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Scroll, Pause, Purchase: Exploring the Connection between Unconscious Browsing Behaviors, Emotional Arousal, and Impulsive Buying in Short-Form Commerce

Md. Tahsin Sami
BBA Marketing, North South University

Abstract:
Short-form commerce combines continuous content exposure with social interaction, recommendation systems, product demonstration, and immediate transaction functions. This review develops an evidence-based model linking unconscious browsing, emotional arousal, and impulsive buying across short-video, social-commerce, and livestreaming contexts. The model treats scrolling as a behavioural stimulus that increases exposure and reduces deliberate stopping, while platform cues, influencer performance, reviews, scarcity, and interface design shape the user's cognitive-affective state. Evidence from the selected studies indicates that hedonic browsing, social presence, flow, customer inspiration, pleasure, and arousal commonly mediate the relationship between environmental cues and purchase responses.

The evidence base includes surveys, structural equation models, eye-tracking, panel data, mixed-methods research, neural-network analysis, and multimodal behavioural prediction. Survey-based studies generally support indirect pathways from vividness, interactivity, personalization, influencer credibility, and scarcity to urge to buy through affective or experiential states. Yet cognitive routes remain relevant: perceived usefulness, information quality, trust, reviews, and algorithmic consistency can shape browsing, resonance, perceived value, and purchase responses . The resulting model therefore specifies parallel affective and cognitive routes rather than treating emotion as the sole explanation. It also incorporates impulsivity, self-control, product type, viewer engagement, and persuasion knowledge as boundary conditions. The review identifies a persistent gap between reported purchase intention and observed conversion, and it calls for temporal, multimodal designs that connect scrolling behaviour to arousal and transaction outcomes.

Keywords: *Unconscious Browsing; Emotional Arousal; Impulsive Buying; Short-Form Commerce; Social Presence; Hedonic Browsing .*

I. INTRODUCTION

Short-form video platforms make continuous content exposure a central feature of the user experience, with continued watching supporting platform engagement and advertising revenues. In commerce settings, this viewing environment intersects with product presentation and purchase opportunities, while research has documented impulsive buying in both mobile browsing and short-video contexts. These developments raise a consequential question: how does browsing that continues with limited deliberate interruption relate to users' emotional arousal and their propensity to purchase impulsively?

Prior studies identify affective and experiential pathways linking commercial cues to purchase responses, including presence and customer inspiration in short-video commerce and hedonic browsing and flow in social-media shopping. Yet impulse buying is also associated with cognitive responses, indicating that affect alone may not account for the process. This leaves a need to connect patterns of ongoing browsing more directly to emotional arousal and purchase outcomes, while accounting for the cognitive processes that may operate alongside them.

This review develops an evidence-based framework for examining the relationship among unconscious browsing, emotional arousal, and impulsive buying across short-form, social-commerce, and livestreaming settings. It synthesizes evidence on platform and social cues, affective and cognitive mechanisms, and potential boundary conditions to clarify how browsing may translate into purchase responses.

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Short-Form Commerce as an Entertainment, Social, and Transactional Environment

Short-form commerce differs from conventional online shopping because product discovery occurs within a stream of entertainment, social interaction, and personalized recommendation. Users may encounter a product while seeking amusement, information, social connection, or relief from routine activities rather than while pursuing a defined purchase. Research on short-video use shows that cognitive consumption values influence satisfaction and dependence, which in turn predict continuous watching intention [1]. This finding places commercial exposure within an attention process sustained by repeated content consumption rather than by a discrete search episode. The commercial message is therefore embedded in an ongoing sequence of videos, comments, demonstrations, and platform prompts.[2]

The same environment permits immediate movement from exposure to evaluation and transaction. Livestreaming adds real-time speech, viewer messages, social cues, product presentation, and trading functions, while short-video platforms add sound-on audiovisual design, rapid transitions, and algorithmic selection. Affordance-based research links visibility, expressiveness, guided shopping, and trading functions with social presence and immersion, which are then associated with impulse purchase [3]. Research on TikTok marketing videos similarly links entertainment, perceived usefulness, and aesthetic design with perceived enjoyment and impulsive purchase intention [4]. These findings indicate that commerce is integrated into media use rather than positioned outside it.

Sociality further changes the meaning of product information. Influencers and streamers communicate through self-disclosure, authenticity, credibility, interaction, and emotional expression, while viewers observe comments, purchases, recommendations, and audience reactions. Parasocial interaction predicts perceived enjoyment and urge to buy in social commerce [5], and trust in branded influencer posts mediates associations between influencer, message, and media credibility and the urge to buy [6]. In livestreaming, the product can appear simultaneously as an object of evaluation, a topic of collective attention, and a prompt for participation. This configuration makes the transition from watching to purchasing less dependent on a consciously planned shopping task.[7]

The Unresolved Link Between Unconscious Browsing, Emotional Arousal, and Impulse Buying

The phrase **unconscious browsing** should not imply that users lack awareness of the screen or the product. It refers more narrowly to browsing that is automatic, continuous, weakly goal-directed, or maintained without a deliberate decision to continue. Existing studies measure related processes through continuous watching intention, browsing, flow, telepresence, immersion, and viewing frequency rather than through a common behavioural construct [1], [8], [9]. This measurement diversity limits direct comparison. A user may scroll because content is entertaining, because recommendations reduce search effort, because social cues sustain attention, or because stopping has become less salient. Each route may produce exposure, but the psychological consequences need not be identical.

Emotional arousal offers a plausible bridge between exposure and action. Product videos, scarcity messages, audiovisual cues, social presence, and influencer performance can generate excitement, pleasure, inspiration, admiration, or urgency. Studies on livestreaming report that affective intensity predicts the urge to buy more directly than perceived risk [10], while research on short-video product presentation identifies arousal and pleasure as mediators between external stimuli and impulse buying among Generation Z respondents [11]. These results support an affective account, but they do not establish that arousal is always the first or strongest mechanism. Reviews, information quality, usefulness, trust, and perceived value can also influence browsing and purchase responses through cognitive routes [12], [13].

