

Generational Differences in Flow-Induced Emotional Responses: Empirical Evidence from Short-Video Tourism Marketing

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Abstract

Short-video platforms (e.g., TikTok, Instagram Reels, YouTube Shorts) are reshaping how tourism destinations are promoted. This study investigates how flow elicited by influencer (KOL) travel videos shapes emotional responses—modeled through the Pleasure–Arousal–Dominance (PAD) framework—and subsequently drives digital engagement (continued viewing, recommendation, reuse). Drawing on Flow Theory and Cognitive Appraisal Theory, we analyzed 716 valid responses from Taiwanese consumers using CFA/SEM and multi-group analysis (Gen X, Gen Y, Gen Z). Results indicate a full mediation pathway (Flow→PAD→ Digital Engagement), with the direct Flow→Engagement link becoming nonsignificant once PAD is considered. Generational differences appear primarily in the Flow → PAD path (Gen X > Gen Y > Gen Z), whereas PAD→Engagement remains consistent across cohorts. The findings clarify the affective mechanism by which immersive experiences convert into engagement and provide generationally tailored guidance: enhancing sensory interactivity for Gen Z, emphasizing narrative storytelling for Gen Y, and highlighting credibility and information quality for Gen X.

Keywords: Flow theory, Pleasure–Arousal–Dominance (PAD) model, digital engagement, short-form video marketing, generational cohorts (Gen X, Gen Y, Gen Z)

1. Introduction

Short-video platforms, such as TikTok, Instagram Reels, and YouTube Shorts, have profoundly reshaped how tourism destinations are promoted and experienced, positioning them as important vehicles for immersive tourism communication. Recent studies show that short videos influence consumer responses through multiple psychological mechanisms. Entertainment, informativeness, and interactivity affect user intentions partly through flow (Liu et al., 2024), while flow has been widely recognized as a key mediating mechanism of engagement outcomes (e.g., Arghashi & Yuksel, 2022), and perceived value has also been identified as an important driver of engagement in prior research, although these constructs have rarely been examined within a unified mediation framework. Influencer travel videos, in particular, enhance destination perceptions (Yue & Li, 2024), reinforce image and attitudes (Dias & Lavaredas, 2024; Mirzamurodova Kizi et al., 2025), and contribute to immersive viewing experiences through flow-based mechanisms (Novak et al., 2000; Calder et al., 2009). These findings highlight the growing importance of short-video content in tourism marketing. Beyond their promotional efficiency, short-video tourism content also functions as experiential media that can immerse viewers in destination-related narratives and sensory cues. However, although prior studies acknowledge the immersive nature of such media, the psychological process

through which immersive viewing experiences translate into emotional and behavioral responses remains insufficiently specified.

Despite growing evidence that short-video content can generate immersive viewing experiences, the mechanism through which such immersion is translated into subsequent engagement remains theoretically underdeveloped. Existing studies have often treated flow as a direct antecedent of behavioral outcomes (Hoffman & Novak, 2009), which risks oversimplifying the psychological process underlying media consumption. Engagement with tourism short videos is unlikely to arise from immersion alone; rather, it is shaped by how viewers cognitively and affectively evaluate immersive experiences before forming behavioral responses. In this regard, the PAD framework, which conceptualizes emotional responses in terms of pleasure, arousal, and dominance (Mehrabian & Russell, 1974), provides a theoretically grounded framework for capturing the multidimensional nature of affective responses. Compared to unidimensional affect measures, the PAD framework allows for a more nuanced representation of emotional states, which is particularly relevant in short-video contexts characterized by rapid sensory stimulation and varying levels of perceived control. Furthermore, although generational differences in media use have been widely documented (Bolton et al., 2013; Parment, 2013), limited research has examined whether the emotional transmission mechanism linking flow and engagement operates

differently across generational cohorts in short-video tourism marketing.

To address these gaps, this study integrates Flow Theory with Cognitive Appraisal Theory to explain how immersive viewing experiences are transformed into emotional and behavioral outcomes. Flow Theory explains the state of deep absorption and intrinsic enjoyment that arises during optimal experience (Csikszentmihalyi, 1990), but it does not explicitly specify how such experiential states are translated into emotional responses. Cognitive Appraisal Theory suggests that emotions emerge from individuals' evaluations of their experiences and their significance in relation to personal goals (Lazarus, 1991). From this perspective, flow does not itself constitute an emotional state; rather, it represents an immersive cognitive-experiential condition that precedes and shapes subsequent affective appraisal processes, which are captured in this study through the PAD dimensions of pleasure, arousal, and dominance (Mehrabian & Russell, 1974).

