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Enchanted but Regretful: Exploring the Impact of Flow Induced Impulse Buying and Return Intention in the Domain of Live Streaming Commerce

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Social media live streaming has gained popularity among small sellers for real-time selling. Although favourable facets of live streaming have been studied, the potential for these advantages to result in negative outcomes is unexplored. The surge in small businesses embracing live streaming has led to a corresponding increase in product returns, impacting the profitability of these sellers. Therefore, this study aims to investigate how the shopping experience, particularly the sense of flow generated by live streaming, shapes the inclination to return the products. This impact is elucidated through the mediating role of impulse buying and regret (process and outcome regret). Moreover, the research examines the moderating role of flow consciousness in these relationships. A cross-sectional study was conducted using self-administered questionnaire from 463 participants in India. Data was then analysed using covariance-based structural equation model. Additionally, the impact of flow consciousness as a moderator was examined using process macro. The findings highlight three aspects: first, live streaming attributes induce a state of flow for users; second, impulse buying serially mediates with its sequential parallel mediators' process and outcome regret, the relationship between flow and return intention. Third, heightened awareness of the flow intensifies customer's regret. This study offers valuable insights to online retailers, as it provides insights into diverse tactics for mitigating the adverse effects of shopping encounters arising from live streaming. The study provides novel perspectives by delving into the path that influences customer in deciding whether to return products they have purchased through live streaming on social media platforms.

1. Introduction

Today, Social media platforms serve more than just avenues for social interaction and establishing connections. They have evolved into spaces where users can also obtain information about various products & engage in shopping, popularly known as social commerce (s-commerce) (Wongkitrungrueng & Assarut, 2020; Omoush and Oirem, 2023). According to social media global market report (2023), Social media market has grown from \$193.52 billion in 2022 to \$231.1 billion in 2023, reflecting an annual growth rate of 19.4%. Reason being, entering into s-commerce presents fewer barriers, such as modest technological requirements and affordable upfront (Al-Adwan & Yaseen, 2023). Hence, a significant proportion of small businesses have been attracted to engage with s-commerce (Kanani & Glavee-Geo, 2021). More than 200 million small businesses worldwide utilize Facebook tools to sell their products (Facebook, 2021). In India too, within last five years, 83% of small businesses have initiated online sales (Reynolds et al., 2020) and many of them have started their online ventures by creating social media profiles (GoDaddy

data observatory, 2023). This study consider small businesses, as self-employed individuals (De Sordi et al., 2024) and local entrepreneurs, who operate within the informal sector with restricted funding and limited human and social capital (Akpan et al., 2022). Buying from small sellers involves greater risk compared to established businesses with reliable return policies and quality control (Wongkitrungrueng & Assarut, 2020). In an effort to build trust, small sellers are currently embracing more adaptable return policies, despite the potential consequences on their profit margins (Rao et al., 2018). Additionally, the use of Live-streaming by small sellers allows them to reveal more personal aspects of themselves which helps in alleviating the uncertainty that shoppers may have towards them (Hajli, 2015). Through live selling, sellers can provide immediate product explanations, which helps in diminishing returns also that are attributed to information gaps in online retailing. However, according to Xu et al., (2023) live sales exhibit higher return rates than conventional e-commerce, challenging the notion that returns are predominantly caused by informa-

tion gaps This suggests that live streaming may involve additional factors influencing customer return intentions.

The return rate for online shopping in India is projected to range from 25% to 40%, which exceeds the global average (The times of India, 2023). This results in the substantial financial implications for retailers, such as elevated distribution costs and greater demands on labour resources, as it requires handling tasks such as repackaging, restocking, and reselling of the returned items (Petersen & Kumar, 2009, Bijimult et al., 2021). Particularly small businesses, encounter substantial financial challenges as a result of product returns (Li et al., 2021), while established stores may not suffer significant losses (Online labels, 2020).

No doubt live streaming has become a game changer for small businesses, they however are confronting a diverse array of challenges too. The rise of businesses enabled by live streaming is coupled with a corresponding increase in the frequency of product returns (Yang et al., 2022). This presents a considerable challenge for small businesses since returns have a direct impact on their profit margins. Moreover, the adverse impacts of product returns go beyond sellers and affect customers and society at large. While customers usually receive refunds for the cost of the product, they don't receive compensation for the time and effort they spent on the purchase process (Bijimult et al., 2021). Additionally, product returns have detrimental environmental effects that can harm sustainability (Forbes, 2022). Due to its growing significance, recent research has placed substantial focus on this issue.

There are various studies on positive aspects of S-commerce live streaming (Lo et al., 2022, Zhang et al., 2023) but there is a significant gap in understanding the possible negative implications that might result from live streaming. In this competitive arena, every seller on live streaming try to create such an enjoyable shopping experience that fosters a sense of flow and delight throughout their shopping journey (Zheng et al., 2023) as customers value shopping experience more than the actual tangible value of the product or service (Pine & Gilmore, 2011). Flow state experienced by customers not only benefit sellers by increasing customer satisfaction and loyalty (T. L. Huang & Liao, 2017; Liao et al., 2019) but also give them the benefits of increased impulse purchases (Ming et al., 2021, Lin et al., 2022). Although, impulse buying can be enticing, individuals may subsequently encounter feeling of remorse and acknowledge a temporary lack of self-control (Lim et al., 2017). They might derive enjoyment from the flow state encountered during shopping, yet true satisfaction may only be achieved later when they believe they've made a wise choice (Barta et al., 2022). This scenario can result in the emergence of negative emotions, including regret (Connolly & Zeelenberg, 2002). Decisions made unwisely can lead to a rise in product returns, as customers without thorough evaluation, often end up with purchases that do not meet their needs or expectations (Barta et al., 2023b).

