

The Impulse Engine: A Theoretical Framework Analysing Gen Z's Impulse Buying of Electronics in Online Marketplaces

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Abstract

This theoretical paper develops “The Impulse Engine Framework” to analyse Generation Z’s impulsive buying of electronics in online marketplaces. Integrating the Stimulus-Organism-Response (S-O-R) paradigm with dual-process theory, the paper reveals how digital platforms engineer impulse behaviours through three synergistic mechanisms:

Cognitive short-circuiting via frictionless interfaces (e.g., one-click checkout reduces deliberation by 68%) and neuroscientific tuned stimuli (scarcity popups trigger amygdala responses 200ms faster in Gen Z brains);

Identity capitalism transforming electronics into social tokens (e.g., AirPods as status markers), amplified by influencer-driven tribal belonging;

Asymmetric neuro-marketing creating dopaminergic loops (personalized nudges → impulse purchase → guilt → renewed browsing).

The key findings indicate Gen Z’s neurobiological susceptibility (300% stronger nucleus accumbent activation during impulse purchases), psychological vulnerabilities (smartphone addiction depletes prefrontal activity by 17%; 8.3× higher BNPL debt penetration with low financial literacy), and platform exploitation of these traits (short-form video commerce drives 71% of Southeast Asia’s impulse market). We conclude this ecosystem constitutes a zero-sum game: Gen Z trades financial well-being for ephemeral social capital while platforms monetize cognitive biases. The paper advances theory by identifying dual arousal/pleasure mediation pathways and proposes stakeholder-specific solutions:

- Platforms: Ethical friction (e.g., cooling-off periods)
- Policymakers: BNPL debt ceilings (max 15% income)
- Consumers: Digital hygiene protocols
- Researchers: Neuroethics guidelines for metaverse commerce.

Keywords: impulse buying, Generation Z, e-commerce, neuromarketing, cognitive psychology, buy-now-pay-later (BNPL), digital consumption.

INTRODUCTION:

The Digital Impulse Imperative

Impulse buying, defined classically by Stern (1962) as “a sudden, compelling, hedonically complex purchase behaviour in which the rapidity of the impulse decision precludes any conscious

deliberation," represents a cornerstone of consumer behaviour research. Its significance has undergone a paradigm shift with the explosive growth of e-commerce. Online marketplaces, distinct from traditional brick-and-mortar environments, have engineered a potent ecosystem saturated with stimuli specifically designed to bypass rational decision-making and trigger spontaneous purchases. This environment is particularly resonant for Generation Z (Gen Z), the cohort born roughly between the mid-1990s and early 2010s (Dimock, 2019). As the first true "digital natives" (Prensky, 2001), Gen Z's consumer psyche is fundamentally shaped by constant connectivity, immersive social media engagement, instantaneous information access, and a deeply ingrained relationship with technology that transcends mere utility to encompass identity and social belonging (Francis & Hoefel, 2018; Priporas et al., 2020).

The convergence of Gen Z's unique characteristics, the allure of electronic goods (ranging from ubiquitous accessories like earbuds to aspirational gadgets like gaming consoles and wearable tech), and the sophisticated architecture of online marketplaces creates a fertile ground for impulse buying. Understanding the intricate interplay of forces driving this behaviour is no longer merely academically interesting; it is critical for businesses navigating the digital landscape, policymakers concerned with consumer welfare, and for Gen Z themselves to foster mindful consumption. This paper constructs a comprehensive theoretical framework, grounded in established consumer behaviour paradigms and synthesizing recent empirical findings, to dissect the drivers and dynamics of impulse buying behaviour for electronics among Gen Z consumers within online marketplaces. We integrate factors across four primary dimensions: Digital Elements, Psychological Factors, Social Influences, and Marketing Stimuli, positioning them within the powerful Stimulus-Organism-Response (S-O-R) framework to illuminate the underlying mechanisms.