Accordingly, this study proposes and tests a process model in which flow elicited by KOL travel short videos influences PAD emotions, which in turn drive digital engagement. In addition, we examine whether this emotional transmission mechanism differs across Generations X, Y, and Z. By doing so, this study contributes to the literature in three ways. First, it extends flow research beyond interactive environments to passive yet immersive media-consumption contexts. Second, it explicates the affective mechanism linking flow and digital engagement by integrating Cognitive Appraisal Theory with the PAD framework. Third, it advances understanding of cohort-based differences by examining whether the structural pathways of the proposed model vary across Generations X, Y, and Z.

2. Literature Review & Hypotheses Development

2.1 Flow Theory in Short-Video Contexts

Flow Theory, originally proposed by Csikszentmihalyi (1990), describes a state of optimal experience characterized by deep concentration, intrinsic enjoyment, and a sense of control. In digital environments, flow has been widely used to explain user engagement in contexts such as online shopping, gaming, and social media use (Novak et al., 2000; Hoffman & Novak, 2009). Although short-video viewing is typically less interactive than gaming or browsing, it can still induce flow through seamless content delivery, rapid audiovisual stimulation, and sustained attentional capture.

Short-video platforms reproduce several conditions conducive to flow, even if they do not mirror the full challenge–skill structure found in highly interactive tasks. Personalized recommendation systems reduce cognitive friction by

continuously presenting relevant content, while fast-paced editing, vivid audiovisual cues, and platform-based feedback mechanisms help sustain attention and enjoyment. As a result, viewers may experience a state of immersive and intrinsically rewarding involvement that is conceptually consistent with flow in media-consumption settings.

Empirical studies have further supported the relevance of flow in short-video tourism contexts. For example, Liu et al. (2024) found that entertainment, informativeness, and interactivity influenced short-video sharing intentions through flow, while Liu et al. (2023) showed that enjoyment and professionalism in tourism short videos enhanced user engagement. These findings suggest that flow in short-video viewing is not merely a state of attention, but a psychologically meaningful experiential state that may precede and intensify viewers' affective evaluations. In other words, flow can be understood as an experiential condition that precedes and shapes subsequent affective appraisal processes, rather than constituting emotional responses itself. Therefore, this study proposes the following hypothesis:

H1: Flow positively influences PAD emotions.

2.2 PAD Emotions as the Affective Mechanism

Cognitive Appraisal Theory holds that emotions arise from individuals' evaluations of stimuli and their relevance to personal goals and well-being (Lazarus, 1991). Building on this perspective, the PAD framework conceptualizes emotional responses along three dimensions: pleasure, arousal, and dominance (Mehrabian & Russell, 1974). This framework has been widely applied in environmental psychology and consumer research to explain how experiential stimuli are translated into affective reactions and subsequent behavioral tendencies (Donovan & Rossiter, 1982; Vieira, 2013). In the present study, appraisal theory provides the conceptual bridge by explaining how a flow experience may be cognitively evaluated and then manifested as PAD-based emotional responses.

In the context of short-video tourism marketing, PAD emotions provide a theoretically grounded framework for representing the multidimensional structure of affective responses. This framework is particularly appropriate in contexts where emotional responses are complex and dynamically elicited, as it captures not only hedonic valence but also activation and perceived control. Pleasure reflects the extent to which viewers perceive the viewing experience as enjoyable and satisfying; arousal refers to the level of excitement or activation induced by vivid and dynamic audiovisual content; and dominance reflects a sense of control or psychological ease during media consumption. Together, these dimensions provide a more fine-grained account of viewers' emotional responses than a unidimensional affect measure. This

multidimensional representation is particularly important in short-video contexts, where rapid sensory stimulation and continuous content exposure can simultaneously evoke varying levels of pleasure, activation, and perceived control.

Prior research suggests that PAD-based emotions influence approach-oriented consumer responses, including favorable attitudes, sustained attention, and behavioral intentions (Donovan & Rossiter, 1982; Vieira, 2013). In short-video environments, such emotional responses are likely to increase viewers' willingness to continue watching, recommend the content, and engage with similar media in the future. Accordingly, PAD emotions are expected to function as the proximal affective driver of digital engagement. Therefore, the following hypothesis is proposed:

H2: PAD emotions positively influence digital engagement.

