

The impact of ai recommendation systems on impulsive buying behaviour in electronic marketplaces: The mediating-moderating role of fear of missing out

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ABSTRACT

Artificial intelligence has spread rapidly across e-commerce, and in doing so it has reshaped how consumers reach purchase decisions. Scholarship to date concentrates mainly on what shoppers gain from algorithmic recommenders, whereas far fewer studies ask whether such systems also push buyers toward unplanned spending. The present work therefore tests how perceived attributes of AI recommendation engines relate to impulsive buying, treating fear of missing out (FOMO) simultaneously as an intervening variable and as a boundary condition. Survey evidence was gathered from 823 Vietnamese shoppers who regularly transact on AI-enabled marketplaces. Results show impulsive purchasing rising together with perceived AI authority, perceived task complexity, and with perceived personalisation. FOMO carries a significant portion of each effect and, at the same time, amplifies its magnitude. These outcomes ground several managerial recommendations for platforms seeking to reconcile recommender deployment with responsible consumer conduct.

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1. INTRODUCTION

Firms increasingly regard technological progress as the main lever for improving efficiency and sustaining engagement over the long run. Because AI is absorbed into e-commerce ever faster, holding a competitive position now demands heavier investment than conventional approaches required. Online sellers therefore concentrate on AI-enabled services and on building algorithmic recommendation strategies [1]. Within a digital marketplace growing more crowded each year, marketing managers must construct a distinctive edge. Businesses must consequently design and run AI-powered marketing that preserves durable ties with customers and with partners, within and beyond organisational boundaries [2].

Market opportunity is undeniably large, yet the psychological machinery underlying AI-shaped consumer behaviour remains difficult to read for local firms and for the global platforms competing in Vietnam. Large foreign marketplaces have moved quickly into Ho Chi Minh City, Hanoi, and other urban centres, but predicting which recommendation tactics will lift sales, and which will instead provoke pushback or regret after the purchase, continues to defeat many of them [3]. Making recommendation engines work well becomes harder still because shoppers in Vietnam behave distinctively: collectivist values, intense social media use, and steadily improving digital skills all shape how

they respond [4]. For newer platforms working with modest technical budgets, the practical route forward is therefore to grasp the psychological levers lending algorithmic advice its persuasive force, above all the way fear of missing out (FOMO) precipitates on-the-spot buying [5].

Appetite for individually tailored shopping keeps growing because the majority of Vietnamese buyers no longer sit at the base of Maslow's need hierarchy, where physiological and safety concerns dominate [6]. What motivates them instead are belonging, esteem, and self-actualisation. Purchases made online serve not merely functional ends but also signal status, earn social approval, and express who the buyer is. Picking goods that align with an idealised self, follow current trends, and demonstrate familiarity with what is new becomes a way of assembling social identity. Such motives clarify why scarcity framing, social proof, and tailored prompts that arouse FOMO prove so effective on these shoppers. Examining the FOMO-centred link between recommender attributes and impulsive purchasing in Vietnam is therefore important.

Regarding the current literature, work on AI recommenders has largely catalogued their advantages: appreciation of algorithms together with sharper judgment accuracy [7], quicker decisions and lower search costs when choice problems turn complex [8], [9], and tailored shopping episodes that raise both trust in and willingness to follow algorithmic advice [10]–[12]. Read together, these studies present recommender output as a decision aid that improves consumer welfare. Several gaps nonetheless persist. To begin with, the harmful side of such systems, above all their power to provoke purchases that were never planned, has so far attracted comparatively little examination [13]. Furthermore, while social-media settings have produced an abundant FOMO literature [5], [14], whether FOMO is the psychological route connecting recommender attributes to impulse purchases inside e-marketplaces has scarcely been established. Finally, very few studies have specified FOMO as mechanism and as boundary condition at one and the same time. The present study responds by asking how perceived AI authority, along with task complexity and with personalisation as perceived, shapes impulsive buying, and how FOMO serves at once to mediate and to moderate those links among Vietnamese shoppers.