Research has extensively delved into the beneficial effects of flow within context of live streaming (Ming et al., 2021, Li & Peng, 2021) but there has been limited investigation into how flow induced through live streaming might

impact negative consequences. Moreover, a significant portion of research related to flow has focused on the results of the flow state itself, overlooking the aspect of whether customers become conscious of being in that state afterward. While certain studies have addressed this aspect, demonstrating that flow consciousness enhances trust in websites (Herrando et al., 2018), the role of flow consciousness in moderating the impact of negative emotions that consumers might encounter after making a purchase has not been explored (Barta et al., 2022). In line with the idea that individuals may not always consciously recognize their own experiences (Lamme, 2003), people could have encountered flow states without being aware of them. This lack of awareness can impede their understanding of the reasons behind their behaviours. Hence, it is crucial to explore the role of flow consciousness. Prior studies have extensively explored various aspects of live streaming such as customer engagement (Kang et al., 2021), purchase intention (Lv et al., 2022, Lu & chen, 2021), Trust (Wongkitrungrueng & Assarut, 2020) and so on. However, there is a notable gap in research regarding how specific attributes of live streaming that contribute to pleasurable experience could potentially lead to product returns, particularly within the context of small businesses. The study takes a perspective that integrates elements from the e-commerce success model, flow theory, and factors related to feelings of regret.

The rest of the study is organised as follows: Section 2 outlines the review of existing literature and theoretical foundation of the study. The formulation of the proposed model and hypotheses is presented in section 3. The research design used has been discussed in section 4. Results of the study are deliberated upon in section 5, followed by the ultimate discussion on study conclusions, along with theoretical and practical implications, limitations, and prospects for future research.

2. Literature review and Theoretical background

2.1. E-commerce system success model (ES success model)

As e-commerce has grown, research has been centered on tailoring Information System (IS) success model to suit e-commerce contexts. Molla & Licker (2001) were the first to apply DeLone & Mclean IS success model to e-commerce. Wang (2008), revised this model by modifying certain pivotal success factors from the initial IS success model. The modifications were done on the basis of insights obtained from the online customers. Particularly, quality of information, system, and service serves as precursors to perceived value and user satisfaction, which ultimately impact intention to reuse. The fundamental components of the ES success model are outlined as follows: System quality denotes the functionality and effectiveness of an e-commerce system (DeLone & McLean, 2004). Information quality pertains to the effectiveness of output generated by an e-commerce system (DeLone & McLean, 2004). Service quality is featured as the variance between the perceived and the anticipated performance of an e-commerce system (Pitt et

al., 1995). Perceived value encompasses the comprehensive evaluation made by consumers regarding the utility of a product or service. This evaluation is based on their perceptions of the benefits offered in comparison to what they receive (Zeithaml, 1988). User satisfaction relates to how customers react emotionally to their engagement with different elements of the e-commerce system (Molla & Licker, 2001). Ultimately, the intention to reuse acts as the final outcome in the ES success model, indicating the customer's willingness to utilize the ES again in future occurrences.

In context of live streaming, it offers a dynamic sensory experience encompassing visuals, sounds, and motion, resulting in more authentic and content-rich information than just the static product images shown in the traditional e-commerce (Zhang et al., 2019). The real-time features within live streaming platforms, encourage viewer engagement by facilitating enhanced communication and interaction between viewers and streamers. This, in turn, assists customers in acquiring more precise product details (Kang et al., 2021). The effectiveness and functionality of live streaming platforms empower viewers to access exceptionally informative and diagnostic product content (Bao & Zhu, 2023).

Therefore, aligning with the framework of Bao & Zhu (2023), this study adopts informativity, real-time interaction, and diagnosticity as the foundation for representing information quality, service quality, and system quality within the context of live streaming commerce. This approach is pertinent because it recognizes that live streaming has evolved into a dynamic and interactive e-commerce platform, where the elements of informativity, real-time interaction, and diagnosticity significantly contributes in providing customers with in-depth product information and interactive engagement.

2.2. Flow Theory

Flow is a fundamental concept in understanding customer experiences (Hoffman & Novak, 1996; Novak et al., 2000). Introduced by Csikszentmihalyi (1975), the theory of flow posits that individuals experience optimal positive states and pleasurable emotions when they enter a flow state, characterized by profound absorption and engagement in an activity. This psychological state induces heightened motivation, a distorted perception of time, and a diminished sense of self-awareness (Csikszentmihalyi, 1975; Novak et al., 2000). While flow manifests across various daily activities, its presence is particularly pronounced in online environments, encompassing general web usage, web navigation, online shopping, gaming, and social networking. In this study, the selection of flow theory is grounded in its emphasis on the pleasurable emotions experienced by users during live streaming (Wu et al., 2020). Live streaming fosters such conditions where flow elements like deep concentration and enjoyment are likely to be prevalent (Lv et al., 2022). During live streams, products are showcased in a unique manner where live broadcasters demonstrate the product usage and address customer queries through interactive sessions in such way that creates a sense of pleasure and satisfaction in the viewers (Li

& Peng, 2021). This directs customers to get deeply engaged in these live activities, potentially leading them to experience a state of flow (Paraman et al., 2022). From the customer's perspective, a strong focus on the shopping experience can be so compelling that self-awareness fades away, leading to a distorted sense of time and an immensely enjoyable state of mind (Wu et al., 2020). Consequently, individuals frequently report a notable decline in self-consciousness (Csikszentmihalyi et al., 2014). This reduced self-consciousness during flow could direct customers to indulge in behaviours that they might later wish to avoid.