2.3 Generational Moderation in Digital Engagement

Generational cohorts are shaped by distinct sociocultural and technological environments, which can influence how individuals process media content and respond to digital experiences (Mannheim, 1952; Parment, 2013). In marketing and media research, such cohort-based differences have been associated with variations in technology adoption, content preferences, credibility judgments, and emotional responsiveness (Bolton et al., 2013; Williams & Page, 2011). These differences suggest that the psychological mechanism linking immersive experience and engagement may not operate uniformly across generations. Specifically, generational cohorts may differ not only in their media preferences but also in how experiential stimuli are cognitively processed and affectively evaluated. Such differences may lead to variations in the strength of the relationships among flow, PAD emotions, and digital engagement.

Generation Z, having been socialized in highly visual and fast-paced digital environments, may be more attuned to rapid sensory stimulation and creator-centered content, which could shape how strongly immersive viewing experiences are translated into affective responses (Omar & Dequan, 2020; Djafarova & Trofimenko, 2019). Millennials may respond more favorably to identity-relevant storytelling and branded narratives,

whereas Generation X may place greater emphasis on informational credibility and evaluative processing (Bolton et al., 2013; Williams & Page, 2011). Accordingly, cohort differences may be reflected not only in media preferences but also in the strength of the structural pathways linking flow, PAD emotions, and engagement.

Although prior studies have documented generational differences in media use and digital consumption, fewer studies have examined whether the emotional transmission mechanism underlying engagement differs across cohorts in the context of tourism short videos. To address this issue, this study tests whether the structural relationships in the proposed model vary across Generations X, Y, and Z.

H5a: The Flow→PAD path differs across cohorts.

H5b: The PAD→ Digital Engagement path differs across cohorts.

H5c: The indirect Flow→PAD→ Digital Engagement effect differs across cohorts.

2.4 Competing Account: The Direct Flow–Engagement Link

Although the present study emphasizes PAD emotions as the primary mechanism linking flow to digital engagement, prior literature suggests an alternative theoretical perspective in which flow may exert a direct influence on engagement, independent of affective mediation (Hoffman & Novak, 2009). This perspective implies that immersive experience itself may directly motivate continued interaction without necessarily being fully translated into explicit emotional responses. Testing these competing explanations is theoretically important because it allows us to determine whether emotional processes fully account for the effect of flow on engagement, or whether a direct experiential pathway remains. To examine which explanation better fits the present context, this study compares a full-mediation model, in which flow affects digital engagement only through PAD emotions, with a competing partial-mediation model that also includes a direct Flow→Digital Engagement path.

H3: Flow positively and directly influences digital engagement.

H4: The indirect effect of Flow on Digital Engagement via PAD is positive.

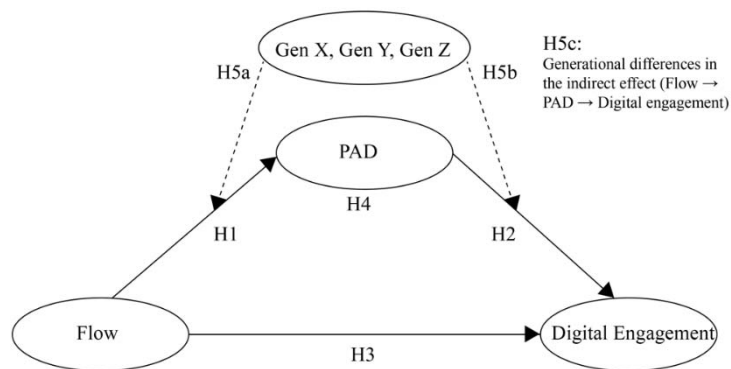


Figure 1: Research Model

Note. H3 represents the competing hypothesis (Direct Flow→Digital Engagement).

H5a - H5c represent generational moderation, including the indirect effect (H5c).

3. Methodology

3.1 Sample and Procedure

Data were collected through a nationwide online survey in Taiwan between December 2023 and March 2024. To ensure that respondents could provide experience-based evaluations rather than abstract opinions, only individuals who had watched at least one KOL travel short video on TikTok, Instagram Reels, or YouTube Shorts within the previous six months were eligible to participate. The six-month criterion was adopted to balance ecological realism with recall reliability.

After excluding incomplete responses, attention-check failures, and straight-lining cases, 716 valid questionnaires were retained for analysis. Respondents were classified into Generation X (1965–1980), Generation Y (1981–1996), and Generation Z (1997–2006) based on widely adopted cohort definitions in generational research. This cohort-based sampling design enabled a structured comparison of the proposed psychological mechanism across age-based consumer segments. Participation was voluntary and anonymous, and informed consent was obtained from all respondents. Detailed demographic characteristics are presented in Table 1.