2. LITERATURE REVIEW

2.1. Technical background of AI recommendation systems in e-marketplaces

Viewed technically, the recommender platforms studied here rest on three algorithmic families operating at scale. Neighbourhood methods or matrix factorisation let collaborative filtering derive preferences from comparable users; content-based approaches align item attributes with a shopper's browsing history; and hybrids, standard today in sizeable marketplaces, fuse both with deep ranking networks so that sparse data and cold-start conditions become tractable [4], [12]. Shopee, Lazada, and TikTok Shop run hybrid engines in Vietnam, refreshing suggestions from behavioural signals (clicks, searches, purchases) plus contextual ones (time, device, location). At TikTok Shop the engine sits inside video feeds and livestreams, so entertainment and buying merge. Users meet the result as interface cues: “AI-selected for you” labels, stock counters, countdown timers, devices making the system look expert, easy, and tailored. Consumer readings of that infrastructure form the constructs studied, notably perceived AI authority, namely judgments about how competent and legitimate the engine is.

2.2. Conceptual model

This study builds a model on the stimulus-organism-response (S-O-R) logic [15], treating recommender attributes, that is, perceived AI authority together with task complexity and personalisation, as environmental stimuli arousing FOMO, which in turn produces impulsive purchasing. Consistent with current work on individual variation in technology-driven consumption, FOMO additionally conditions how strongly recommender attributes translate into impulse buying. That FOMO occupies two positions, channel and boundary condition, mirrors how intricate the phenomenon becomes once algorithms curate consumption. Under the first role, FOMO is the internal process converting system attributes into behaviour. Under the second, variation across people in FOMO proneness dictates how tightly system attributes and impulsive reactions are coupled. Theoretical warrant for this dual specification lies in the accepted separation of state from trait FOMO [5]. State FOMO plays the mediating part: it is the unease that scarcity signals and social proof embedded in suggestions provoke, and it corresponds to the organism component of the S-O-R model. Trait FOMO, differing across individuals, governs how reactive each shopper becomes to those cues. One construct can occupy both positions inside a single specification because an indirect path and a product term draw on distinct portions of variance. Figure 1 presents the model.

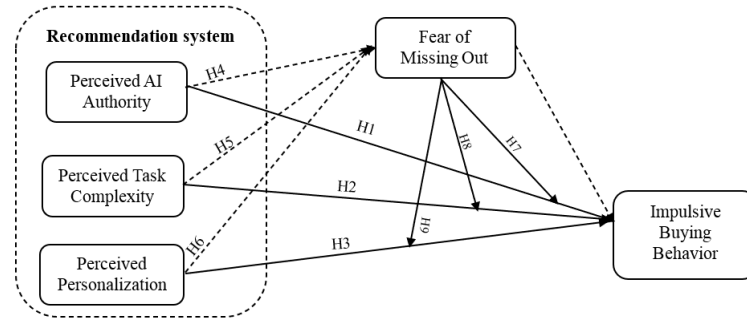


Figure 1. Research model

2.3. Research hypotheses development

Consumer decision processes in online retail are shaped by three attributes of recommender systems. The first, perceived AI authority, concerns the legitimacy shoppers grant algorithmic systems to steer their actions even where the system's competence has never been demonstrated to them. Shoppers holding this belief credit algorithms with analytical power superior to their own for locating the best items within enormous assortments. Research on authority bias indicates that advice from a source judged expert or capable is trusted and followed more readily; relatedly, Logg, *et al.* [7] report "algorithm appreciation", meaning that algorithmic judgment is favoured over the human variety, wherever algorithmic competence is rated highly. Perceived task complexity, the second attribute, captures how mentally taxing a decision feels when information is abundant, alternatives are many, or outcomes stay uncertain [8]. Facing catalogues that run to thousands of items, shoppers incur heavy search and evaluation costs, so they look for shortcuts or simplifying devices sparing mental effort [9]. Perceived personalisation, the third of them, refers to how far shoppers judge algorithmic suggestions to match their individual tastes, requirements, and purchase situation [10]. Where personalisation is judged high, cognitive effort and uncertainty both fall markedly, so algorithmic proposals earn greater trust and readier adoption.