The central unresolved issue is temporal. Most studies use cross-sectional questionnaires that ask respondents to reconstruct browsing, emotion, and purchase intention after exposure. Such designs can estimate associations and indirect effects, but they cannot show whether scrolling precedes arousal, whether arousal precedes an urge, or whether a pre-existing impulse-buying tendency produces all three reports. Minute-level data, eye-tracking, panel observations, and segment-level behavioural data begin to address sequence and attention allocation [14], [15], [16]. A synthesis must therefore distinguish evidence for association, mediation, and temporal ordering.[17]

Research Questions, Conceptual Contributions, and Scope of the Evidence Base

This review addresses four questions. First, which browsing patterns and platform stimuli are associated with immediate purchase responses in short-form commerce? Second, how do arousal, pleasure, inspiration, flow, presence, and emotional contagion connect exposure with the urge to buy? Third, when do cognitive processes, including usefulness, trust, perceived value, reviews, and algorithmic consistency, supplement or compete with affective explanations? Fourth, how do product type, impulsivity, self-control, viewer engagement, persuasion knowledge, and user characteristics modify these pathways?[18]

The review makes three conceptual contributions. It first treats scrolling as an exposure process with behavioural properties, including continuity, viewing frequency, repeated presentation, and reduced stopping opportunities. It then specifies an organism layer with separable affective states, cognitive evaluations, and experiential states rather than collapsing them into a single latent construct. Finally, it distinguishes immediate responses, such as urge and purchase intention, from completed purchase behaviour. This distinction matters because several studies examine intention or urge, whereas fewer observe transactions directly [19], [20].

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The evidence base consists of 50 selected papers addressing short-video commerce, livestreaming, social commerce, mobile browsing, influencer marketing, interface design, reviews, and neuromarketing. The scope is deliberately broad because short-form commerce draws on mechanisms that predate any single platform. The review does not claim that all forms of scrolling are commercial, that all arousal is positive, or that every impulsive purchase is irrational. Instead, it maps converging and competing mechanisms, identifies differences in measurement and design, and prepares a multimodal framework for testing the scroll-to-purchase sequence.[21]

II. LITERATURE REVIEW

Literature Review: Psychological and Platform Mechanisms of Short-Form Impulse Buying

Stimulus–Organism–Response Theory, Customer Inspiration, and Emotional Contagion

The **stimulus–organism–response (S-O-R) framework** provides the most common organizing structure in the reviewed literature. Stimuli include platform affordances, product presentation, time pressure, social cues, influencer characteristics, reviews, interface features, and promotional signals. The organism includes perceived enjoyment, pleasure, arousal, trust, flow, social presence, telepresence, inspiration, and vulnerability. The response includes urge to buy, purchase intention, impulsive purchase behaviour, or completed transactions. Studies using S-O-R consistently report that environmental cues are associated with purchase responses through intervening psychological states, although the relevant state differs across contexts [22], [23], [24].

The framework becomes more precise when combined with **customer inspiration theory**. Inspiration distinguishes being inspired by content from being inspired to act. In short-video marketing, social, co-presence, and physical presence predict impulse purchase intention, with customer inspiration mediating these associations [25]. Real-time interactivity similarly connects responsiveness and personalization with inspiration, delight, and the urge to buy, while idea-shopping motivation strengthens the association between interactivity and being inspired by content [26]. These findings suggest that arousal is not simply a physiological reaction to stimulation. It may be part of a directional process in which content changes what consumers imagine, want, and feel able to do.[27]

Emotional contagion adds a social transmission mechanism. Streamer similarity, attractiveness, professionalism, and interactivity predict pleasure, with anchor attractiveness receiving the highest importance in an artificial neural-network analysis of the studied predictors [28]. Celebrity performance can also transmit pleasure, arousal, admiration, and emotional trust to viewers, with product differences observed across cosmetics, clothing, and food [29]. The evidence supports a distinction between direct cue effects and socially mediated affect. Viewers may respond to the product itself, to the presenter's emotional display, or to the perceived emotions of other viewers.

The S-O-R model nevertheless risks treating all stimuli as additive and all organisms as interchangeable. A time-pressure cue may produce urgency, whereas a review may produce confidence or perceived value. A streamer's warmth may create social presence, whereas a vivid product demonstration may create telepresence. The same response, such as an urge to buy, can therefore arise from distinct paths. Research combining pleasure, arousal, perceived uncertainty, social cues, and media cues reports parallel and reverse mediation, with emotional variables exerting stronger influence than perceived uncertainty in the examined model [24]. This supports a differentiated S-O-R architecture rather than a single emotional mediator.

Hedonic Browsing, Flow, Presence, and the Cognitive–Affective Organism

Hedonic browsing describes browsing pursued for enjoyment, stimulation, or experiential value, while utilitarian browsing is directed toward information or task completion. In mobile commerce, portability, visual appeal, and interpersonal influence affect the two browsing forms differently; hedonic browsing directly predicts the urge to buy, whereas utilitarian browsing operates indirectly through hedonic browsing [30]. Online reviews show a related pattern: both utilitarian and hedonic value increase browsing, which then predicts urge and impulse buying, with high-impulsiveness consumers placing greater emphasis on hedonic value [12]. These findings position browsing as an organism-linked activity rather than as a neutral interval between product exposure and evaluation.[31]

Flow provides an experiential explanation for continued attention. Flow involves absorption, reduced awareness of competing activity, and a sense that the activity is intrinsically rewarding. Among Instagram users, hedonic browsing predicts flow, while flow predicts cognitive and affective shopping experiences and directly predicts online impulse buying [8]. In livestreaming, social presence and telepresence predict trust and flow, which then relate to impulsive buying [32]. Virtual-streamer research extends this model by linking interactivity, entertainment, social presence, and telepresence with flow, and flow with trust and continuous watching intention [33].

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Presence has several analytically distinct forms. **Social presence** concerns the felt presence of the streamer, other viewers, or the platform; **co-presence** concerns sharing the shopping situation with others; and **physical presence** or telepresence concerns the vividness of the product or mediated environment. Short-video evidence reports positive associations between all three forms of presence and impulse purchase intention, with social and co-presence stronger than physical presence [25]. Other evidence is less uniform: broadcaster and streamer presence predict pleasure and arousal, while viewer presence does not predict those states in one minute-level study [14]. Differences may reflect the endpoint, the operationalization of presence, or the distinction between perceived audience size and actual social interaction.[31]

Cognitive processes remain embedded in this affective environment. Perceived usefulness predicts perceived enjoyment in livestreaming, but usefulness does not directly predict urge to buy in one S-O-R model [22]. Information quality, variety, navigability, price attributes, trust propensity, and self-confidence can predict impulse buying directly or through utilitarian and hedonic browsing [13]. The cognitive-affective organism should therefore be represented as parallel and connected states. Information can increase confidence, confidence can permit pleasurable browsing, and pleasure can reduce deliberative stopping without eliminating cognitive evaluation.