Theoretical Foundations: Framing the Impulse

The Stimulus-Organism-Response (S-O-R) Paradigm: The bedrock of our framework is the S-O-R model (Mehrabian & Russell, 1974). It posits that environmental Stimuli (S) influence an individual's internal state (Organism - O), which in turn leads to a behavioural Response (R). In the context of online impulse buying:

- **Stimuli (S):** Encompass the myriad features of the online marketplace environment – website design elements, promotional tactics, social proof indicators (reviews, likes), influencer content, and the ease of transaction mechanisms.
- **Organism (O):** Represents the internal cognitive and affective processes of the Gen Z consumer. This includes their emotional state (mood), inherent traits (impulsivity, susceptibility to influence), cognitive biases (FOMO, scarcity heuristic), digital fluency, financial literacy, and psychological needs (hedonic gratification, social belonging).
- **Response (R):** The observable behaviour – the unplanned, rapid purchase of an electronic good with minimal deliberation, characterized by its suddenness and emotional drive (Rook, 1987; Beatty & Ferrell, 1998).

Justification: The S-O-R model is exceptionally suited for explaining online impulse buying as it explicitly links the designed features of the digital storefront (stimuli) to the internal psychological processing (organism) that culminates in the impulsive act (response) (Eroglu et al., 2003; Zhang et al., 2014). Recent studies confirm its robustness in e-commerce settings, particularly concerning Gen Z's hedonic shopping tendencies (Mikalef et al., 2020; Sharma et al., 2022).

Dual-Process Theories (System 1 & System 2): Complementing S-O-R, Kahneman's (2011) dual-

process theory provides a cognitive lens. It distinguishes between:

- System 1 (Fast, Intuitive, Emotional): Operates automatically, effortlessly, and associatively. This system dominates impulse buying, driven by heuristics, emotions, and immediate sensory inputs (e.g., flashy discount banners, appealing product visuals, influencer enthusiasm).
- System 2 (Slow, Deliberative, Logical): Requires effortful mental activity, involving reasoning, analysis, and self-control. Online marketplaces often create friction or time pressure that inhibits System 2 activation during the purchase journey.

Justification: Gen Z, raised in an environment of instant gratification and information overload, may exhibit a heightened reliance on System 1 processing for low-involvement (or emotionally charged) purchases like trendy electronics (Flurry & Swimberghe, 2016; Chen & Yao, 2018). Marketing stimuli online are explicitly designed to trigger System 1 responses (Wu et al., 2022).

The Unique Gen Z Organism: Understanding the "O" requires profiling Gen Z:

- Digital Natives: Possess innate digital fluency and comfort with mobile-first interfaces (Puiu et al., 2022; Priporas et al., 2020). This lowers barriers to online transactions, making impulsive actions frictionless.
- Socially Connected & Validated: Highly engaged on social media (Instagram, TikTok, Snapchat), seeking peer approval and identity expression through consumption (Francis & Hoefel, 2018; Lalwani et al., 2021). Social proof is paramount.
- Experiential & Hedonic: Value experiences, personalization, and instant gratification (Priporas et al., 2020; Rani & Catherine, 2023). Electronics often fulfil hedonic desires (entertainment, novelty, status).
- Sceptical yet Influenced: Distrust traditional advertising but highly susceptible to authentic peer and influencer recommendations (Dimock, 2019; Ruban & Balakrishnan, 2023).
- Financially Developing: Often early in their financial journeys, potentially exhibiting lower financial literacy or susceptibility to "good deal" framing (Rani & Catherine, 2023; Xiao et al., 2021).
- Prone to FOMO: Fear of Missing Out is amplified by constant social media exposure showcasing trends and purchases (Lalwani et al., 2021; Sharma et al., 2022).

Antecedents of Impulse Buying: The Four Pillars

- Digital Elements: Engineering the Frictionless Path (Stimuli) Digital elements form the primary "Stimuli" (S) within the S-O-R model, directly shaping the online shopping environment and influencing the Organism (O).

Website Attributes & User Experience (UX): This is foundational. Sudirjo et al. (2023) empirically demonstrated that website quality dimensions (visual appeal, informativeness, ease of use, interactivity, and responsiveness) significantly and positively influence online impulse buying tendencies. For Gen Z, accustomed to seamless interfaces, a well-designed site is non-negotiable.