Three hypotheses about recommender attributes and impulse purchasing follow from the reasoning above. Shoppers who regard AI as authoritative may skip careful evaluation and buy quickly, particularly once countdown offers or scarcity signals appear. Because appreciation of the algorithm cuts mental effort, reactions to urgency cues turn more impulsive still. Complex assortments, meanwhile, leave shoppers anxious or unable to decide, so algorithmic proposals win acceptance with little scrutiny. By absorbing the cognitive load of weighing many attributes and large volumes of information, recommenders make choices feel simple and safe and thereby, paradoxically, raise impulse purchasing [12]. Tailored suggestions, lastly, generate "algorithmic intimacy": shoppers sense that the system reads their wants accurately, occasionally more accurately than they do themselves. That sense of being understood produces quick commitment, since buyers trust the item to satisfy preferences they never articulated, while situational wording lowers perceived risk and eases impulsive action. Accordingly, we hypothesise:

- H1: Perceived AI authority positively influences impulsive buying behaviour in AI-driven e-commerce.
- H2: Perceived task complexity positively influences impulsive buying behaviour when mediated by an AI recommendation system.
- H3: Perceived personalisation positively influences impulsive buying behaviour in AI-mediated shopping contexts.

A pathway leading from recommender attributes to impulse purchasing through FOMO is proposed here on the basis of Self-Determination Theory alongside social comparison theory. Shoppers confronted with an authoritative system, a demanding choice task, or individually tailored offers begin to fear that valuable chances will be claimed by others first. Authority perceptions raise FOMO because they imply the engine commands better knowledge of trends, timing, or dwindling stock, knowledge whose neglect may end in regret once the chance disappears. Complexity works similarly: shoppers who hand evaluative work to the system may simultaneously grow uneasy that, unaided by the algorithm, they will overlook the best options better-informed buyers are already finding, and this unease then becomes a motivational state pushing them to comply. Personalisation heightens FOMO especially sharply, since it suggests a proposal matching one person's taste against a restricted supply, so hesitation may cost access to goods fitted precisely to that person's requirements [10], [16]. The tie between personalisation and FOMO grows stronger still once social-proof wording enters tailored messages (for instance, "Others with similar tastes purchased this item"), because relevance and comparison anxiety are then aroused together. In the account offered

by Przybylski *et al.* [5], FOMO stands for psychological needs left unmet, chiefly relatedness (contact with what others experience) and competence (choosing well). Highlighting what is selling, what is trending, or what will soon expire is precisely what recommenders are engineered to do. Those designs speak straight to the needs just named, generating FOMO states that shoppers discharge by buying at once so that regret is forestalled [14]. We therefore hypothesise that:

- H4: FOMO mediates the positive relationship between perceived AI authority and impulsive buying behaviour.
- H5: FOMO mediates the positive relationship between perceived task complexity and impulsive buying behaviour.
- H6: FOMO mediates the positive relationship between perceived personalisation and impulsive buying behaviour.

FOMO operates as the psychological route by which recommender attributes reach behaviour; alongside that route, how prone a person chronically is to FOMO acts as a boundary condition strengthening or else weakening those very effects [13]. Individuals dispositionally high in FOMO, people troubled continually by the thought that others are enjoying rewarding experiences, prove markedly more responsive to cues awakening such worries [5]. Person-environment fit theory maintains that what people do depends on how well personal dispositions and situational characteristics correspond; on that basis, shoppers carrying chronic FOMO should be expected to buy impulsively once recommender cues arouse situational FOMO. Where FOMO runs high, authority signals from the system read as expert judgment that urgent chances exist and that better-informed buyers will otherwise get ahead [17]. Confronted with demanding purchase tasks, these same shoppers worry more acutely about deciding badly, which leaves them unusually open to any suggestion resolving uncertainty. Dispositional FOMO combined with task difficulty thus yields decisions that are fast and barely reasoned. Tailored proposals likewise elicit strong reactions from high-FOMO shoppers, who read them as scarce chances fitted to their tastes and contestable by others. We hypothesise that:

- H7: FOMO moderates the relationship between perceived AI authority and impulsive buying behaviour, such that this positive relationship is stronger for consumers with higher FOMO.
- H8: FOMO moderates the relationship between perceived task complexity and impulsive buying behaviour such that this positive relationship is stronger for consumers with higher FOMO.
- H9: FOMO moderates the relationship between perceived personalisation and impulsive buying behaviour, such that this positive relationship is stronger for consumers with higher FOMO.

3. METHOD

Data were gathered quantitatively through an online questionnaire distributed across several channels aimed at Vietnamese online buyers: Facebook, Zalo communities, user groups of the leading marketplaces, and mailing lists. Participation was further stimulated by QR codes posted on campuses and in retail outlets and by snowball referral. Screening items verifying recent purchases and AI exposure, attention checks, completion-time monitoring, and IP-based duplicate detection together safeguarded response quality.