3. Research Model and Hypothesis Development

3.1. Attributes of Live streaming commerce and Flow

Live streaming in social media provides a compelling platform for presenting products by emphasizing authenticity, immersive visualization, and active interaction (Hu & Chaudhry, 2020). Increased vividness often corresponds to a greater quantity of informative signals and sensory pathways that can captivate viewer's sensory experiences (Jiang & Benbasat, 2007). Sun et al. (2019) also proposed that visibility during live streaming acts as a signal of informativeness, indicating greater product authenticity. Consumers consistently prioritize product authenticity, particularly when interacting with small, independent sellers (Chen & Dhillon, 2003). This fosters a deeper understanding of the benefits arising from a seller's offering, potentially enhancing the perceived value for customers. The live view of product, offers the comprehensive product information to customers, inducing a state of flow in them (Lv et al., 2022). Researchers have contended that providing website users with convenient, accurate, and current information would capture their interest and subsequently propel them into a deeper level of involvement with the online site (Gao & Bai, 2014; Jeon et al., 2018).

Furthermore, the interactive nature of live streams prompts participants to engage in synchronous communication (Xu et al., 2023), where viewers can raise queries about products and promptly receive answers from the streamers (Kang et al., 2021, Zhang et al., 2019). Presently, small businesses demonstrate a tendency to employ live streaming as a means to exhibit their products or services, interact with customers and promptly address their queries (Hung et al., 2018). This form of real time communication leads consumers to become deeply engaged in the live streams and direct them to enjoy the state of flow (Bao & Zhu, 2023). Engaging in real-time interactions with fellow shoppers allow customers to forge robust social bonds and experience more engrossing buying encounters (Wongkitrungrueng & Assarut, 2020). Prior research has shown that customers find diagnostic information, advantageous for product searches, as it improves their understanding of product performance and value (Grange et al., 2019). Live streaming offers a chance for customers to engage in analytical exploration (Gu et al., 2023). This type of exploration inherent in online platforms suggests that customers

have enhanced prospects to explore, assess, and juxtapose choices based on their particular search parameters (Yi et al., 2017). Such interactions inspire customers to proactively gather details and make their decisions with a strong commitment often losing track of time (Niu et al., 2021). Thus, we hypothesize: -

H1a The Informativity of social media live streaming positively influences flow

H1b The Real-time interactions of social media live streaming positively influences flow

H1c The Diagnosticity of social media live streaming positively influences flow

3.2. FlowImpulse BuyingReturn Intention

The concept of “flow” has been introduced as a way to assess customers’ online interactions (Hoffman & Novak, 1996). Flow is experienced when users perceive their actions as seamlessly connected, driven by the interactive nature of the online environment (Chang & Wang, 2008). Upon reaching the flow state, individuals disregard other thoughts as they become deeply immersed in the activity, perceiving the flow state as inherently gratifying and enjoyable (Kim et al., 2020). According to Paraman, et al., (2022), personal enjoyment plays a potential role in impulsive buying, with the flow state providing this pleasurable experience due to its affective nature. Impulse buying is a phenomenon driven by a sudden, enduring urge among customers to make immediate purchases (Rook, 1987). It is often driven by emotions rather than rational consideration, that persuade individuals to make purchases without taking into account its potential consequences (Barta et al., 2023a). Positive emotions in customers can trigger a cascade of more positive emotions, sparking their imagination when considering the store’s products and subsequently elevating the chances of making impulsive purchases. In context of online retail, when customers had enjoyable experiences, they tend to further explore the website, increasing the likelihood of making unplanned purchases (Koufaris, 2002). Furthermore, individuals who are in a state of pleasure are prone to exceed their planned spending limits (Donovan et al., 1994). As consumers settle down and become aware of their excessive spending, a sense of dissatisfaction sets in, making them more inclined to consider returning their purchases (Lim et al., 2016). Additionally, frequent impulse buyers often shop for the sheer pleasure of the experience, which is primarily fulfilled during the purchase itself. However, once the purchase is made, the perceived value of the product tends to diminish rapidly, increasing the likelihood of customers returning the item (Pei & Paswan, 2018; Spiteri Cornish, 2020). Thus, on the basis of above, we hypothesize:

H2 Impulse buying mediates the relationship between Flow and Return intention

3.3. Flow, Process regret, outcome regret, Return intention

Customers make decisions for purchases with both planned intention and spur-of-the-moment inclination. Rook (1987) revealed that impulsive buying might stem from the pleasurable enjoyable experience. When people experience positive emotions, they nurture an increased sense of positivity, sparking imaginative contemplation about the store’s items, thereby escalating the likelihood of impulsive purchases (Wu et al., 2020). Impulse buying often takes place without consideration for potential outcomes, driven more by emotions than rationality. This lack of rationality in buying behaviour can lead to the onset of regret in such purchases. Zeelenberg et al., (2001), characterize regret as a negative emotion stemming from cognitive assessments where individuals come to recognize or envision that their current situation could have been more favourable if different actions had been taken. Decision justification theory posits that regret stems from two primary factors: a) the assessment of how the decisions were made, and b) the assessment of the outcomes resulting from their choices (Connolly & Zeelenberg, 2002). Because impulse buying is hasty, sudden, and unpremeditated, the buyer might later regret the manner in which the purchase was executed (Barta et al., 2022). Specifically, consumers may regret their lack of thorough consideration, feeling that they did not dedicate sufficient time to gather the necessary information before making the purchase. They may later recognize the manner in which they made the purchase. On one hand, impulse buying can elevate the customer’s mood during the purchase, as the decisions are influenced by their immediate emotions, particularly hedonistic motives. On other hand, the individual realizes that the good they bought was unnecessary or doesn’t align with their actual requirements (Barta et al., 2023a). Due to which customers feel both outcome as well as process regret.