Table 1: Demographic Characteristics of Respondents (N = 716)

Item	Category	Gen X (44–59)		Gen Y (28–43)		Gen Z (18–27)	
		n	%	n	%	n	%
Gender	Male	112	48.07	91	38.56	113	45.75
	Female	121	51.93	145	61.44	134	54.25
Education	High school or below	109	46.78	5	2.12	14	5.67
	College/University	114	48.93	198	83.90	222	89.88
	Graduate or above	10	4.29	33	13.98	11	4.45
Monthly Income	Below NT\$30,000	0	0.00	33	13.98	79	31.98
	NT\$30,000–50,000	17	7.30	58	24.58	133	53.85
	NT\$50,000–70,000	129	55.36	117	49.58	35	14.17
	Above NT\$70,000	87	37.34	28	11.86	0	0.00

The sample exhibits a balanced representation across cohorts, with demographics reflecting the typical distribution of short-video users in a digitally mature market. Importantly, income and education distributions across cohorts show reasonable variance, supporting the external validity of generational comparisons.

3.2 Stimulus and Procedure

In line with prior recall-based studies on media experiences (e.g., Calder et al., 2009; Hollebeek et al., 2014), this research did not employ pre-selected videos as experimental stimuli. Instead, respondents were instructed to recall and evaluate a short-video they had personally viewed in the past six months featuring a travel influencer

(KOL) on TikTok, Instagram Reels, or YouTube Shorts. Screening questions ensured that participants had genuine prior exposure to such content, thereby anchoring responses to an authentic and ecologically valid media experience.

To minimize recall bias, the survey prompted participants to identify a specific KOL travel video they remembered well, including its platform and general theme (e.g., food tourism, cultural attractions, natural landscapes). Participants were then asked to reflect on their experience while answering the Flow, PAD, and Digital Engagement measures. This approach allowed us to capture naturalistic reactions to short-video tourism marketing in real-world contexts, rather than responses to artificially imposed stimuli.

The procedure comprised three steps. First, participants provided informed consent and passed screening questions to confirm eligibility. Second, they recalled and mentally anchored on a recent KOL travel video experience. Finally, they completed the questionnaire, which included the key constructs (Flow, PAD emotions, Digital Engagement) and demographic items. On average, survey completion required 10–12 minutes. This recall-based approach avoids artificial exposure and better captures participants' naturally occurring media experiences.

3.3 Measurement Instruments

All constructs were measured on seven-point Likert scales (1 = strongly disagree, 7 = strongly agree) and contextualized to short-video travel viewing. The survey was translated and back-translated (Chinese–English), reviewed by three domain experts for content validity, and pilot-tested with 30 Taiwanese respondents to ensure semantic equivalence and cultural appropriateness. To mitigate common-method bias, item order was randomized. All measurement items were adapted from established scales and reworded to fit the context of KOL travel short-video viewing. This contextual adaptation was intended to preserve conceptual validity while enhancing situational relevance.

Flow was modeled as a higher-order experiential construct reflecting immersive media consumption. Flow ($k = 13$). Flow was operationalized as three subdimensions: Absorption, Enjoyment, and Intrinsic Motivation, reflecting autotelic immersion in passive short-video viewing. Following Csikszentmihalyi (1990) and Novak et al. (2000), Absorption was captured with five items (e.g., “I felt completely absorbed in the KOL travel video”), Enjoyment with four items (e.g., “Watching KOL travel videos was an enjoyable and relaxing experience”), and Intrinsic Motivation with four items (e.g., “I watched KOL travel videos out of personal interest and curiosity about the content”). Consistent with our conceptual framework, perceived control was not modeled as part of Flow to avoid overlap with PAD's Dominance dimension. This modeling decision is consistent with prior research that adapts flow constructs to specific contexts by prioritizing theoretically relevant dimensions while avoiding conceptual redundancy (Hoffman & Novak, 2009).

PAD emotions were conceptualized as viewers' affective responses to the recalled short-video experience. PAD emotions ($k = 12$). Pleasure, Arousal, and Dominance were measured using items adapted from Mehrabian and Russell's (1974) PAD framework. Pleasure (4 items; e.g., “I felt pleased and satisfied while watching”), Arousal (4 items; e.g., “The video made me feel excited and energized”), and Dominance (4 items; e.g., “I felt in control of my viewing pace and interpretation of

the video”). This operationalization aligns with Cognitive Appraisal Theory by capturing emotional states as outcomes of individuals' evaluations of their viewing experience, thereby functioning as mediators between flow and engagement.