Fieldwork occupied six weeks, running from March 15 to April 25, 2025; 1,127 people opened the questionnaire. Screening was passed by 896, and once invalid cases were deleted, 823 usable responses were left, giving a 73.0% rate. Respondents mirrored urban online buyers in Vietnam: female 54.7%, male 45.3%; ages 18–25 (37.2%), 26–35 (43.6%), 36–45 (19.2%). Postgraduate degrees 8.6%, bachelor's 68.3%, secondary 23.1%. Buying twice monthly or more applied to 76.4%, with 32.8% purchasing weekly.

Every construct relied on validated scales taken from earlier studies and then polished through the qualitative fieldwork. Agreement with each statement was recorded on seven-point Likert scales anchored at 1 (strongly disagree) and at 7 (strongly agree), a format chosen so as to widen the variance captured and strengthen statistical power. Four items capturing beliefs about the competence, expertise, and decision superiority of algorithms operationalised perceived AI authority (PAI), following Logg *et al.* [7], Longoni and Cian [18]. Three items addressing information overload, difficulty of evaluation, and uncertainty arising when algorithmic help is absent measured perceived task complexity, after Chan *et al.* [19], Reynolds and Ruiz de Maya [20]. For perceived personalisation, five items borrowed from Smink *et al.* [10], Tam and Ho [21] gauged how far suggestions struck respondents as tailored, pertinent, and consistent with their own personal tastes. An eight-item instrument from Przybylski *et al.* [5], updated in line with newer FOMO work situated in e-commerce, served for FOMO; its items registered dispositional FOMO (trait-like individual differences) together with FOMO aroused by shopping situations (state-like reactions to particular recommendations). Six items from Chung *et al.* [22] measured Impulsive Buying Behaviour (IBB), reworded so that they referred to buying prompted by AI suggestions rather than to impulsiveness in general.

Analysis unfolded across several stages, drawing on complementary statistical procedures. SPSS 28.0 handled the preliminary work: distributional checks, the detection of outliers, and an appraisal of

common method bias (CMB). Hypotheses were subsequently tested with partial least squares structural equation modelling (PLS-SEM) in the SmartPLS 4.0 environment.

4. RESULTS AND DISCUSSION

4.1. Results

Cronbach's alpha (α) together with composite reliability (CR) served to gauge the internal consistency of the measures. Every construct cleared the customary cut-offs: alpha ran from 0.821 for perceived task complexity up to 0.947 for FOMO, while CR ran from 0.822 to 0.948, comfortably above the minimum of 0.70 [23]. Reliability of measurement is therefore well supported. Average variance extracted (AVE), the share of variance a construct captures relative to measurement error, was used next in order to judge convergent validity. Each construct surpassed the recommended benchmark of 0.50 [24], with figures lying between 0.658 for impulsive buying behaviour and 0.737 for perceived task complexity. Every indicator loading likewise passed 0.708, which shows that individual items contributed considerable variance to the constructs they represent. Convergent validity is adequately supported by these figures when taken together. Whether constructs stand apart empirically, that is to say discriminant validity, was judged against several criteria. Heterotrait-monotrait (HTMT) correlation ratios all sat under the strict limit of 0.85, spanning 0.331 to 0.650. None of the HTMT confidence intervals, obtained from 5,000 bootstrap subsamples, contained 1.0, which supplies solid support for discriminant validity. Table 1 reports the reliability and validity findings in full.

Table 1. Measurement model assessment results

Construct	Outer loading (min – max)	Cronbach's α	CR	AVE	HTMT value				
					FOMO	IBB	PAI	PP	PTC
FOMO	0.799-0.889	0.947	0.948	0.731					
IBB	0.770-0.862	0.896	0.898	0.658	0.650				
PAI	0.835-0.860	0.869	0.869	0.718	0.516	0.581			
PP	0.790-0.877	0.889	0.893	0.693	0.529	0.552	0.331		
PTC	0.854-0.863	0.821	0.822	0.737	0.567	0.584	0.319	0.338	

Once the measurement model had proved adequate, attention turned to the structural model and to the relationships hypothesised, whose results are reported in Table 2. The t-statistics, path coefficients, confidence intervals, and p-values attaching to every direct, moderating, and mediating effect hypothesised came from PLS-SEM bootstrapping run over 5,000 subsamples. Since every measure was self-reported and captured from a single source on a single occasion, CMB received formal scrutiny before any testing began. In Harman's single-factor test the first unrotated factor explained 42.419% of the total variance, comfortably under the 50% cut-off, while full collinearity diagnostics returned variance inflation factors under the 3.3 benchmark (maximum VIF = 1.831; Table 2). Read jointly, these diagnostics suggest that CMB poses no serious threat within this study.