Algorithmic Recommendations, Influencer Cues, Social Presence, and Interface Design

Platform mechanisms structure which stimuli users encounter and how quickly they encounter them. Research on AI-driven content consistency separates information, image, and presence consistency. Information and image consistency predict cognitive resonance, while presence consistency predicts emotional resonance; cognitive resonance then predicts impulse buying, with platform stickiness moderating the relationship between emotional resonance and engagement [34]. This evidence suggests that recommendation quality may work through both recognition and emotion. Personalization can make content seem relevant, while consistency can reduce interpretive effort and support continued viewing.[35]

Influencer cues provide a second source of structured persuasion. Credibility, message credibility, media credibility, authenticity, sentiment, observational learning, self-disclosure, and interaction can shape trust or parasocial relationships, which then relate to the urge to buy [6], [20], [36]. Persuasion knowledge moderates the trust-to-urge relationship, indicating that consumers do not respond identically to sponsored content [6]. Social interaction content also has a nonlinear association with purchasing in livestreams: excessive interaction may reduce product-focused attention even while supporting gift-giving [37]. Influencer effects are therefore conditional on content form, audience interpretation, and the balance between social and product attention.

Interface and sensory design regulate attention and arousal. Eye-tracking evidence shows that herding messages and interaction text capture exogenous attention, but interaction text can distract from the product while herding messages can create positive spillover; endogenous product attention predicts purchase intention [15]. Interface design, live atmosphere, visual appeal, perceived arousal, and engagement have also been linked through mediating pathways to impulse purchase [38]. Visual framing evidence adds a boundary condition: functional frames are associated with engagement and sales, contextual frames with sales, and social frames with engagement but lower sales, while frequent framing transitions reduce engagement and sales [39]. Attention capture is consequently not equivalent to effective persuasion.

The literature can be summarized as a layered mechanism:

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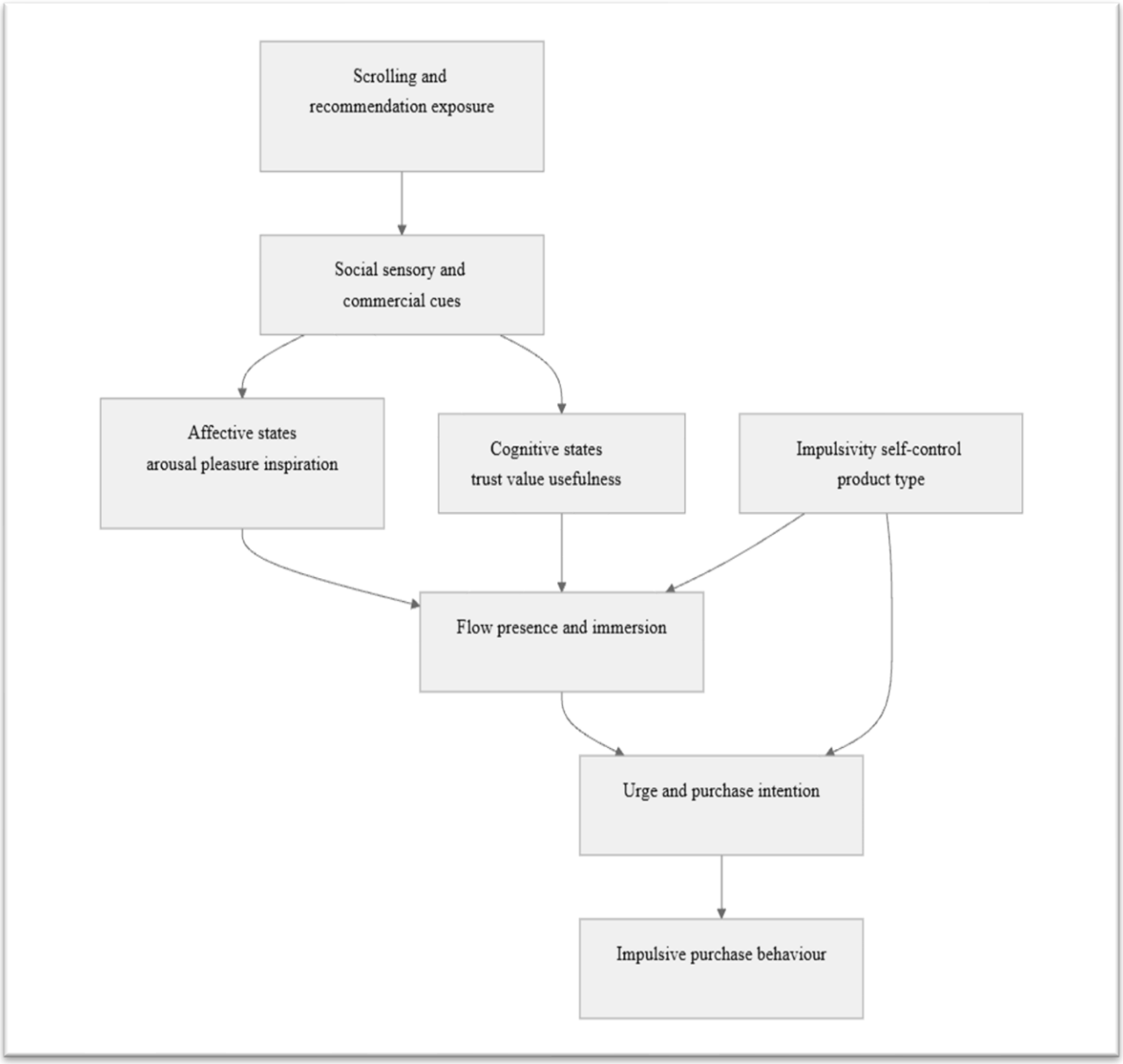

Diagram 1

This model motivates a methods architecture that can separate exposure, internal state, intention, and observed action.