Due to experienced feelings of regret, customers manage their regret by employing either a singular strategy for coping with regret or a combination of such strategies. Typically, customers attempt to rectify the situation or absolve themselves of responsibility by returning the purchased item (Zeelenberg & Pieters, 2007). As, according to the balance theory, the connection between a person and an item should be in equilibrium, as balanced connections are preferred (Heider, 1958). Hence, if an individual holds a negative view of the item, it’s possible that they would engage in actions that align with this unfavourable assessment of the product, such as initiating a product return.

H3 Flow influences return intention through serial mediation of impulse buying with its sequential parallel mediators’ process and outcome regret.

3.4. Serial Mediation of Impulse buying Process regretOutcome Regret

People watching live stream get really into it and don’t pay attention to anything else. They might forget what time it is and even forget things they were supposed to do be-

cause they're just focused on enjoying the show (Chen & Lin, 2018). The notion of being in a state of flow is also closely connected to a reduced self-consciousness (Csikszentmihalyi et al., 2014). In this state, consumer's decision-making becomes less intentional, potentially leading to the procurement of items that weren't initially part of their intended shopping list (Koufaris, 2002). When customers have positive and pleasurable experiences, they are inclined to prolong their exploration of the virtual store, often culminating in impulse buying (Paraman et al., 2022). In this scenario, studies indicate direct association between individuals' affective reactions, such as enjoyment, and their propensity for impulsive buying (Barta et al., 2022; Wu et al., 2020). Impulsive purchases, prompted by customer's limited participation in evaluation process, results in subsequent feelings of regret after the purchase (Barta et al., 2022). They get dissatisfied with the way they have acquired a product, which subsequently leads to process regret (S. H. Lee & Cotte, 2009). Thus, not obtaining sufficient information while making a purchase decision raises the chances of selecting an item that doesn't fulfil the customer's requirements (Puccinelli et al., 2009) that increases the likelihood of making an erroneous product choice, which subsequently gives rise to outcome regret (Tzeng & shiu, 2019). Rapid decision-making implies that the customer lacks adequate information at the time of purchase. When they retrospectively compare the results of their purchase and recognize that an alternative option could have led to a more favourable outcome than their chosen one, leads to feeling of regret. Upon acknowledging errors in their actions, individuals experience negative feelings. Nevertheless, they want to mitigate this regret to restore a positive self-perception (Zeelenberg & Pieters, 2007). To accomplish this, customers have the option to modify their beliefs and implement strategies to address their feelings of regret. This might result in actions such as returning the product. Thus, we hypothesize: -

H4 Flow affects Return Intention through the serial mediation of Impulse Buying, Process Regret, and Outcome Regret

3.5. Flow Consciousness as a Moderator

Flow is characterized as a state of profound engagement and engrossment in a task that is inherently satisfying (Csikszentmihalyi, 1990). The key feature of this phenomenon is the personal, subjective experience of the individual while engaged in the task. On the other hand, flow consciousness is a broader concept that encompasses the reflective awareness and self-monitoring of the state of flow afterwards. It pertains to an individual's later recognition and acknowledgment of being in a state of flow or having undergone a state of flow (Barta et al., 2022). Previous research showed that even if the customers recognise that they were caught up in the flow state while making a purchase decision, it still results in a favourable aspect of the purchase process (Herrando et al., 2018). In this way, they recognize that they made a satisfying choice because of the flow state they felt. This feeling of enjoyment associated

with flow helps them feel less regretful about not considering enough information. Being aware of the positive experiences during flow states helps consumers acknowledge what went well and also makes it easier for them to pinpoint external factors that led to any mistakes (Barta et al., 2022).

In context of gaming, it has been noted that flow can give rise to addictive tendencies (Brandtner et al., 2022), but when gamers are cognizant of the pleasurable experiences fostered by their state of flow, it can improve their general well-being. No doubt, users could experience regret over investing too much time in gaming. However, if they are mindful of the positive experiences associated with achieving flow states, it can lessen the perception of time being wasted. Therefore, in the realm of online retailing, recognizing that one has entered the flow state helps diminish the regret caused by recalling the positive aspects of the purchasing experience, even if the product's performance is not satisfying (Chen & Lin, 2022). Similarly, if the customers become aware that their decision-making process was pleasurable due to the flow state they experienced in live streaming, might help them to reduce regret they feel for not acquiring sufficient information and taking the purchase decision impulsively, even in the cases where satisfaction with the product's performance is not substantial. Thus, on the basis of above, we hypothesize:

H5a Flow consciousness weakens the impact of impulsive buying on Process regret.

H5b Flow consciousness weakens the impact of impulsive buying on outcome regret.

