital environment (Jacoby, 2002; Nguyen et al., 2020; Yang, 2018).

6. Conclusions

This systematic review examined how gamified and interactive mechanisms in digital advertising shift user responses from inattentiveness and avoidance toward deeper engagement. Across sixteen empirical studies published between 2015 and 2025, the findings consistently show that mechanisms rooted in gameful design, interactive interfaces and immersive media change the motivational foundations of digital attention. Rather than functioning as surface-level enhancements, these mechanisms restructure the advertising encounter by fostering voluntary participation, increasing cognitive and affective involvement and reducing resistance to persuasion. Evidence from advergames, mobile interactions, augmented reality lenses, quest-based units and skippable video environments demonstrates that engagement increases when advertisements are experienced as activities to navigate instead of interruptions to dismiss.

This review advances the theoretical understanding by integrating insights across several frameworks. The stimulus–organism–response perspective clarifies how interactive and game-related features evoke internal states that facilitate attention and approach behavior. Flow theory explains why mechanisms involving challenge, feedback or sensory immersion create conditions for sustained involvement. The Persuasion Knowledge Model shows how user agency, choice and playful framing reduce defensive processing and encourage the open evaluation of brand messages. Together, these frameworks indicate that the effectiveness of gamified and interactive advertising arises from the psychological states in which these mechanisms activate, not from the mechanics themselves. This integrative view positions gamification as a strategic means for reshaping user–advertiser relationships in digital environments characterized by ad fatigue and habitual avoidance.

The findings have several implications for practitioners. Advertisers should prioritize mechanisms that enable meaningful user action, perceptual novelty or self-directed control, as even simple interactions can disrupt avoidance patterns and improve recall. Playful or immersive formats such as advergames and augmented reality experiences are particularly impactful in high-competition attention environments and among younger audiences. Personalization and relevance further

strengthen engagement by reducing perceived intrusiveness. Platforms can support these outcomes by integrating microinteraction opportunities and adaptive delivery systems into their advertising architecture, allowing user experience design and advertising performance to reinforce one another.

Despite strong evidence, important gaps remain. Most studies rely on short-term laboratory designs that capture immediate reactions but do not track how engagement persists over time. Cross-platform comparisons are limited, leaving it unclear whether certain mechanisms operate similarly across mobile, social and web environments. Cultural variation in interactivity preferences and resistance patterns remains underexamined. Future research should adopt longitudinal, multiplatform and cross-cultural designs to produce a fuller understanding of gamified advertising. Attention-tracking and behavioral analytics can also clarify how mechanisms disrupt ad blindness at a perceptual level. Additionally, real-world advertising often combines several mechanisms simultaneously, yet academic studies typically isolate one mechanism at a time. Research on synergistic or competing effects among multiple interactive features would bring academic models closer to contemporary practice.

In summary, this review shows that gamified and interactive mechanisms offer a viable and theoretically grounded pathway for addressing ad blindness in today's digital ecosystem. By activating intrinsic motivation, supporting autonomy and encouraging purposeful interaction, these mechanisms shift advertising from a passive stimulus to an engaging experience. This transformation has significant implications for advancing both theoretical models of digital persuasion and practical strategies for designing advertising that aligns with user expectations for meaningful, interactive and user-centered content.

7. Declarations

7.1. Ethical considerations

Not applicable.

7.2. Use of artificial intelligence (AI)

The authors declare that the generative artificial intelligence (AI) tool ChatGPT was used exclusively for language editing and/or grammatical improvement. The use of AI did not influence the scientific content, study design, data analysis, data interpretation, results, or conclusions of the manuscript. Full responsibility for the content remains with the authors.

7.3. Conflict of interest

The authors declare that they have no conflicts of interest.

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