Methods: Multimodal Evidence Mapping and Measurement Architecture

Corpus Construction, Thematic Coding, and Cross-Study Comparison of the 50 Selected Papers

The review uses an evidence-mapping design for the 50 selected papers. Inclusion is defined by substantive attention to short-form video, livestreaming, social commerce, mobile browsing, influencer commerce, interface cues, or neuromarketing measures connected to impulse buying, purchase intention, continuous watching, arousal, flow, presence, or related mechanisms. Papers are coded for context, population, design, sample size, predictor, organism variable, outcome, moderator, estimation method, and whether the endpoint is intention, urge, self-reported behaviour, or observed purchase. This approach prevents a survey estimate of purchase intention from being treated as equivalent to a transaction record.[40]

The coding scheme separates four analytical domains. The first is **browsing and exposure**, including continuous watching, viewing frequency, hedonic browsing, utilitarian browsing, attention allocation, immersion, and average watch time. The second is **stimulus structure**, including recommendation consistency, product presentation, visual and sound cues, reviews, scarcity, time pressure, social interaction, influencer attributes, and interface design. The third is **organism state**, including arousal, pleasure, emotional intensity, inspiration, flow, presence, telepresence, trust, perceived value, uncertainty, and vulnerability. The fourth is **response**, including urge to buy, purchase intention, impulsive buying intention, self-reported behaviour, gift-giving, search, conversion, or product purchase.

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Cross-study comparison emphasizes design rather than citation frequency. The corpus includes questionnaire-based PLS-SEM and covariance-based SEM, experiments, eye-tracking, fixed-effects count regression, mixed-methods inquiry, artificial neural networks, field panel data, and computer-vision analysis. The following table illustrates the heterogeneity that the synthesis retains.

Study focus	Sample or data basis	Method	Main endpoint
Short-video live commerce and vulnerability	411 consumers	PLS-SEM	Impulse purchase
Social presence in livestreaming	267 respondents	Survey and structural model	Urge to buy
Social cues and attention	Within-subject eye-tracking experiment	Generalized linear mixed-effects model	Attention and purchase intention
Douyin live speech	537 live streams	Fixed-effects negative binomial regression	Purchasing and gift-giving
Shopee video and Generation Z	438 respondents	PLS-SEM	Impulse buying
Streamer nonverbal cues	4,600 segments from 546 sessions	Computer vision and mediation analysis	Purchase behaviour

The table shows why pooled numerical synthesis is inappropriate at this stage. Samples range from individual respondents to thousands of observed video segments, and endpoints range from intention to purchase behaviour. The review therefore compares directional findings, mediating structures, moderators, and temporal capacity rather than manufacturing a common effect size.

Operationalizing Browsing, Arousal, and Impulsive Buying Across Behavioral, Survey, and Neuromarketing Data

Browsing is operationalized at three levels. Self-report measures capture hedonic and utilitarian browsing, continuous watching intention, viewing frequency, and perceived immersion. Behavioural measures include watch time, repeat viewing, scrolling continuity, attention allocation, search, and product interaction. Segment-level data can connect presentation features with average watch time and purchase behaviour, as demonstrated in research using automated measures of streamer nonverbal cues [16]. These measures should be retained as related but nonidentical indicators because intention to continue watching is not the same as observed scrolling or completed viewing.

Arousal is measured primarily through self-reported affective intensity, excitement, perceived arousal, pleasure, emotional resonance, and anticipated emotions. The distinction between arousal and pleasure is necessary because several studies find separate pathways: external stimuli can raise arousal without raising pleasure, while both states can mediate impulse buying [11]. Emotional contagion studies add admiration, emotional trust, and pleasure, whereas customer-inspiration studies capture inspired-by and inspired-to states [26], [29]. A multimodal design should supplement these scales with facial, gaze, physiological, or neural indicators when available, while avoiding the assumption that any single signal directly represents subjective emotion.[41]

Impulsive buying is divided into **urge**, **intention**, **self-reported behaviour**, and **observed conversion**. Urge is an immediate motivational response and is often the dependent variable in S-O-R studies. Purchase intention is more distal and can remain unrealized. Self-reported impulse buying records retrospective behaviour, while transaction logs or product-purchase records provide the strongest behavioural endpoint in the reviewed designs. Eye-tracking research demonstrates that attention to product and anchor can be separated from exogenous attention captured by social cues [15]. A multimodal architecture should therefore model attention as a process indicator rather than as proof of purchase.

The neuromarketing component is exploratory rather than universal. EEG and eye-tracking can be fused through preprocessing, feature extraction, and classification to distinguish buy from not-buy choices; one multimodal model reported 84.01% accuracy and 83% precision for its prediction task [42]. Those values describe model performance in that study, not a general estimate of human purchase predictability. They also do not establish that the measured neural or gaze features cause impulsive buying. The appropriate use of such data is to test whether temporal attention and affective signals improve prediction beyond self-report and platform behaviour.

Analytical Strategy: Mediation, Moderation, Structural Models, and Temporal Sequence Analysis

The primary analytical model specifies stimuli as exogenous variables, browsing and platform exposure as proximal processes, cognitive-affective states as organism variables, and purchase outcomes as responses. Mediation tests estimate indirect paths from cues to urge or purchase through arousal, pleasure, inspiration, flow, presence, trust, perceived value, or uncertainty. Parallel mediation is preferred where affective and cognitive routes coexist, as in models combining pleasure, arousal, and perceived uncertainty [24]. Serial mediation can test whether exposure predicts presence or browsing, which predicts arousal or flow, which predicts urge and purchase.[43]

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Moderation analyses examine whether pathway strength changes with impulsivity, self-control, product type, persuasion knowledge, personal sense of power, viewer engagement, platform stickiness, mindset, fashion involvement, or idea-shopping motivation. Existing studies show that product type moderates vulnerability-related impulse buying [44], self-control negatively moderates the relationship between attitudinal loyalty and online impulsive buying [45], and impulsivity strengthens the association between livestream stimuli and consumption vision or telepresence [46]. These findings justify interaction terms and multigroup tests, but they do not support a universal moderator effect.

Structural models should report construct reliability, discriminant validity, explained variance, indirect effects, confidence intervals, and model fit where appropriate. PLS-SEM dominates the corpus, but covariance-based SEM, Bayesian SEM, fixed-effects regression, mixed-effects models, fsQCA, artificial neural networks, and machine-learning classifiers answer different questions. fsQCA is useful for identifying configurations of influencer attributes and uncertainty, whereas regression estimates average associations [20]. A synthesis should not rank these methods as interchangeable evidence of causality.