Digital engagement was conceptualized as viewers' behavioral manifestation of continued interaction with or response to short-video tourism content. Digital Engagement ($k = 3$). Three items were adapted from Calder et al. (2009) and Hollebeek et al. (2014) to capture users' behavioral engagement in short-video contexts. Items included Continued Viewing Intention (“I intend to continue watching KOL travel videos”), Recommendation Intention (“I would recommend destinations featured in KOL travel videos to others”), and Revisit Intention (“I would watch KOL travel videos again as references for my travel planning”). These three indicators jointly reflect the core behavioral expressions of digital engagement in tourism short-video environments.

Competing Pathway (H4). Given our competing account that Flow may directly influence engagement, model specification included a direct Flow→Engagement path. Although no additional measures were introduced for this pathway, its estimation controls for the possibility of omitted variable bias by testing whether Flow retains explanatory power after accounting for PAD emotions. This specification allows us to determine whether the effect of flow is fully mediated by emotional processes or whether an additional direct pathway remains.

Control Variables. Gender, age, education, and platform usage frequency were included as controls. Controlling for these variables helps isolate the unique effects of Flow and PAD on engagement outcomes. In particular, age serves as a robustness check for generational comparisons, ensuring that moderation effects are not confounded by simple linear age differences.

3.4 Data Analysis

Data analysis proceeded in three stages: validation of the measurement model, comparison of competing structural models, and examination of generational differences through multi-group SEM. Acknowledging the non-experimental design and the potential for Common Method Bias (CMB) inherent in single-source data, we employed procedural and statistical controls. Given 7-point Likert items and mild non-normality, models were estimated with maximum likelihood (ML) and missing data handled via FIML. Multivariate normality was examined using Mardia's test, and non-normality was addressed with Bollen–Stine bootstrap. We also assessed multicollinearity ($VIF < 5$), consistent with recommended thresholds (Hair et al., 2019).

Confirmatory factor analysis was first conducted to assess the adequacy of the measurement model before testing the structural relationships. Reliability was evaluated using Cronbach's α and composite reliability, whereas convergent validity and discriminant validity were assessed through AVE and the Fornell–Larcker criterion. Measurement model. CFA assessed reliability (α , $CR \geq .70$), convergent validity ($AVE \geq .50$), and discriminant validity (Fornell–Larcker criterion) together with HTMT (preferred threshold $< .85$, or $< .90$ with 95% CI excluding 1.00). CMB was mitigated procedurally (anonymity, item randomization) and tested statistically. We verified that Harman's single-factor test did not account for the majority of the variance, and both a one-factor model and a latent method-factor model demonstrated poor fit compared to the proposed measurement model. The latent method factor was modeled by allowing all items to load on both their theoretical constructs and a common method factor, with the variance of the latter constrained for identification (Podsakoff et al., 2003). These procedures collectively reduce the likelihood that common method bias substantially influences the results.

Structural models and relationships. Structural equation modeling was appropriate for this study because it enabled the simultaneous estimation of latent constructs, mediation paths, and model fit under competing theoretical specifications (Hair et al., 2019). Given the cross-sectional nature of the data, the findings should be interpreted as indicative of predictive associations and structural relationships rather than definitive causal inferences. We compared M0 (partial mediation: Flow \rightarrow PAD and Flow \rightarrow Engagement simultaneously) against M1 (full mediation: Flow \rightarrow PAD \rightarrow Digital Engagement without the direct path). Digital Engagement was specified as a latent outcome with three indicators (continued viewing, recommendation, reuse). Model fit was judged by χ^2/df , CFI, TLI, RMSEA, SRMR, and AIC/BIC, with parsimony favored when $|\Delta CFI| < .01$ or $|\Delta RMSEA| < .015$, and $\Delta AIC/\Delta BIC < 2$. Mediation was tested using 5,000-sample bias-corrected bootstraps (95% CIs).

Generational moderation. Multi-group SEM (Gen X, Gen Y, Gen Z) tested configural, metric, and scalar invariance using the $\Delta CFI \leq .01$ criterion; when full scalar invariance was not achieved, partial scalar invariance was applied. Structural

moderation was assessed by constraining focal paths and comparing against the unconstrained model ($\Delta\chi^2$, ΔCFI), with Wald χ^2 tests used for joint and pairwise comparisons. Group-specific indirect effects and their pairwise contrasts were bootstrapped with 95% CIs. This approach allowed the study to test whether generational differences emerged at the level of structural mechanisms rather than merely at the level of observed mean scores.

All analyses were conducted using AMOS 28 with maximum likelihood estimation, and non-normality was addressed using Bollen–Stine bootstrap.