Table 2. Hypotheses testing result

Hypothesis	Relationship	β	t-value	VIF	R ²	Q ²	f ²	VAF (%)	Decision
	PAI → FOMO	0.289	10.797	1.139			0.134		
	PTC → FOMO	0.335	12.649	1.139	0.452	0.284	0.179		
	PP → FOMO	0.306	11.368	1.153			0.148		
	FOMO → IBB	0.216	7.691	1.831			0.08		
H1	PAI → IBB	0.243	10.013	1.297			0.144		Supported
H2	PTC → IBB	0.219	9.670	1.347	0.683	0.332	0.113		Supported
H3	PP → IBB	0.235	10.303	1.325			0.131		Supported
H4	PAI → FOMO → IBB	0.062	6.061					20.4	Supported (partial mediation)
H5	PTC → FOMO → IBB	0.072	6.49					24.8	Supported (partial mediation)
H6	PP → FOMO → IBB	0.066	6.579					22.0	Supported (partial mediation)
H7	PAI × FOMO → IBB	0.062	6.061	1.309			0.072		Supported
H8	PTC × FOMO → IBB	0.072	6.49	1.337			0.093		Supported
H9	PP × FOMO → IBB	0.066	6.579	1.247			0.064		Supported

Explanatory power for the focal dependent variable proved substantial. Impulsive buying behaviour had 68.3% of its variance accounted for (VAF) ($R^2 = 0.683$), a figure well beyond the benchmarks for substantial explanation applied in consumer research [25]. For the mediator, R^2 indicated that 45.2% of FOMO variance was explained, which confirms that the antecedents specified predict this mechanism to a meaningful degree. Figure 2 displays the estimated structural model, where standardised coefficients, R^2 values, and significance levels are reported within the path diagram itself.

Direct-effect testing showed each of the three recommender attributes to exert significant influence on impulsive buying behaviour. For perceived AI authority the effect was positive and significant ($\beta = 0.243$, $t = 10.013$, $p < 0.001$), so H1 holds. Perceived task complexity likewise produced a positive, significant path ($\beta = 0.219$, $t = 9.670$, $p < 0.001$), which confirms H2. The largest direct coefficient belonged to perceived personalisation ($\beta = 0.235$, $t = 10.303$, $p < 0.001$), supporting H3. Impulse purchases are consequently likelier among shoppers who treat AI as authoritative, who face complicated shopping tasks, or who obtain strongly tailored suggestions.