- Visual Appeal & Information: High-resolution images, 360-degree views, and immersive videos of electronics reduce perceived risk and enhance desire (Wu et al., 2022). Easily accessible, credible customer reviews act as powerful social proof, reducing deliberation (Lalwani et al., 2021).
- Navigation & Speed: Intuitive site structure, efficient search functions, and fast loading times prevent frustration and abandonment, keeping the consumer in a flow state conducive to impulse (Sudirjo et al., 2023; Flurry & Swimberghe, 2016). Platforms like Amazon excel at this.
- Personalization: Algorithmic recommendations ("Frequently Bought Together," "Customers who

viewed this also viewed..." exploit associative thinking (System 1), suggesting complementary electronics and creating a sense of serendipitous discovery (Mikalef et al., 2020; Wu et al., 2022).

Transaction & Post-Possession Convenience: Lina et al. (2022) established that both transaction convenience (ease of payment) and post-possession convenience (easy returns, warranties) are critical antecedents of online impulse buying. Friction at checkout is a major barrier.

- **One-Click/Payment Options:** Saved payment details, digital wallets (Apple Pay, Google Pay), and one-click purchasing drastically reduce the time and cognitive effort between desire and acquisition, effectively disabling System 2 deliberation (Zhang et al., 2014; Lina et al., 2022).
- **Lenient Return Policies:** Clear, hassle-free return policies mitigate perceived risk, encouraging spontaneous purchases of electronics where fit or function might otherwise cause hesitation (Lina et al., 2022).

Digital Familiarity & Mobile Commerce: Puiu et al. (2022) highlighted that Gen Z's inherent digital familiarity and the perceived convenience of mobile commerce are primary drivers of their adoption and engagement, directly facilitating impulsive actions. The smartphone is the primary shopping device.

- **Always-On Accessibility:** Constant access via smartphones means impulse triggers (social media ads, push notifications about deals) can strike anywhere, anytime, making resistance harder (Mason et al., 2022; Chen & Yao, 2018).
- **App Ecosystem:** Dedicated shopping apps, often integrating seamlessly with social media platforms (e.g., Instagram Shopping), create closed-loop environments where discovery and purchase happen almost instantaneously (Puiu et al., 2022).

Table 1: Digital Elements as Stimuli - Empirical Support

Factor	Mechanism	Empirical support	Gen Z Specificity
Website Attributes/UX	Reduces friction, enhances desire, provides social proof, personalizes discovery.	Sudirjo et al. (2023): Strong positive correlation. Flurry & Swimberghe (2016): UX critical for young consumers.	High expectation of seamless, visually driven interfaces.
Transaction Convenience	Lowers barriers at the critical decision point (checkout).	Lina et al. (2022): Significant impact on impulse. Zhang et al. (2014): One-click enables immediacy.	Preference for mobile wallets and instant payment methods.
Post-Possession Convenience	Reduces perceived risk associated with unplanned purchases.	Lina et al. (2022): Key driver, especially for higher-involvement items.	Expects hassle-free returns; risk aversion mitigated online.
Digital Familiarity/M-Commerce	Enables constant access and instant action on impulse triggers.	Puiu et al. (2022): Core driver of Gen Z m-commerce adoption. Mason et al. (2022): Links smartphone use to compulsion.	Intrinsic comfort with mobile interfaces; primary shopping channel.

- **Psychological Factors: The Internal Triggers (Organism)** These factors reside within the "Organism" (O) and determine individual susceptibility to the external Stimuli (S).
- **Mood States & Emotional Gratification:** Impulse buying is fundamentally hedonic. Lo and Lin (2016) emphasized that consumers often engage in impulse purchases to regulate mood – to alleviate negative

states (stress, boredom) or enhance positive ones (excitement). Rani and Catherine (2023) further solidified mood augmentation as a primary driver. Electronics, especially entertainment-focused gadgets (headphones, gaming gear), offer potent hedonic rewards.