Temporal sequence analysis addresses the principal gap. Event-level data can model transitions from exposure to scroll continuation, product attention, emotional response, click, urge, and purchase. Cross-lagged or survival models can test whether prior exposure predicts later action while accounting for baseline impulsivity. Eye-tracking and minute-level records can identify attention order, while session-level transaction logs can establish whether the sequence ends in conversion [14], [15]. The design remains observational unless exposure or interface cues are experimentally assigned.

Planned Evidence Displays: Comparative Tables, Path Diagrams, Conceptual Models, and Statistical Graphs

Evidence displays are planned to make construct differences visible. Comparative tables will align context, sample, design, stimulus, mediator, endpoint, and boundary condition. Path diagrams will distinguish direct, mediated, moderated, and sequential associations. A conceptual model will place scrolling and recommendation exposure before stimulus appraisal, then separate affective and cognitive organism states before urge, intention, and behaviour. Statistical graphs will be used only when at least three studies report comparable numerical outcomes on the same endpoint and scale.[47]

The principal display is a multimodal pathway diagram that separates measurement layers:

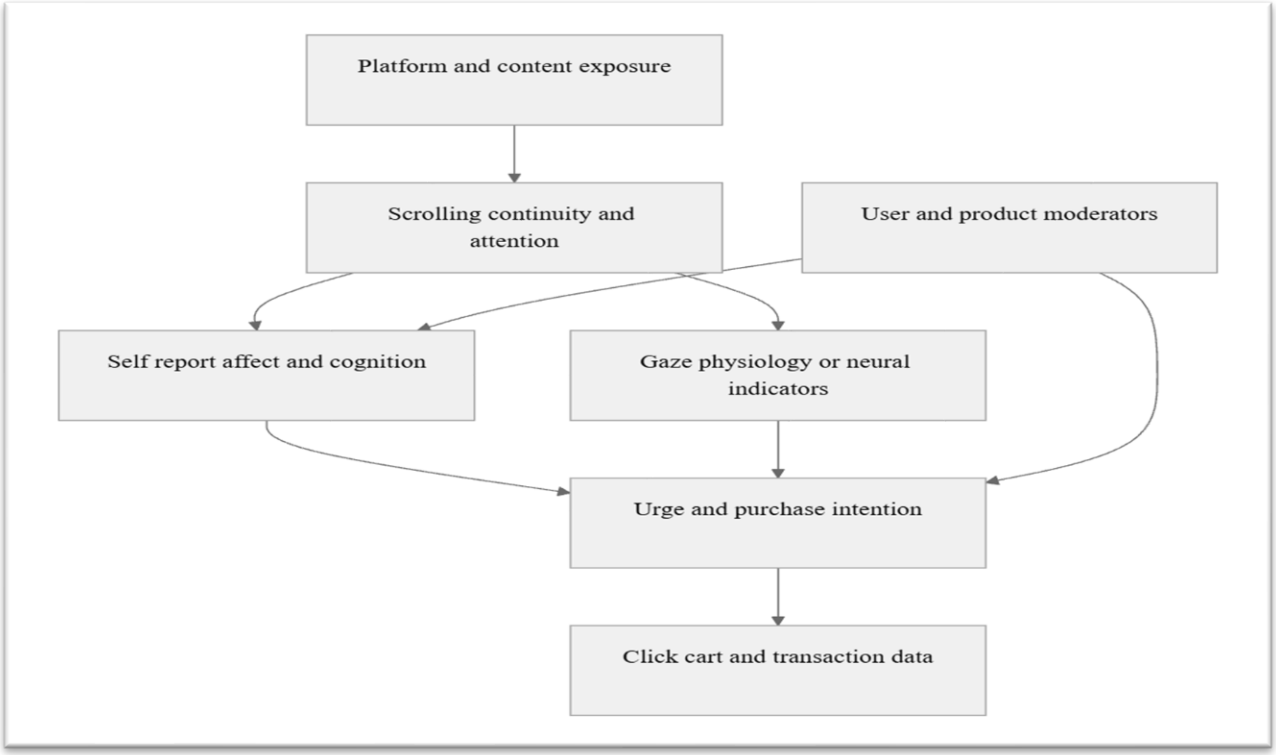

Diagram 2

This architecture prevents a self-reported mediator from being interpreted as a direct observation of unconscious browsing. It also allows evidence from surveys, experiments, eye-tracking, computational content analysis, and transaction records to be integrated without collapsing their endpoints. The resulting displays prepare the comparison of direct, mediated, and moderated findings in the results section.

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Results: Integrated Evidence on Browsing Patterns, Emotional Arousal, and Impulsive Purchase

Scrolling and Browsing as Behavioral Stimuli: Continuity, Exposure, Reviews, Scarcity, and Product Presentation

The reviewed evidence presents scrolling as a sustained exposure condition rather than a single stimulus. Continuous watching is associated with satisfaction, dependence, and cognitive consumption values, while advertising irritation weakens the association between satisfaction and continued watching [1]. This finding suggests that commercial exposure depends on maintaining an acceptable entertainment experience. Advertising that interrupts the user's affective state may reduce continuation, whereas embedded product content can remain compatible with scrolling when it preserves entertainment or perceived relevance.[48]

Browsing also differs by motive. Hedonic browsing directly predicts urge to buy, while utilitarian browsing can affect the urge indirectly through hedonic browsing [30]. Reviews produce a similar dual route: utilitarian and hedonic perceived value increase browsing, browsing predicts urge, and urge predicts impulse buying [12]. High-impulsiveness consumers rely more heavily on hedonic review value, whereas lower-impulsiveness consumers place more emphasis on utilitarian value [12]. Browsing is therefore a behavioural stimulus with motivational content, not a simple measure of time spent online.