4. Research Design: Participants and Procedure

This study focused on examining social media live streaming, with a specific emphasis on the trade of fashion products, including clothing, accessories, and footwear. As according to RedSeer Consultants, (2021), fashion products are expected to contribute to 60-70% of the gross merchandise value in live streaming commerce. The participants under consideration were individuals who have experienced live streaming of fashion products in India. To gather data, the study employed a combination of Purposive and Snowball sampling to reach the targeted respondents. Within live streaming communities, many customers are willing to actively share their firsthand knowledge of customer needs, thus facilitating businesses in enhancing customer engagement (Wongkitrungrueng & Assarut, 2020). Therefore, we selected live streaming communities as the data collection platform. The research utilized a survey approach, where the questionnaire consisted of 34 self-reported items and the items are measured by 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). To determine the suitability of potential participants, initial questions were included, asking individuals if they had recently purchased fashion products through social media live streaming and whether they regretted their purchase and initiated the return process or returned the product. Only those who responded affirmatively proceeded to complete the questionnaire. Each response was carefully reviewed for

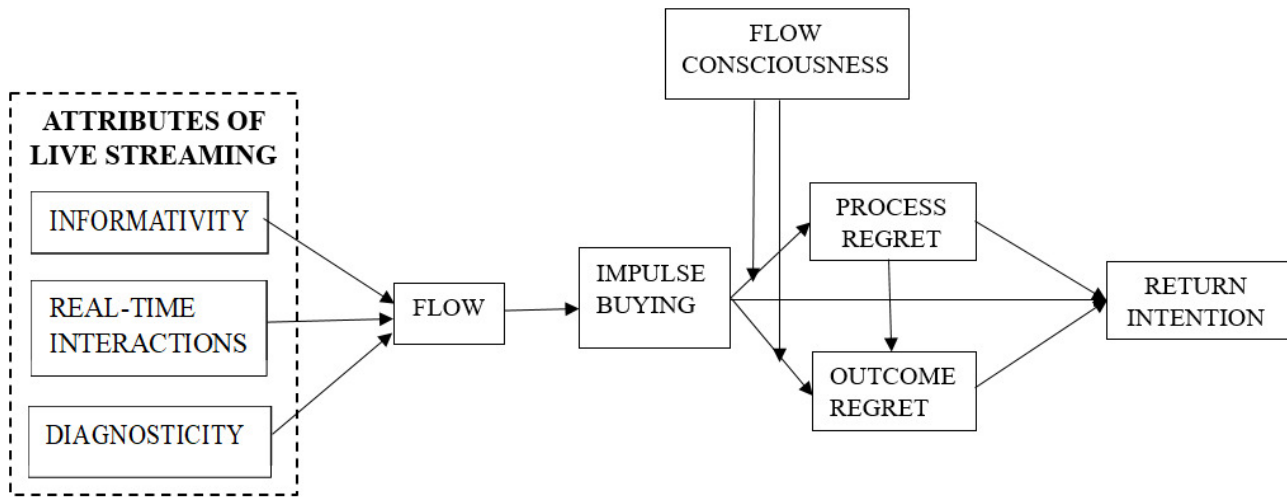


Figure 1. Proposed Research Model

errors, incomplete, or missing answers. Efforts were made to reach out to respondents via email to seek clarification and corrections, particularly for missing or incomplete responses. However, any responses with over 25% of the survey questions left unanswered or answered incorrectly were removed from the data analysis. Following this screening process, only 463 responses were considered complete and valid for further analysis. [Table 1](#) provides basic descriptions of samples.

5. Data analysis and Results

5.1. Measures

All constructs and measures were adapted from previous studies. Informativity (Gao & Bai, 2014 and Jeon et al., 2018), Real-time interactions (Hou et al., 2019), Diagnosticity (Lin et al., 2018), Flow (Y. C. Huang et al., 2013), Impulse buying (Rook, 1987), Process regret (S. H. Lee & Cotte, 2009), Outcome regret (Bonifield & Cole, 2007), Return intention (S. Lee & Yi, 2017), Flow Consciousness (Barta et al., 2022). The concrete measurement items for each construct are listed in [Table 3](#). Responses were captured on Likert-type scales.

5.2. Common method bias assessment

A cross-sectional survey was done to collect data, relying on self-reported information from participants, potentially introducing common method bias. Following Hafez, (2021), the Harmon one-factor test was conducted. This involved conducting an exploratory factor analysis, wherein items representing various constructs were loaded into a single factor using principal components analysis without rotation. The outcomes revealed that the initial factor explained 39.918% of the overall variance, which falls below the suggested threshold of 50% (Podsakoff et al., 2003). Additionally, the research employed the variance inflation factor (VIF) to assess the possible presence of common method bias. The results demonstrated that all VIF values for the constructs stayed below the recommended threshold

of 3.3 for common method bias testing (Podsakoff et al., 2003). Hence it can be concluded that this study is not affected by common method bias.

5.3. Measurement Model

To analyse the proposed research model, the study utilized covariance-based structural equation modeling (CB-SEM) through AMOS version 24. SEM serves as a tool for analysing multiple variables concurrently, allowing researchers to simultaneously explore interrelations among different constructs (Hair et al., 2010). Employing a two-step process, the assessment of the measurement model began with a maximum likelihood confirmatory factor analysis (CFA). The findings demonstrated a robust fit for the measurement model, supported by favourable goodness-of-fit indices: $\chi^2 / df = 2.166$, CFI = 0.961, GFI = 0.878, CFI = 0.961, TLI = 0.956, SRMR = 0.0322, and RMSEA = 0.050 (refer to [Table 2](#)).