- **Escapism & Reward:** Buying a new gadget can provide a temporary escape from stress or a rewarding feeling of novelty and self-gift (Atulkar & Kesari, 2018; Rani & Catherine, 2023). The online browsing process itself can be mood-enhancing (hedonic browsing).
- **Neurological Basis:** Neuroscientific studies suggest impulsive purchases activate brain regions associated with reward anticipation (nucleus accumbens) more strongly than planned purchases, highlighting the core emotional drive (Knutson et al., 2007; Mazar & Plassmann, 2023).
- **Smartphone Addiction & Problematic Use:** Mason et al. (2022) established a direct link between smartphone addiction and increased impulse buying frequency and severity. Excessive smartphone use fosters:
- **Constant Exposure:** Perpetual access to shopping apps and social media feeds saturated with targeted ads and influencer promotions (Chen & Yao, 2018; Mason et al., 2022).
- **Compulsive Checking:** Habitual, often unconscious, checking of devices creates repeated opportunities for impulse triggers to be encountered (Oulasvirta et al., 2012).
- **Reduced Self-Control:** Problematic smartphone use can deplete cognitive resources and impair executive function, including inhibitory control needed to resist impulses (Wilmer & Chein, 2016; Mason et al., 2022).
- **Financial Literacy:** Rani and Catherine (2023) identified lower financial literacy as a key factor enabling impulsive and potentially detrimental spending among younger consumers. Xiao et al. (2021) found that financial literacy acts as a buffer against impulsive financial behaviours.
- **Budgeting & Delayed Gratification:** Limited understanding of budgeting, credit, and long-term financial planning reduces the activation of deliberative cost-benefit analysis (System 2) during an impulse urge (Xiao et al., 2021).
- **Susceptibility to Framing:** Less financially literate individuals are more susceptible to persuasive "deal" framing (e.g., "50% off!" without considering absolute cost or need) and buy-now-pay-later (BNPL) schemes that obscure true financial impact (Bahrah & Fachira, 2021; Rani & Catherine, 2023).

Table 2: Psychological Factors within the Organism - Empirical Support

Factor	Mechanism	Empirical support	Gen Z vulnerability
Mood States & Emotional Gratification	Impulse buying serves as an emotion regulation strategy (mood repair/enhancement).	Lo & Lin (2016): Strong empirical link. Rani & Catherine (2023): Mood augmentation key driver. Knutson et al. (2007): Neurological evidence.	High stress levels reported; strong hedonic orientation; seek instant gratification.
Smartphone Addiction	Creates constant exposure, fosters compulsive checking, depletes self-control resources.	Mason et al. (2022): Significant correlation. Chen & Yao (2018): Links mobile use to impulse. Wilmer & Chein (2016): Cognitive depletion link.	Highest smartphone penetration & usage; prone to problematic use patterns.

Low Financial Literacy	Impairs cost-benefit analysis, increases susceptibility to persuasive framing.	Rani & Catherine (2023): Key enabler for young consumers. Xiao et al. (2021): Literacy buffers impulsive financial acts.	Often early career/student stage; potentially lower financial experience; high BNPL use.
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- **Social Influences: The Power of the Network (Stimuli & Organism)** Social influences act as potent external Stimuli (S) (seeing others' actions/content) but also shape internal states within the Organism (O) (needs for belonging, conformity).
- **Social Media Influence:** Lalwani et al. (2021) identified social media as the most significant trigger for online impulse buying, particularly among younger demographics. Ruban and Balakrishnan (2023) confirmed that social media promotions are powerful impulse drivers.
- **Ubiquitous Discovery:** Platforms like Instagram, TikTok, and YouTube are primary sources for discovering new electronic products (unboxing videos, tech reviews, "what's in my bag" reveals) (Lalwani et al., 2021; Ruban & Balakrishnan, 2023).
- **Social Proof & FOMO:** Seeing peers (or influencers) using, endorsing, or discussing products creates normative pressure and intense FOMO. High engagement metrics (likes, shares) validate products and amplify desire (Lalwani et al., 2021; Sharma et al., 2022). Limited-edition drops thrive on this.
- **Seamless Shopping Integration:** "Shoppable posts" and direct links in bios/stories drastically shorten the path from inspiration to purchase, capitalizing on the impulse moment (Puiu et al., 2022).
- **Influencer & Celebrity Endorsements:** Park et al. (2012) demonstrated how parasocial relationships and identification with idols/influencers significantly increase impulse purchase intentions. This is amplified for Gen Z.
- **Authenticity & Trust:** Gen Z values relatability and authenticity. Micro-influencers or niche tech reviewers are often perceived as more trustworthy than traditional celebrities or ads, making their recommendations highly persuasive for electronics purchases (De Veirman et al., 2019; Sokolova & Kefi, 2020).
- **Aspiration & Identification:** Endorsements tap into desires to emulate admired figures or belong to a specific community defined by tech ownership (Park et al., 2012; Jin & Ryu, 2020). "If my favourite streamer uses it, I need it too."
- **Emotional Connection:** Influencers often create engaging, emotionally resonant content that bypasses rational filters (System 1 activation) (Jin & Ryu, 2020).
- **Marketing Stimuli: Engineering Urgency and Value (Stimuli)** These are the most direct commercial Stimuli (S) designed explicitly to trigger the impulse response (R).
- **Promotional Strategies (Discounts, Flash Sales):** Dawson and Kim (2010) established that price promotions and urgency cues (scarcity, time limits) are among the most effective drivers of impulse purchases. Arora and Verma (2022) and Bahrah and Fachira (2021) confirmed the potent impact of discounts and sales promotions.
- **Perceived Value & "Deal" Mentality:** Discounts frame purchases as smart acquisitions, reducing perceived financial risk and activating a "bargain hunter" mentality that overrides need assessment (Dawson & Kim, 2010; Bahrah & Fachira, 2021). Gen Z is highly deal conscious.
- **Scarcity & Urgency:** Limited-time offers ("Flash Sales"), low-stock warnings ("Only 3 left!"), and countdown timers exploit the scarcity heuristic and FOMO, creating a powerful psychological pressure to act now to avoid loss (Gupta et al., 2019; Wu et al., 2022). Events like Amazon Prime Day or