Exposure is intensified by scarcity, time pressure, quantity pressure, and repeated viewing. In short-video live commerce, time pressure, live-streaming activity, and anchor characteristics can induce impulse purchase through consumer vulnerability [44]. Scarcity-induced purchase decisions are linked to viewing frequency and anticipated emotions, including regret and rejoicing [9]. These findings support a sequence in which repeated exposure increases familiarity and attention, while scarcity changes the anticipated cost of delay. They do not show that every scarcity cue produces conversion, particularly because most evidence relies on survey responses and intention-related outcomes.[49]

Product presentation operates through sensory and informational channels. Among Generation Z users of a video-commerce platform, time pressure, quantity pressure, economic benefits, social influence, visual cues, and sound cues affect arousal, while arousal and pleasure mediate impulse-buying decisions [11]. Product and comment presentation also matter: comment quality, comprehensiveness, quantity, and commentator credibility are associated with clothing impulse buying, with fashion involvement moderating these relationships [50]. The direction of attention is conditional. Eye-tracking evidence shows that interaction text can distract from product attention, while herding messages can produce a positive spillover, and endogenous attention to the product or anchor predicts purchase intention [15].

Visual richness does not guarantee a positive commercial outcome. Functional visual framing is associated with both engagement and sales, contextual framing with sales, and social framing with engagement but lower sales in a large analysis of book-related short sales videos [39]. Frequent transitions between framing types reduce engagement and sales by increasing visual complexity [39]. This result qualifies the common assumption that faster or denser presentation necessarily increases impulse buying. Scrolling continuity may create more opportunities for exposure, but conversion depends on whether the content preserves comprehension, attention to the product, and a favourable emotional state.

Emotional Arousal as the Organizing Mechanism: Inspiration, Flow, Emotional Contagion, and Immersion

Across the studies, arousal is most consistently supported as an intermediary between environmental cues and purchase responses. Product presentation stimuli predict arousal, and arousal predicts impulsive buying among Generation Z respondents [11]. Social and media cues influence pleasure, arousal, and perceived uncertainty, with the emotional paths exerting stronger influence than the uncertainty path in the reported model [24]. Arousal therefore functions as a common explanatory state across sensory, social, and promotional stimuli. Its effect remains associative because the dominant designs are surveys and structural models.

Pleasure and arousal are related but not interchangeable. In livestreaming, social presence can increase affective intensity, while perceived risk may decline in response to some forms of social presence; the urge to buy is driven by affective intensity rather than perceived risk in one study [10]. Another study finds that broadcaster and streamer presence predict impulse buying directly and indirectly through pleasure and arousal, whereas viewer presence does not predict either mediator [14]. The divergence may reflect differences in measurement level, data timing, or the social meaning assigned to viewer presence. It also indicates that the audience is not a uniformly effective stimulus.[51]

Customer inspiration extends arousal beyond immediate excitement. Social, co-presence, and physical presence predict impulse purchase intention through customer inspiration, with social and co-presence showing stronger effects than physical presence [25]. Real-time responsiveness and personalization similarly connect with inspired-by and inspired-to experiences, followed by delight and urge to buy [26]. These findings imply that commercial content can stimulate action by making an idea salient and actionable, not only by increasing activation. Inspiration may thus link affective arousal with a consumer's sense that purchase is personally meaningful or immediately feasible.

Flow and immersion describe sustained involvement. Hedonic browsing predicts flow, and flow predicts cognitive and affective shopping experience as well as direct impulse buying [8]. Social presence and telepresence predict flow and trust, which then relate to impulsive buying [32]. Affordances such as visibility, expressiveness, guided shopping, and trading functions also predict social presence and immersion [3]. Segment-level computer-vision research adds behavioural evidence: nodding, gesture

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intensity, postural movement, forward lean, and camera proximity are associated with purchase behaviour, with average watch time mediating these relationships [16]. The combined pattern is consistent with an exposure-to-immersion route, although watch time can indicate either engagement or passive continuation.

Influencer and streamer performance supplies the social source of arousal. Anchor similarity, attractiveness, professionalism, and interactivity predict pleasure, while celebrity performance can generate pleasure, arousal, admiration, and emotional trust [28], [29]. Virtual AI streamers also affect arousal and parasocial interaction through persuasive factors such as coolness, congruence, and mind perception, with mindset moderating parts of the pathway [52]. These findings widen the mechanism beyond human authenticity, but they do not establish that artificial and human presenters produce equivalent emotional responses.

From Arousal to Action: Urge to Buy, Purchase Intention, and Impulsive Conversion

The most stable response sequence is **stimulus, affective state, urge, and purchase response**. Perceived enjoyment predicts urge in live-streaming models, while demand, convenience, interactivity, and playfulness increase perceived enjoyment and thereby impulsive purchase intention [22], [23]. Arousal and pleasure predict impulsive buying in video-commerce studies, and emotional arousal is reported as the strongest predictor in a dual-mediation model involving perceived value [11], [53]. This pattern supports the proposition that the immediate motivational state is closer to action than broad attitude or product usefulness.

The action endpoint remains heterogeneous. Influencer advertising research reports that credibility, celebrity effect, entertainment, trust, and usefulness influence urge through attitude toward the advertisement, with the model explaining 19.4% of the variance in urge and 61.7% in advertising attitude [19]. These figures concern model-specific variance in survey constructs, not conversion rates. Research on online customer experience uses online impulsive buying as the outcome and finds attitudinal loyalty as a mediator, with self-control negatively moderating the loyalty-to-buying relationship [45]. In contrast, field and panel studies observe purchasing, gift-giving, search, or transaction behaviour, providing stronger behavioural anchoring [29], [37].

Cognitive mechanisms qualify the arousal pathway. Information quality, variety, navigability, price attributes, trust propensity, and self-confidence can predict impulse buying directly or through utilitarian and hedonic browsing [13]. AI content consistency predicts cognitive resonance, and cognitive resonance predicts impulse buying [34]. Short-video covert advertising can influence perceived entertainment and trust through both emotional and cognitive factors, with entertainment and trust independently associated with impulsive buying intention [54]. The evidence therefore supports dual processing: arousal may accelerate action, while trust, information, and perceived value can make that action acceptable.[55]

Social influence produces both linear and nonlinear responses. Trust in influencer posts predicts urge, parasocial relationships predict impulsive buying, and observational and reinforcement learning can jointly formulate online impulsive buying [5], [6], [56]. Yet social interaction-oriented speech has an inverted U-shaped association with purchasing, suggesting that additional interaction can eventually divert attention from the product [37]. Viewer engagement can also weaken the effect of anchor similarity and attractiveness on pleasure in some conditions [28]. Social presence is therefore effective when it supports attention and emotion, but excessive or misdirected interaction may reduce conversion.