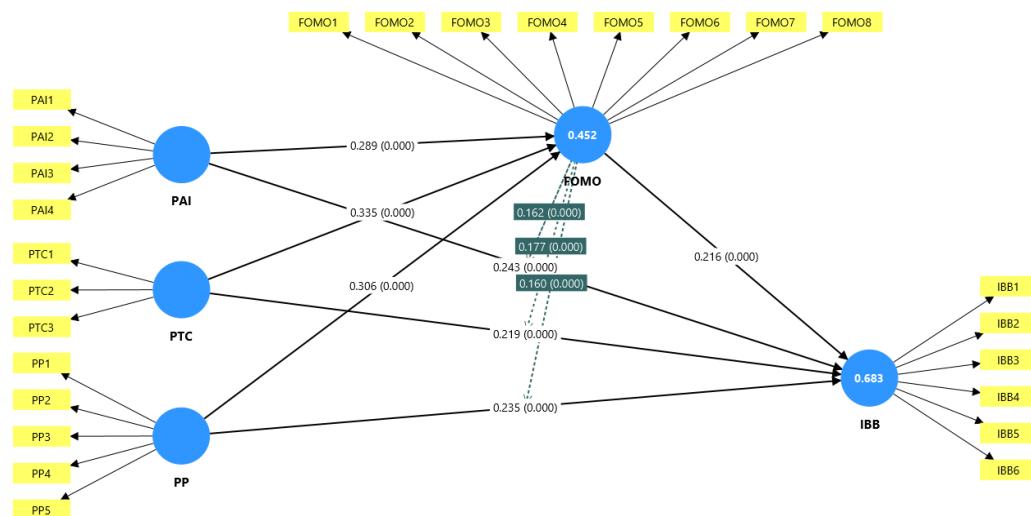


Figure 2. PLS-SEM result

Specific indirect effects derived from bootstrapping served to evaluate FOMO's mediating role, and mediation emerged as significant along each of the three paths. Running from perceived AI Authority through FOMO to impulsive buying behaviour, the indirect effect proved significant ($\beta = 0.062$, 95% CI [0.043, 0.084]), so H4 holds. The path originating in perceived task complexity behaved likewise ($\beta = 0.072$, 95% CI [0.047, 0.095]), which confirms H5. Mediation through FOMO was significant for perceived personalisation as well ($\beta = 0.066$, 95% CI [0.047, 0.086]), supporting H6. Dividing indirect by total effects, the VAF statistic put FOMO's share at 20.8% where authority perceptions were concerned, at 24.8% for task complexity, and at 22% for personalisation, indicating partial mediation, since the direct and the indirect route each add appreciably to the explanation of impulse purchasing [26].

Moderation hypotheses (H7–H9) were examined by adding product terms (for example, perceived AI authority $\times$ FOMO) to the model beside the main effects, and the earlier patterns held throughout. Every interaction coefficient turned out positive and significant ($\beta = 0.062$ through $\beta = 0.072$, all $p < 0.001$), which converges on the conclusion that recommender attributes act more forcefully upon impulse purchasing whenever FOMO is elevated. Simple slopes computed at one standard deviation either side of the FOMO mean reveal the shape taken by these interactions (Figure 3). Where FOMO stood high (+1 SD), perceived AI authority influenced impulsive buying at $\beta = 0.405$; where it stood low (−1 SD), that same slope fell away to $\beta = 0.082$. Comparable contrasts appeared in the case of perceived task complexity ($\beta = 0.396$ at +1 SD as against $\beta = 0.042$ at −1 SD) and equally for perceived personalisation ($\beta = 0.395$ at +1 SD as against $\beta = 0.075$ at −1 SD). Put differently, shoppers who were high in FOMO experienced something like two to three times the influence that shoppers low in FOMO did from all three of the recommender attributes, so the moderation observed in this study amplifies the effects rather than buffering them.

4.2. Discussion

4.2.1. Theoretical implications

Several contributions to the expanding literature on the psychology behind AI-influenced consumption, especially within emerging market settings, follow from this study [1], [2]. Benefits of recommender systems, including greater satisfaction with purchases, more efficient decisions, and deeper engagement with the platform, have already been documented at length [5]; attention here moves instead to unintended by-products, above all the encouragement of impulsive purchase patterns sitting uneasily with the longer-term welfare of buyers. FOMO is advanced as a psychological construct that deserves far more scrutiny within research on AI and on online retail [27], [28]. Although social media together with social comparison have furnished a substantial FOMO literature [5], [14], extending the construct to algorithmic recommendation and to consumption still remains a young line of inquiry. What this study shows is FOMO working simultaneously as the mediating mechanism and as an individual difference conditioning vulnerability to algorithmic influence, which yields a sharper account of when, and of why, algorithmic suggestions become impulsive acts. The results also speak directly to earlier research. They first extend the “algorithm appreciation” reported by Logg *et al.* [7]: that work explains the preference for algorithmic advice by pointing to perceived superior competence, whereas the evidence here uncovers a behavioural cost, since authority perceptions hasten purchases by cutting deliberation short, so appreciation may slide into deference with consequences that bear on welfare. Second, they sit alongside Smink *et al.* [10], whose study links personalisation to stronger responses toward the app and the brand; the present data indicate that identical personalisation mechanisms lift FOMO and impulse buying together, implying that persuasive gains and behavioural hazards flow from one and the same design decision. Third, the study carries the self-determination account of FOMO advanced by Przybylski *et al.* [5] out of social media and into algorithmically curated commerce, showing that recommendation infrastructures, and not merely peer-generated content, can arouse, and profit from, unmet relatedness and competence needs.