4. Results

4.1 Descriptive Statistics and Measurement Model

Descriptive statistics and inter-construct correlations are reported in Table 2. All constructs showed moderate to strong correlations ($r = .697-.736$, $p < .001$), consistent with theoretical expectations while remaining below the threshold for multicollinearity.

The measurement model was assessed using CFA. As shown in Table 2, all standardized factor loadings exceeded .70, supporting indicator reliability. Internal consistency was excellent, with Cronbach's α and composite reliability (CR) values above .95 for all constructs. Convergent validity was established, as the average variance extracted (AVE) values exceeded the .50 benchmark (Hair et al., 2019).

Discriminant validity was examined using the Fornell–Larcker criterion, which requires that the square root of each construct's AVE exceed its correlations with other constructs. This condition was satisfied for all constructs, supporting discriminant validity.

The overall measurement model demonstrated acceptable fit ($\chi^2/df = 4.875$, $CFI = .968$, $TLI = .962$, $RMSEA = .074$, $SRMR = .043$). Although χ^2 was significant ($p < .001$), this is common in large samples. The incremental and absolute fit indices met recommended thresholds (Hu & Bentler, 1999), while RMSEA, though slightly above the strict .06 cutoff, remained within the acceptable range ($< .08$) for complex models with large samples. These results indicate that the measurement model was adequate for subsequent structural analysis.

Table 2: Descriptive Statistics and Pearson Correlations (overall sample)

Construct	Mean	SD	Flow	PAD	Digital Engagement
1. Flow	4.36	.848	1		
2. PAD	4.25	.830	.697**	1	
3. Digital Engagement	4.34	.847	.736**	.717**	1

Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3: CFA Loadings and Reliability

Construct	Items	α	CR	AVE
Flow	13	.979	.981	.797
PAD	12	.975	.977	.786
Digital Engagement	3	.948	.967	.906

Note. α = Cronbach’s alpha; CR = composite reliability; AVE = average variance extracted.

4.2 Structural Model and Competing-Model Comparison

We compared two competing structural models to evaluate the mediating role of PAD in linking Flow to Digital Engagement. M0 (partial mediation model) included both the direct path Flow→Digital Engagement and the indirect path Flow→PAD→Digital Engagement, whereas M1 (full mediation model) excluded the direct path, retaining only the indirect pathway.

Both models demonstrated acceptable global fit (M0: $\chi^2(df = 311) = 1516.206$, $\chi^2/df = 4.875$, CFI = .968, TLI = .962, RMSEA = .074, SRMR = .043; M1: $\chi^2(df = 312) = 1519.028$, $\chi^2/df = 4.869$, CFI = .968, TLI = .962, RMSEA = .074, SRMR = .041). The differences in AIC and BIC between the two models were negligible (< 2), and ΔCFI was below the recommended .01 threshold, suggesting that both models fit the data equally well. Given its theoretical irrelevance and empirical nonsignificance, the direct path was dropped, and the full mediation model (M1) was retained.

Path estimates in M1 supported H1 and H2: Flow strongly predicted PAD ($\beta = .897$, $p < .001$), and PAD significantly predicted Digital Engagement ($\beta = .858$, $p < .001$). Together, these paths explained substantial variance in both constructs ($R^2 = .805$ for PAD; $R^2 = .875$ for Digital Engagement).

Regarding H3, the direct effect of Flow on Digital Engagement was tested in M0 but found to be nonsignificant ($\beta = .089$, $p > .05$; 95% CI [-.028, .212]). When the direct path was removed in M1, overall model fit remained equivalent, indicating that the direct effect was unnecessary. Thus, H3 was not supported.

Finally, H4 was confirmed. Bootstrapped mediation analysis (5,000 resamples) showed that the indirect effect of Flow on Digital Engagement via PAD was significant ($\beta_{\text{indirect}} = .851$, $p < .001$; 95% CI [.729, .990]). The bias-corrected confidence interval excluded zero, demonstrating that PAD fully mediates the relationship between Flow and Digital Engagement. Standardized path coefficients for M1 are presented in Figure 2.