Cross-Study Statistical Patterns and Visual Synthesis of Direct, Mediated, and Moderated Effects

The empirical pattern is dominated by indirect-effect models. Among the reviewed studies, PLS-SEM is used to test paths from cues to browsing, arousal, pleasure, flow, inspiration, trust, or presence and then to urge or impulse buying [22], [24], [25]. This concentration permits comparison of conceptual pathways but limits causal inference. Most samples are convenience or non-probability survey samples, and most outcomes are intention or self-reported behaviour. The evidence is strongest for the recurrence of a mechanism, not for a universal effect magnitude.[57]

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A comparison of statistical designs shows how the evidence changes with measurement:

Analytical design	Evidence contribution	Main limitation
PLS-SEM and SEM	Tests direct, mediated, and moderated latent-variable paths	Cross-sectional ordering and common-method bias
Eye-tracking with mixed-effects models	Separates exogenous cue capture from endogenous product attention	Attention does not equal purchase
Fixed-effects count regression	Estimates content-purchasing associations across live streams	Limited access to internal affective states
fsQCA	Identifies configurations associated with impulse buying	Does not estimate average marginal effects
Neural networks and machine learning	Ranks predictors or predicts behavioural classifications	Prediction does not establish mechanism
Multimodal EEG and eye tracking	Integrates neural and gaze features	Model performance may not generalize across settings

The strongest behavioural triangulation comes from studies that combine observed attention or activity with purchase-related outcomes. Eye-tracking identifies different effects for herding messages and interaction text, while segment-level computer vision connects streamer nonverbal cues, watch time, and purchase behaviour [15], [16]. Field data show that broadcaster speech can predict purchasing and gift-giving through different functional forms [37]. These designs improve ecological validity but provide less direct evidence about subjective arousal than questionnaire studies.

Moderation findings indicate that the scroll-to-purchase pathway is conditional. Product type changes the relationship between livestream stimuli, vulnerability, and impulse buying [44]. Impulsivity strengthens the association between stimuli and telepresence or consumption vision [46], while self-control weakens the relationship between attitudinal loyalty and online impulsive buying [45]. Persuasion knowledge changes the trust-to-urge association, and fashion involvement changes the relationship between online comments and clothing impulse buying [6], [50]. These results argue against a single average consumer model.

The integrated result is a conditional sequence rather than a deterministic funnel:

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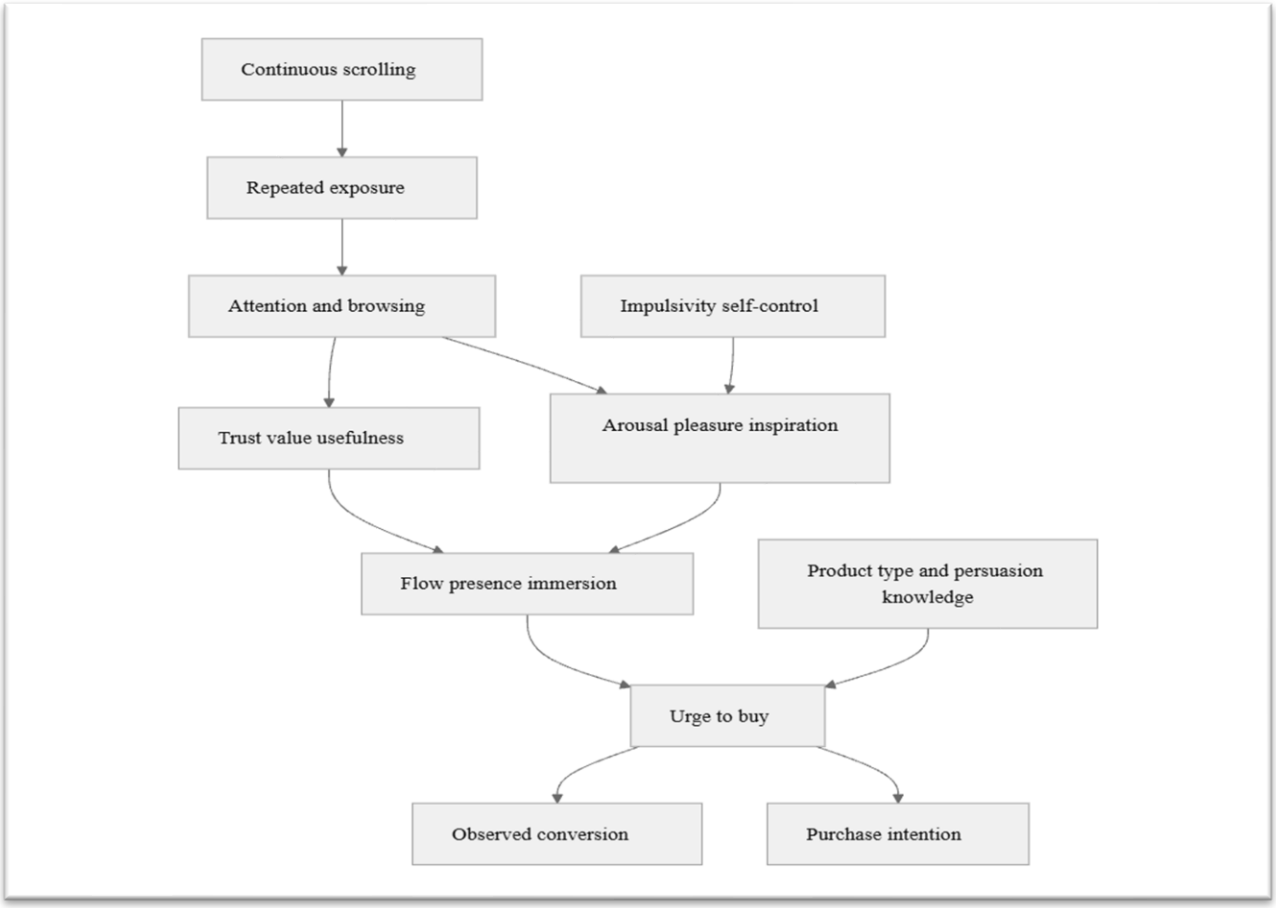

Diagram 3

The literature supports the affective route most consistently at the level of urge and intention, while cognitive variables explain why some exposures become credible, useful, or personally relevant. Observed conversion remains less frequently measured than intention, and temporal ordering remains incomplete. The next analytical priority is therefore to connect scrolling records, momentary arousal, attention allocation, and transaction data within the same session.