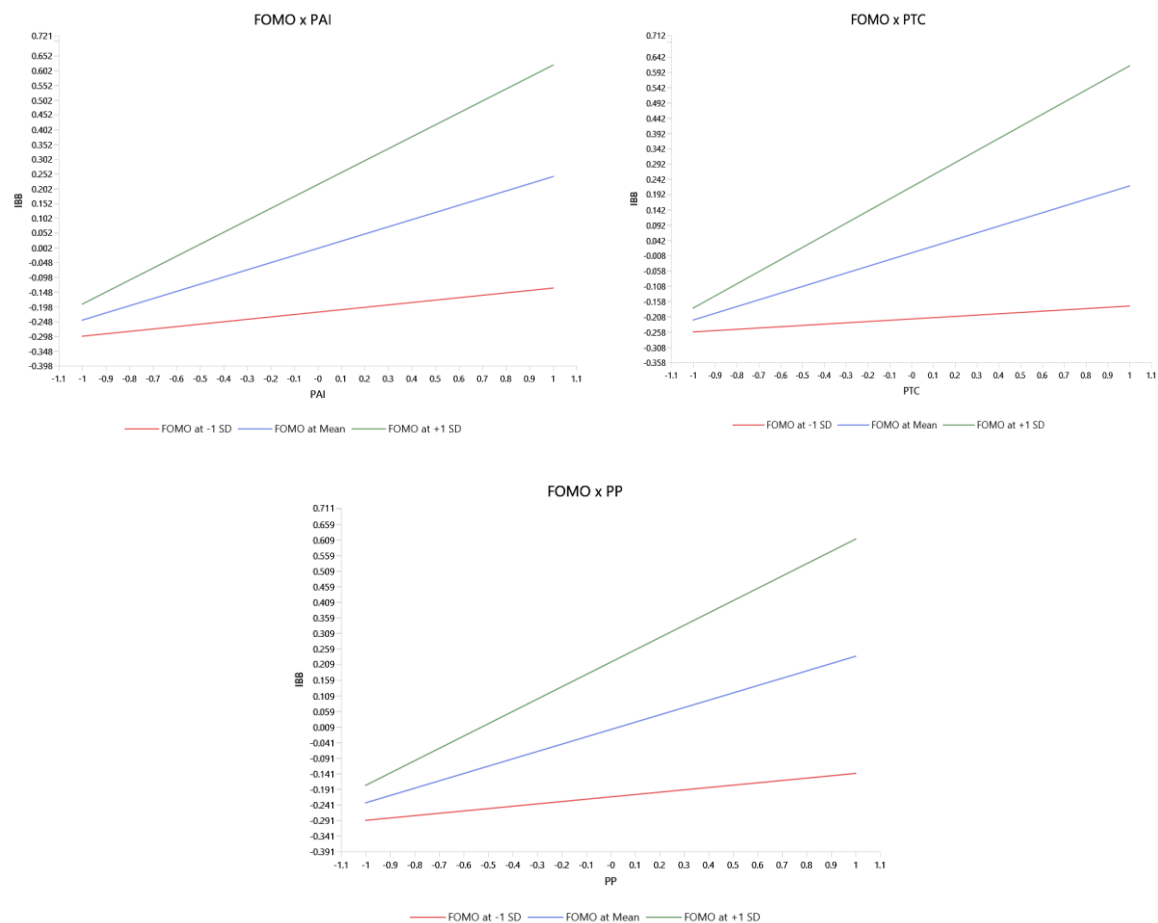


Figure 3. Simple slope analysis of the moderating effect of FOMO

4.2.2. Practical implications

Because the audience addressed here is an ICT one, what follows is stated as design principles governing AI-based recommender systems, and not as marketing advice of a generic kind. Platforms need to weigh conversion-rate goals against an ethical duty to foster sustainable patterns of consumption. Evidence reported here shows that authority framing (e.g., "AI-selected"), urgency framing (e.g., "limited time"), and tailored wording within recommender output do raise sales by arousing FOMO and prompting impulse purchases. Yet operators who value durable customer relationships and brand standing might add elements inviting more deliberate choice: a clearly placed "save for later" control beside the buy button, a waiting period imposed before costly orders are confirmed, or review screens asking buyers to check the basket item by item against genuine needs. AI capability could further be turned toward detecting shoppers whose behaviour resembles problematic impulsivity, such as rapid purchases frequently followed by returns, or baskets far above that person's usual level of spending, and toward timely prompts encouraging reflection or pointing users to financial wellbeing services. Adopting such measures would move platforms away from optimisation that is purely transactional and toward a broader concern with the welfare of the buyer.