To validate the measurement model, the study evaluated the internal consistency of the constructs, affirming that all composite reliabilities exceeded the threshold of 0.80 (Hair et al., 1998). Convergent validity was confirmed by employing the average variance extracted (AVE) metric (refer to [Table 3](#)), which surpassed the threshold of 0.50 (Fornell & Larcker, 1981). As far as the model's discriminant validity is concerned ([Table 4](#)), in relation to each construct, the square root of AVE was greater than the absolute correlation values with other constructs (Fornell & Larcker, 1981). Moreover, all values within the HTMT matrix ([Table 5](#)) were under 0.85 (Henseler et al., 2015), confirming the distinct nature of all constructs.

5.4. Structural Model

The proposed hypotheses were assessed by CB-SEM using AMOS 24. The study examined the direct impact of social media live streaming attributes on flow. The results supported H1a, H1b, and H1c, indicating positive influences: Informativity and flow ($\beta=.518$), real-time interac-

Table 1. Demographic profile of respondents

Demographics with sample size= 463		
Characteristics	Frequency	Percentage
Gender		
Male	176	38.01%
Female	287	61.98%
Age		
≤20	103	25.26%
20-30	184	41.90%
31-40	109	20.08%
41-50	44	9.50%
≥50	15	3.23%
Education		
High school	74	15.98%
Bachelor	287	61.98%
Master or above	102	22.03%
Occupation		
Business	123	26.56%
Service	158	34.12%
Student	106	22.89%
Others	76	16.41%
Frequency of social media live streaming usage to shop		
Twice a month	113	25.91%
Thrice a month	217	46.86%
Twice a week	96	20.73%
More than 3 times a week	37	7.99%

Table 2. Results of CFA

	Reference	Actual	Source
Chi-Square/df (cmin/df)	≤2 good; ≤3 sometimes permissible	2.166	Hair et al., (2010)
Goodness of Fit Index (GFI)	≥0.9 acceptable; ≥0.8 marginal	0.878	
Adjusted Goodness of Fit Index (AGFI)	≥0.8	0.852	
Comparative Fit Index (CFI)	>0.9	0.961	Hair Jr et al. (1995);
Root Mean Squared Error of Approximation (RMSEA)	<.08	0.050	
Tucker Lewis Index (TLI)	>0.9	0.956	She et al., (2022)
Standardised Root Mean Square Residual (SRMR)	<0.08	0.0322	

tion and flow ($\beta=.252$), and diagnosticity and flow ($\beta=.275$). These effects were statistically significant at ($P<0.001$). Then, the study investigated whether impulse buying played a mediating role in the relationship between flow and return intention. The findings revealed that impulse buying fully mediates this relationship, with statistically significant effect ($\beta=.107$, $P<0.01$), thus confirming H2.

As stated in H3 the results demonstrate a strong relationship between the flow and the intention to return (FL→IMB→PR→RI) with a significant coefficient of

$\beta=0.014$ and $P<0.001$. Additionally, it also shows a similar linkage between flow and return intention through a different path (FL→IMB→OR→RI) with a coefficient of $\beta=0.011$ and $P<0.001$, confirming complete mediation and providing support to H3. Furthermore, the progression of Impulse buying, Process regret, and outcome regret acts as consecutive mediators in the connection between flow and return intention (FL→IMB→PR→OR→RI) with a coefficient of $\beta=0.001$ and $P<0.05$, thus offering support for H4. The results indicate that impulse purchases made during live

Table 3. Measurement Model Assessment

Construct	Items	Factor Loadings	CR	AVE	CA
Informativity	I find social media live streaming to be informative.	.807	0.905	0.657	.911
	Obtaining information about products or services through social media live streaming is convenient for me.	.782			
	Social media Live streaming offers thorough details about products or services in my opinion.	.762			
	I consider social media live streaming to be a reliable source for accurate information about products or services.	.758			
	Social media live streaming keeps me updated with current products or services information	.694			
Real-time Interactions	The streamer successfully collected feedback from viewers.	.856	0.931	0.772	.936
	This streamer encouraged interactive communication between himself/herself and the audience.	.842			
	The streamer conveyed a sense of interest in listening to viewers' input.	.831			
	Viewers were provided with a chance to engage in conversation with the streamer.	.818			
Diagnosticity	Streamers on the live streaming enhanced my understanding of the product's functioning.	.828	0.924	0.754	.926
	The demonstrations presented on the live streaming are beneficial for assessing the product's quality and performance.	.821			
	Exposure to presentations on live streaming allowed me to evaluate the product.	.810			
	Through the streamers' displays, I acquired sufficient knowledge about the product to determine my interest in using it.	.763			
Flow	When experiencing live streaming, my attention is totally focused.	.810	0.910	0.717	.913
	Experiencing live streaming, excites my curiosity.	.795			
	Experiencing live streaming is intrinsically interesting.	.769			
	When experiencing live streaming, I feel in control.	.763			
Impulse Buying	I ended up purchasing a product that wasn't initially on my list.	.792	0.877	0.641	.882
	My decision to buy the product was influenced by my current emotions.	.783			
	"I see it, I buy it" describes my purchase behaviour in that instance.	.773			
	I made an unplanned purchase of the product.	.748			
Process Regret	Having more information, I believe I could have arrived at a more informed decision.	.818	0.917	0.734	.922
	I think I rushed into the purchase without giving it adequate consideration.	.809			
	With more efforts, I believe I could have reached a better conclusion.	.803			
	I feel regret for not giving enough thought before making the decision.	.802			
Outcome Regret	I should have gone for another product.	.855	.947	.818	.948
	I regret my purchase.	.851			
	Receiving this product left me feeling dissatisfied with my decision.	.842			
	In retrospect, I could have chosen better by opting for a different product.	.809			