Discussion: Competing Explanations and Boundary Conditions in Short-Form Commerce

Emotional Arousal Versus Cognitive Processing as the Primary Route to Impulse Buying

The evidence supports an affective pathway, but it does not eliminate cognitive processing. In livestream commerce, affective intensity predicted the urge to buy more directly than perceived risk, whereas social presence reduced risk and increased affective intensity [10]. Similarly, pleasure and arousal mediated associations between social presence and impulsive buying, while uncertainty followed a partly opposing pathway [14], [24]. These findings position arousal as a proximal mechanism rather than proof that consumers stop evaluating information.

Cognitive processing remains consequential when content supplies usefulness, trust, or perceived value. Utilitarian browsing often affected impulse buying indirectly through hedonic browsing, and information quality influenced both browsing routes [13], [30]. AI recommendation consistency produced separate emotional and cognitive resonance pathways, with cognitive resonance associated with impulse buying [34]. The most defensible interpretation is therefore dual-route: rapid affective activation may produce the buying urge, while cognitive appraisal determines whether the stimulus appears credible, useful, or personally relevant. Short-form commerce should not be described as purely unconscious, because trust, perceived risk, and product information can redirect the same exposure.@

Social and Influencer Effects Versus Algorithmic, Interface, and Content-Level Effects

Social cues are influential, but their effects depend on the form and timing of attention. Eye-tracking evidence shows that herding messages and interaction text capture exogenous attention, while interaction text can distract from the product and herding messages can generate product-attention spillover [15]. In field data from 537 Douyin broadcasts, social-interaction speech had an inverted U-shaped association with purchasing, although gift-giving increased linearly [37]. Thus, more interaction is not uniformly better; excessive social content may displace product processing.

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Influencer credibility, authenticity, parasocial interaction, and observational learning can increase trust or buying urges [5], [6], [20]. Yet algorithmic delivery and interface design determine which cues are encountered repeatedly. Continuous watching is associated with satisfaction and dependence, while advertising irritation weakens the satisfaction-to-watching association [1]. Visual appeal, atmosphere, engagement, and perceived arousal also connect interface design with impulse purchase [38]. These findings caution against attributing conversion to influencers alone: recommendation, audiovisual presentation, interaction architecture, and content sequencing jointly condition exposure and response.

Consumer Vulnerability, Product Type, Generation Z, and Other Moderating Conditions

The pathway is moderated by both consumer characteristics and market context. Consumer vulnerability transmitted the effects of anchor characteristics, time pressure, and livestream activity to impulse buying, while product type changed these relationships [44]. Impulsivity strengthened the association between vividness or personalisation and telepresence, whereas self-control weakened the effect of attitudinal loyalty on online impulse buying [45], [46]. Persuasion knowledge altered the trust-to-urge association, and fashion involvement changed how online comments related to clothing impulse buying [6], [50].

Generation Z studies show strong associations between video stimuli, arousal, pleasure, and impulsive buying, but their samples are concentrated in particular platforms and national settings [11], [58]. Product differences also matter: emotional responses predicted purchase willingness for cosmetics, clothing, and food through partly different patterns [29]. Social avoidance, empathy, loneliness, and parasocial interaction further indicate that personal circumstances can alter susceptibility [59]. The average effect reported by platform studies therefore conceals variation in vulnerability, involvement, self-regulation, product uncertainty, and social motivation.

Causal and Measurement Gaps: Limits of Survey-Based SEM, Self-Reported Arousal, and Purchase Intention Measures

Most evidence estimates hypothesised paths from cross-sectional questionnaires using PLS-SEM or covariance-based SEM. These models can test mediation and moderation, but temporal ordering remains uncertain: reported arousal, urge, and intention may be measured after exposure and may reflect a common response tendency. Scenario studies, convenience samples, and non-probability recruitment further limit generalisation [11], [52]. Even large surveys, such as the 1,489-person study of Chinese platform users, remain observational when all constructs are self-reported [45].

The outcome is often purchase intention or urge rather than completed purchase. Eye tracking links attention with purchase intention, but exogenous attention has competing social and distraction mechanisms [15]. By contrast, field observations connect speech, watch time, nonverbal cues, and purchasing, although they cannot directly identify subjective arousal [16], [37]. EEG and eye-tracking classification reached 84.01% accuracy and 83% precision in one predictive study, yet prediction does not establish why a purchase occurs or whether the model transfers across platforms [42]. Future designs should align event-level exposure, physiological signals, self-report, browsing duration, transaction records, and post-purchase regret within the same session.

III. CONCLUSION

The Integrated Model of Unconscious Browsing, Emotional Arousal, and Impulsive Buying

The evidence supports a conditional scroll-to-purchase sequence rather than a universal funnel. Repeated exposure and continuous watching increase opportunities for attention, while hedonic browsing, presence, flow, inspiration, and telepresence can convert attention into arousal or imagined consumption. Arousal and pleasure then increase the urge to buy, but trust, usefulness, perceived value, risk, and information quality determine whether the stimulus is accepted. Product type, impulsivity, self-control, persuasion knowledge, and involvement condition each transition.

A multimodal model should therefore treat unconscious browsing as an observable behavioural state, not as an assumed mental cause. Scroll duration, skips, pauses, gaze allocation, facial or vocal cues, physiological arousal, comments, recommendation exposure, and completed transactions can establish temporal sequence more effectively than retrospective intention alone. The resulting framework connects platform-level selection with content-level stimulation and consumer-level regulation, while preserving competing affective and cognitive routes.

Implications for Consumer Protection, Platform Governance, and Responsible Short-Form Marketing

Consumer protection should address cumulative exposure, scarcity prompts, covert advertising, personalised recommendation, and frictionless checkout rather than focusing only on influencer disclosure. Vulnerability and product type already moderate impulse-buying pathways, while algorithmic transparency and post-purchase regret remain underdeveloped in empirical models. Platforms should test prompts that disclose commercial intent, slow high-pressure transactions, distinguish social proof from verified demand, and give users accessible spending controls.

Responsible marketing can still use entertainment, usefulness, and interaction, but should avoid treating arousal as an unrestricted conversion target. Governance evaluations should report completed purchases alongside intention, refund or regret indicators, exposure frequency, and subgroup effects. Such standards would align commercial effectiveness with informed choice and make the scroll-to-purchase pathway empirically testable rather than psychologically presumed.

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