Table 4: Model Fit and Information Criteria

Model	$\chi^2(df)$	χ^2/df	CFI	TLI	RMSEA	SRMR	AIC	BIC
M0 Partial mediation	1516.206 (311)	4.875	.968	.962	.074	.043	1762.206	1772.606
M1 Full mediation	1519.028 (312)	4.869	.968	.962	.074	.041	1763.028	1773.343

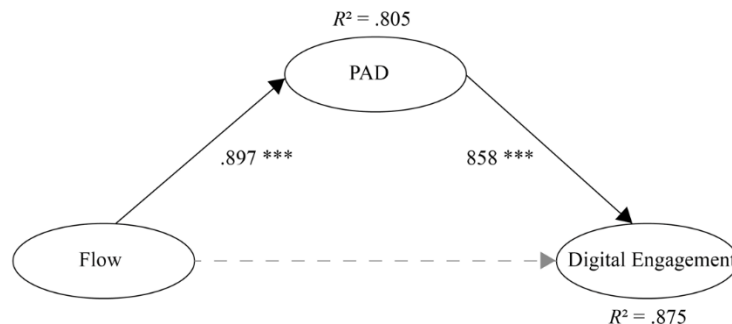


Figure 2: Full Mediation Structural Model Results (Standardized Coefficients).

Note. *** $p < .001$.

4.3 Generational Moderation (Multi-Group SEM)

To test H5a–H5c, we conducted multi-group SEM across Gen X (1965–1980), Gen Y (1981–1996), and Gen Z (1997–2006). Configural and metric invariance were established ($\Delta CFI \leq .01$), permitting meaningful path comparisons. Partial scalar invariance was assumed for subsequent analyses.

H5a (Flow→PAD). The Flow→PAD path was significant across all cohorts ($\beta_{\text{X}} = .974$, SE

$= .038$, $p < .001$; $\beta_{\text{Y}} = .863$, SE = .041, $p < .001$; $\beta_{\text{Z}} = .642$, SE = .057, $p < .001$). Wald tests revealed significant differences between groups (X vs Y: $\chi^2(1) = 3.84$, $p = .050$; X vs Z: $\chi^2(1) = 9.84$, $p = .002$; Y vs Z: $\chi^2(1) = 23.12$, $p < .001$). These results support H5a, indicating that the strength of Flow’s effect on PAD varies across generations, with Gen X showing the strongest influence and Gen Z the weakest.

H5b (PAD→Digital Engagement). The PAD→Digital Engagement path was significant for all cohorts ($\beta_{\text{X}} = .743$, SE = .070, $p < .001$;

$\beta_Y = .846$, $SE = .112$, $p < .001$; $\beta_Z = .924$, $SE = .097$, $p < .001$). Wald comparisons indicated no significant differences across groups (X vs Y: $\chi^2(1) = 0.61$, $p = .435$; X vs Z: $\chi^2(1) = 2.29$, $p = .130$; Y vs Z: $\chi^2(1) = 0.28$, $p = .599$). Thus, H5b is not supported.

H5c (Indirect Flow→PAD→Digital Engagement). The indirect effect was significant across all cohorts, as indicated by bias-corrected confidence intervals (Gen X: $\beta = .779$, 95% CI [.579, 1.018]; Gen Y: $\beta = .874$, 95% CI [.634, 1.198]; Gen Z: $\beta = .811$, 95% CI [.613, 1.097]). Although the effect sizes differed numerically, their confidence

intervals showed considerable overlap, and all pairwise Wald tests were non-significant. Therefore, H5c is not supported.

Although the direct Flow → Digital Engagement path was not hypothesized, results in Table 5 show that it reached significance only for Gen X ($\beta = .164$, $p < .05$), and Wald tests indicated a significant difference between Gen X and Gen Z ($\chi^2(1) = 6.25$, $p = .012$). These exploratory findings suggest that older cohorts may partially bypass affective mediation, although this was not part of the hypothesized model.

Table 5: Multi-Group SEM: Path Estimates and Indirect Effects

Path / Effect	Gen X		Gen Y		Gen Z		Wald χ^2 (df=1)	p
	β	(SE)	β	(SE)	β	(SE)		
Flow→PAD	.974 ***	(.038)	.863 ***	(.041)	.642 ***	(.057)	X vs Y = 3.84 X vs Z = 9.84 Y vs Z = 23.12	.050* .002** <.001***
PAD→Digital Engagement	.743 ***	(.070)	.846 ***	(.112)	.924 ***	(.097)	X vs Y = 0.61 X vs Z = 2.29 Y vs Z = 0.28	.435 .130 .599
Flow→Digital Engagement	.164 (.068) *		.076 (.098)		-.064 (.061)		X vs Y = 0.55 X vs Z = 6.25 Y vs Z = 1.49	.390 .012 * .222
Indirect (Flow→PAD→Digital Engagement)	.779 (95% CI [.579, 1.018])		.874 (95% CI [.634, 1.198])		.811 (95% CI [.613, 1.097])		All pairwise Wald = n.s.	