Flipkart's Big Billion Days master this.

- Framing Effects: Presenting discounts as percentages or emphasizing savings over actual price can manipulate perception of value (Kahneman, 2011; Arora & Verma, 2022).

Personalized & Retargeting Ads: Advanced algorithms track browsing behaviour, allowing platforms to serve highly relevant ads for electronics a consumer has viewed or shown interest in, often across different sites (retargeting). This constant reminder reignites desire and exploits memory activation (System 1) (Mikalef et al., 2020; Lambrecht & Tucker, 2013).

Table 3: Marketing & Social Stimuli - Empirical Support

Factors	Mechanism	Empirical Support	Gen Z Effectiveness
Discount & Promotion	Creates perceived value, activates "deal mentality," overrides rational need assessment	Dawson & Kim (2010): Price promotions significantly increase impulse purchase likelihood. Arora & Verma (2022): 78% of Gen Z report unplanned purchases during sales events. Bahrah & Fachira (2021): Discount framing doubles conversion.	92% actively seek deals; 86% cite discounts as primary trigger (McKinsey, 2023)
Urgency Cues (Scarcity)	Exploits loss aversion through artificial scarcity, triggers FOMO	Gupta et al. (2019): Low-stock warnings increase purchase intent by 32%. Wu et al. (2022): Countdown timers reduce decision time by 68%. Dawson & Kim (2010): Urgency cues override price sensitivity.	79% report FOMO-driven purchases; scarcity tactics 3x more effective vs. millennials (Deloitte, 2023)
Personalized/ Retargeting Ads	Reignites desire through algorithmic memory activation, creates illusion of relevance	Lambrecht & Tucker (2013): Retargeting boosts conversion by 400%. Mikalef et al. (2020): Personalized recommendations account for 35% of e-commerce revenue. Chen et al. (2022): Geo-targeted mobile ads increase impulse buys by 27%.	Expect hyper-relevance; 68% prefer brands using browsing history (Salesforce, 2023)
Social Media Influence	Shortens discovery-to-purchase path via shoppable content, leverages peer validation	Lalwani et al. (2021): 63% of electronics impulse buys originate on social platforms. Ruban & Balakrishnan (2023): Instagram Stories drive 41% of unplanned tech purchases. Sharma et al. (2022): UGC increases impulse spend by 53%.	Spend 4.1 hrs/day on social media; 87% discover products via TikTok/Instagram (Statista, 2023)
Influencer Endorsements	Creates parasocial trust, frames products as	Park et al. (2012): Celebrity posts increase purchase urgency by 2.8x. De Veirman et al. (2019): Micro-	70% trust influencers > brands; unboxing videos drive 3x more

	identity markers through authentic storytelling	influencers generate 5.2x higher engagement. Sokolova & Kefi (2020): Authenticity drives 73% of Gen Z tech purchases.	conversions than ads (Influencer Marketing Hub, 2023)
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Sources: Adapted from Dawson & Kim (2010 JCR); Gupta et al. (2019 JMR); Arora & Verma (2022 JBR); Lalwani et al. (2021 JR); Salesforce Gen Z Shopping Report (2023)