Construct	Items	Factor Loadings	CR	AVE	CA
Return Intention	I will consider returning the product.	.762	0.819	0.604	.820
	Probably I will return the product.	.739			
	Returning the product is a possibility for me.	.667			
Flow Consciousness	I experienced flow.	.862	.898	.637	.922
	It was a very intense sensation	.860			

Table 4. Correlations and Discriminant Validity

RI	INF	RTI	DIG	FL	IMBI	PR	OUR	FLCO
0.777								
0.532	0.810							
0.440	0.637	0.878						
0.499	0.506	0.356	0.868					
0.573	0.403	0.326	0.564	0.847				
0.559	0.377	0.245	0.525	0.577	0.801			
0.451	0.428	0.332	0.413	0.425	0.425	0.857		
0.541	0.397	0.360	0.372	0.413	0.421	0.595	0.905	
0.574	0.335	0.275	0.506	0.611	0.699	0.439	0.423	0.798

Table 5. HTMT Matrix

	INF	RTI	DIG	FL	IMBI	PR	OUR	RI	FLCO
INF									
RTI	0.73								
DIG	0.581	0.517							
FL	0.583	0.525	0.644						
IMBI	0.636	0.594	0.645	0.72					
PR	0.54	0.495	0.526	0.591	0.578				
OUR	0.59	0.561	0.495	0.577	0.613	0.645			
RI	0.636	0.553	0.621	0.715	0.735	0.554	0.599		
FLCO	0.49	0.46	0.535	0.611	0.668	0.472	0.471	0.614	

streaming frequently result in both process regret and outcome regret. Experiencing process regret can prompt customers to return the product, as it allows them to learn from their decision-making and make better choices in the future. However, the extent of regret about the outcome has a stronger influence on the intention to return the product.

5.5. Moderation effects of Flow Consciousness

To analyse H5a and H5b, the study employed Process Macro 4.2 in SPSS (Model 1). H5a hypothesized that flow consciousness would diminish the association between impulse buying and process regret. However, contrary to expectations, the two-way interaction results indicated a positive and significant influence of flow consciousness on impulse buying and process regret ($\beta=0.17$, $t=11.15$, $P<0.05$). Similarly, for H5b, the results also displayed a pos-

itive and significant impact of flow consciousness on impulse buying and outcome regret ($\beta=0.14$, $t=8.49$, $P<0.05$), leading to the rejection of H5a and H5b. As illustrated in Figures 3 and 4, which depict the effect of impulse buying on process and outcome regret at varying levels of flow consciousness, a pattern emerges. In Figure 3, at low flow consciousness levels, the relationship between impulse buying and process regret is ($\beta=0.61$, $P<0.001$), at moderate levels ($\beta=0.79$, $P<0.001$), and at high levels ($\beta=0.96$, $P<0.001$). Similarly, in Figure 4, at low flow consciousness levels, the association between impulse buying and outcome regret is ($\beta=0.68$, $P<0.001$), at moderate levels ($\beta=0.82$, $P<0.001$), and at high levels ($\beta=0.96$, $P<0.001$).

In sum, these findings suggest that the impact of impulse buying on both process regret and outcome regret is comparatively lower at low levels of flow consciousness