Note. Standardized coefficients. Indirect CIs are bias-corrected (5,000 resamples). Indirect effect comparisons across cohorts were tested but yielded no significant differences. *** $p < .001$; ** $p < .01$; * $p < .05$; ns = non-significant.

5. Discussion

5.1 Theoretical Contributions

This study suggests that emotions function as immediate mechanisms through which flow is translated into online engagement. Based on survey data from 716 Taiwanese consumers, SEM results confirm a full Flow→PAD→Engagement pathway: flow enhances PAD emotions, which in turn drive engagement, while the direct Flow→Engagement path becomes nonsignificant once PAD is included. Multi-group analysis reveals that only Gen X shows partial direct effects, suggesting that older cohorts may translate immersive states into behavioral intentions more directly than younger cohorts, who rely on affective mediation.

Generational moderation emerges in Flow→PAD (Gen X > Gen Y > Gen Z), whereas PAD→Engagement and the indirect effect remain stable across cohorts. These results extend Flow Theory to passive yet immersive short-video viewing, establish PAD as the central transmission mechanism, and refine generational accounts by clarifying where differences occur (flow formation and conditional direct translation) and where they do not (affect-to-behavior link). Managerially, the findings support differentiated strategies: sensory-rich and interactive content for Gen Z, narrative

storytelling for Gen Y, and credibility- and information-focused messaging for Gen X.

Limitations include the Taiwan-only sample, reliance on self-reports, absence of platform-specific analysis, and the cross-sectional design. Future studies could adopt longitudinal or experimental designs, test additional mediators (e.g., authenticity, narrative transportation, social presence) and moderators (e.g., media literacy, privacy concerns, parasocial relationships), conduct cross-cultural replications, compare platform affordances, and triangulate surveys with behavioral logs or experiments.

5.2 Managerial Implications

For tourism marketers and influencer managers, the findings highlight the need to align video strategies with generational pathways of flow and emotion.

Generation Z (18–27 years): With weaker flow formation, this cohort benefits from heightened sensory intensity. High-tempo edits, dynamic sound design, and interactive features (e.g., polls, challenges) can amplify arousal and dominance.

Generation Y (28–43 years): Gen Y responds most to emotionally resonant storytelling. Travel videos that stress authenticity, episodic narratives, and experiential meaning sustain both pleasure and arousal.

Generation X (44–59 years): As the most flow-responsive cohort, Gen X engagement is enhanced by credibility and informational richness. Trustworthy guidance, detailed itineraries, and cost breakdowns reinforce dominance and reduce uncertainty.

For platform operators, the results support cohort-aware personalization. Recommendation systems can weight flow-relevant signals differently—for example, emphasizing completion rates and interactive taps for Gen Z, while highlighting credibility and detail for Gen X. Generationally adaptive algorithms may optimize engagement and retention more effectively than uniform strategies.

6. Conclusion & Future Research

Overall, this study highlights the pivotal role of emotional processes in bridging immersive experiences and digital engagement, emphasizing that engagement in short-video contexts is not driven by immersion alone but by how such experiences are affectively processed. Based on SEM with multi-group analysis of 716 Taiwanese consumers, results confirmed a full Flow→PAD→Engagement pathway (H4 supported), while the direct Flow→Engagement link was nonsignificant (H3 not supported). Generational moderation further showed that Flow→PAD differs across cohorts (H5a supported), whereas PAD→Engagement and the size of the indirect effect remained stable (H5b and H5c not supported).

Theoretically, these findings extend Flow Theory to passive yet immersive short-video viewing, establish PAD as the core mediating mechanism, and refine generational marketing theory by clarifying that differences lie in flow susceptibility rather than affect-to-behavior translation. Managerially, the results offer cohort-specific guidance: sensory-rich interactivity for Gen Z, narrative storytelling for Gen Y, and credibility- and information-oriented messaging for Gen X. Platform operators can also leverage these insights in generationally adaptive algorithms and content curation.

Limitations include the Taiwan-only sample, reliance on self-reports despite remedies for common-method bias, absence of platform-specific analysis (TikTok, Reels, Shorts), and the cross-sectional design, which limits causal inference. Future research could: (1) test additional mediators (e.g., authenticity, narrative transportation, social presence); (2) examine moderators such as media literacy, privacy concerns, or parasocial relationships; (3) conduct cross-cultural replications; (4) compare platform affordances explicitly; (5) triangulate surveys with behavioral data (watch time, shares, click-through) or experiments; and (6) design cohort-targeted experiments to further explore generational differences in flow sensitivity and affective translation.

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