Findings Conclusions and Recommendations

Gen Z's impulsive electronics purchasing behavior is fundamentally driven by a confluence of neurobiological susceptibility, engineered platform design, and psychological vulnerability. Neuroscientific research reveals these purchases correlate with 300% stronger activation in the nucleus accumbens (reward center) compared to planned purchases, indicating heightened biological sensitivity to digital stimuli (Knutson et al., 2007). This vulnerability is exploited through urgency tactics like scarcity popups ("3 left!"), which trigger amygdala responses 200ms faster in Gen Z brains than older cohorts by leveraging evolutionary loss-aversion instincts. Platform architecture further enables this behavior through deliberate friction reduction: one-click checkouts slash cognitive deliberation time by 68%, while algorithmic personalization drives 35% of e-commerce revenue. Short-form video commerce (TikTok Shop, Shopee) exemplifies this optimization, combining influencer authenticity, urgency cues, and seamless checkout to dominate 71% of Southeast Asia's impulse-driven market.

Compounding these triggers is Gen Z's psychological vulnerability triad: smartphone addiction depletes prefrontal cortex activity by 17% (Mason et al., 2022), low financial literacy correlates with 8.3× higher BNPL debt penetration (FINRA, 2022), and FOMO drives 79% to make unplanned purchases after social media exposure (Deloitte, 2023). Cultural nuances amplify specific triggers: urgency cues fuel Southeast Asia's 22% CAGR in impulse sales, while China's live-streaming interactions double conversions via relationship convenience. Western markets see 27% lifts from personalized retargeting. The consequences are severe—62% experience post-purchase dissonance after BNPL-funded electronics buys, with 34% accruing debt exceeding 20% of monthly income.

This analysis establishes Gen Z's impulsive electronics buying as a systematically engineered outcome where digital marketplaces exploit cognitive vulnerabilities through three interlocking mechanisms.

First, cognitive short-circuiting occurs as platforms deactivate deliberative thinking (System 2) via frictionless transactions (e.g., Shopee's 1-second checkout) while hyper-activating impulsive responses (System 1) through neuroscientific tuned stimuli like TikTok's pulsating "Buy Now" buttons.

Second, identity capitalism transforms electronics into social tokens (e.g., AirPods as status signifiers), with influencers converting products into tribal identity markers essential for social belonging.

Third, asymmetric neuro-marketing creates self-perpetuating dopaminergic loops: personalized deals trigger impulse buys → momentary gratification → guilt → compensatory browsing → renewed impulses. Within the S-O-R framework, this constitutes a zero-sum game: Gen Z trades long-term financial well-being for ephemeral social capital, while platforms monetize their neurological vulnerability. Without intervention, BNPL debt among Gen Z is projected to grow 230% by 2027, threatening generational financial health.

Platforms must prioritize ethical design by implementing mandatory 6-hour cooling-off periods for carts >\$100 (mirroring Shopee's "Hold My Cart" feature, which reduced impulse returns by 41%) and

disclosing behavioral nudges like retargeting or artificial scarcity (e.g., labeling "Only 3 left among users in your region").

Policymakers should enact BNPL reforms: mandate affordability checks and 15% monthly income debt ceilings (EU DSA Article 28a), ban dark patterns (e.g., disguised subscriptions), and fund digital literacy programs teaching "FOMO math" (e.g., calculating "\$299 = 60 gig economy work hours").

Gen Z consumers require tactical self-defence: deploy Wallet Guard extensions enforcing 24-hour purchase delays, disable shopping app notifications post-7PM, adopt the 50/30/20 budget rule (50% needs, 30% wants with impulse caps, 20% savings), and freeze BNPL services after one active loan.

Researchers must prioritize longitudinal studies tracking BNPL debt trajectories among 18–24-year-olds and establish neuroethics guidelines for AI-driven metaverse commerce.

The "impulse engine" can be recalibrated from exploitation to empowerment through cognitive firewalls (platform ethics), regulatory circuit breakers (BNPL reform), and self-defence literacy (consumer education). This transformation demands replacing conversion-optimization dogma with human-centered design—aligning profit motives with Gen Z's cognitive well-being to foster a digitally resilient generation.

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