Three ICT design principles emerge directly from the evidence at the architectural level: transparency, user control, and friction, each of them built in by design. Both the technical architecture and the interface layer of recommenders ought to draw on consumer psychology and behavioural economics so that autonomy survives without effectiveness being lost. Concretely, designers might: i) explain the algorithmic logic in plain language, stating why an item surfaced, which deflates impressions of algorithmic omniscience that underwrite authority-based compliance; ii) place recommendation parameters under the user's own control, covering price bands, stated priorities ("show me highest quality" as opposed to "show me the best deals"), or a temporary switch disabling personalisation so alternatives can be browsed; and iii) build in "friction" that slows impulsive orders yet avoids irritation, for instance a confirmation step for items priced outside the shopper's normal band, or short notes on cognitive bias appearing whenever trigger phrases such as "limited time" are displayed.

Ethical questions for developers arise beyond the platform layer. Where ranking systems purposely exploit scarcity, social proof, and intensive personalisation to work on psychological weaknesses, FOMO above all, for revenue, they sit in contested territory between persuasion that is legitimate and manipulative "dark patterns." Ethics-by-design practice is therefore advisable: impact assessments of algorithms asking directly whether ranking and messaging push vulnerable, high-FOMO groups disproportionately toward impulse purchases; documented internal review and auditing of persuasive choices; and compliance with the responsible-AI guidance now emerging, which forbids deliberate exploitation of cognitive bias. Practices of this kind reconcile commercial goals with ethical ICT use while lowering the regulatory and reputational exposure that algorithmic manipulation brings.

4.2.3. Limitations and future research directions

Valuable as the present evidence on algorithmically driven impulse buying may be, several limitations point toward further work. The design is cross-sectional first of all, so causal claims cannot be settled definitively even where theory justifies the direction that has been proposed. Experimental work, such as randomised trials varying one recommender feature while the others are held fixed, would firm up causal inference and reveal which design elements most powerfully arouse FOMO and impulsivity. A second limitation concerns self-reported impulse buying, which carries risks of social desirability and of imperfect recall. Subsequent studies might pair survey responses with behavioural traces drawn from real transactions: intervals between viewing a product page and ordering, how often baskets are filled during time-limited promotions, or rates of return after purchase, each of them an objective indicator of impulsivity. Third, only Vietnamese respondents supplied the data. Large though the sample is ($n = 823$), collectivist values, unusually intensive social-media use, and digital penetration climbing fast yet unevenly could magnify FOMO mechanisms compared with elsewhere; how far the present findings generalise, whether to other markets in the region or to global ones, may accordingly be constrained, and replication across cultures that differ in their values and in e-commerce maturity ought to precede any wider claim.

5. CONCLUSION

Consumer decision-making has been transformed fundamentally by the arrival of artificial intelligence in e-commerce infrastructure, which opens unprecedented scope for tailored shopping while creating psychological vulnerabilities of a new kind. Evidence presented here shows perceived AI authority, along with task complexity and with personalisation as perceived, shaping impulsive buying by direct and indirect routes, the indirect one running through FOMO. How susceptible an individual is to FOMO also conditions these effects considerably: impulsive reactions to algorithmic suggestions are dramatically stronger where FOMO is high.

Multiple actors within digital commerce should take note of these results. Platform operators are shown the need to set short-run conversion gains against the cultivation of lasting customer relationships and ethical obligations toward buyer welfare. For those designing AI systems, the message is that behavioural safeguards belong inside recommendation algorithms, rather than persuasive optimisation being pursued without limit. Regulators find support here for frameworks aimed at manipulative algorithmic tactics that still leave room for innovation and consumer choice. Buyers themselves, once alert to the mechanisms described, may engage algorithmic suggestions more critically and decide with greater deliberation.

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C : Conceptualization

M : Methodology

So : Software

Va : Validation

Fo : Formal analysis

I : Investigation

R : Resources

D : Data Curation

O : Writing - Original Draft

E : Writing - Review & Editing

Vi : Visualization

Su : Supervision

P : Project administration

Fu : Funding acquisition

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY

Data underpinning the conclusions reported here may be obtained on reasonable request from B. T. Khoa, the corresponding author.

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