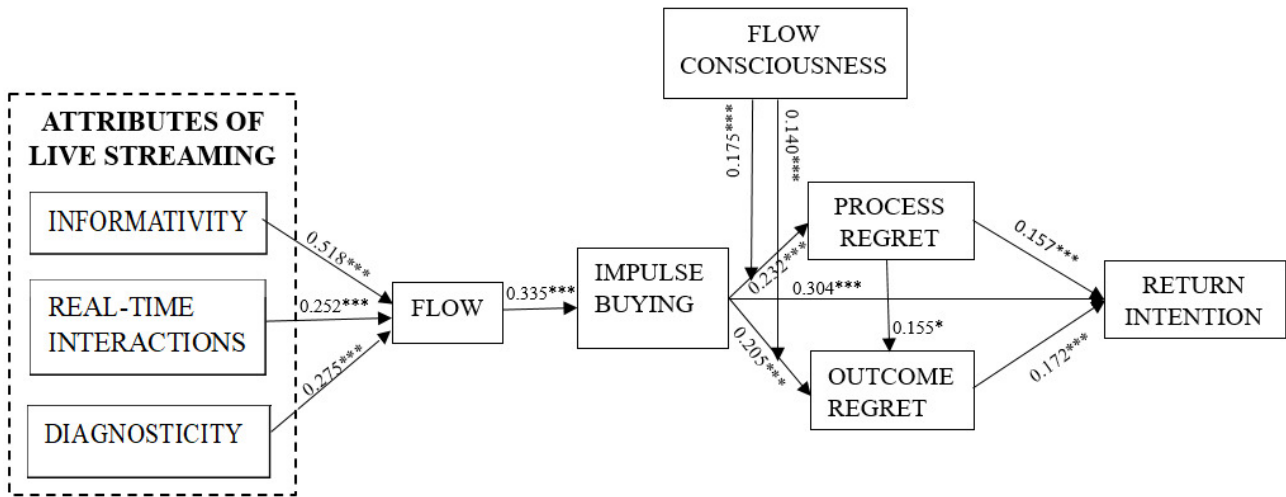


Figure 2. Path coefficients of the structural model

Note(s): ***p < 0.001, **p < 0.01, * p < 0.05, n.s.: not significant

compared to higher flow consciousness. Figures 3 and 4 illustrate that as the level of flow consciousness increases, the strength of the relationship between impulse buying and regret. The visual representations clearly show how the strength of these relationships’ changes depending on different levels of flow consciousness. In both graphs, as flow consciousness increases from low (-1.00) to high (1.00), the relationship between impulse buying and regret becomes stronger. This trend is evident in the beta coefficients, which indicate the strength of the relationship, with higher values observed at higher levels of flow consciousness. Hypotheses H5a and H5b suggested that flow consciousness would lessen the relationship between impulse buying and both process and outcome regret. However, the observed results contradicted these hypotheses, revealing a positive and significant impact of flow consciousness on both impulse buying and process regret, as well as outcome regret. As it has been observed that, customers overlook time and exhibit irrational tendencies during live sales, prioritizing immediate satisfaction over long-term consequences. They later realize their choices were influenced by temporary feelings rather than genuine product value, intensifying post-purchase regret.

5.6. Discussions

The study examined how the attributes of social media live streaming affects the flow state of viewers and how this state of flow impacts customers’ inclination to return products, considering the sequential mediating role of impulse buying with its Parallel mediators’ process and outcome regret. The results of the current study supported the claim that informativity, real time interactions and diagnosticity of social media live streaming are substantial antecedents of flow (Bao & Zhu, 2023) and this flow state of viewers indirectly impacts return intention through Impulse buying. Wu et al., (2020) similarly observed that the state of flow amplifies customer inclination toward impulsive buy-

ing. Although this can offer benefits to online vendors, it is important to acknowledge that the reduced self-awareness stemming from experiencing a flow state can result in subsequent purchases that customers may ultimately feel regretful about. Consistent with the findings of Prasad et al.,(2019), it is also observed in this study that regret arises as an aftermath of impulsive buying, thus the experience of flow alone can’t give rise to regret. Individuals frequently encounter both process regret and outcome regret following impulse buying. It has been observed that during live streaming, customers often make impulsive decisions, influenced by their feelings, without thoroughly evaluating their choices or comparing different options before making a purchase. Decisions made without adequate information often led to subsequent feelings of regret among consumers (Barta et al., 2023a). However, contrary to the results of Barta et al., (2023b), it has been observed that process regret also steers customers to return the product, it may be when individuals realise, they have the chance to enhance their decision-making process and make a superior product choice in future instances, they feel motivated to return the item. However, it was observed that the level of regret concerning the outcome played a more significant role in shaping the intention to return.

The unsupported hypothesis in this study posits that flow consciousness leads to increased process and outcome regret among customers, potentially due to their immersion in the enjoyable live sale experience, which can cause them to overlook time, exhibit cognitive biases, and prioritize immediate satisfaction over long-term consequences. As the initial feelings of optimism and positivity generated by the flow state gradually give way to a more realistic evaluation of their purchases, customers may come to realize that their choices were heavily influenced by the temporary flow state, rather than being based on the genuine value or practical utility of the products. This realization amplifies their post-purchase regret as they confront the gap between

Table 6. Path Analysis

Path	Standardized path coefficients (β)	95% confidence level (Lower bound, Upper bound)
Total Effects		
FL→RI	0.301	(0.162, 0.421)
Direct Effects		
INF→FL	0.518	(0.388, 0.707)
RIT→FL	0.252	(0.137, 0.430)
DIG→FL	0.275	(0.118, 0.536)
FL→IMB	0.335	(0.200, 0.443)
IMB→PR	0.232	(0.129, 0.309)
IMB→OR	0.205	(0.115, 0.290)
IMB→RI	0.304	(0.212, 0.462)
PR→RI	0.157	(0.109, 0.264)
OR→RI	0.172	(0.066, 0.265)
PR→OR	0.070	(-0.010, 0.126)
Indirect Effects		
FL→IMB→PR	0.078	(0.250, 0.122)
FL→IMB→OR	0.085	(0.022, 0.129)
FL→IMB→PR→RI	0.014	(0.006, 0.025)
FL→IMB→OR→RI	0.011	(0.004, 0.024)
FL→IMB→RI	0.107	(0.064, 0.190)
IMB→PR→RI	0.041	(0.025, 0.064)
IMB→OR→RI	0.033	(0.016, 0.06)
FL→IMB→PR→OR→RI	0.001	(0.001, 0.003)
FL→PR→RI	0.028	(0.005, 0.058)
FL→OU→RI	0.023	(0.003, 0.055)
FL→PR→OU→RI	0.002	(0.001, 0.005)

their idealized perceptions during flow and the pragmatic realities they encounter afterward.

6. Theoretical contributions

The study presents various theoretical contributions. First, it emphasizes the route that guides customer in their decisions regarding the return of products acquired through social media live streaming. Previous research has explored diverse factors preceding the inclination to return intention (Cui et al., 2019, Jena & Meena, 2022). This study enhances our understanding of this dimension by elucidating it from the perspective of flow state experienced by the consumers during live sales on social media. The flow, experienced by customers, emerges as the primary catalyst driving subsequent behaviours. Research on flow theory has typically focused on its favourable attributes while disregarding potential drawbacks. However, this study has filled this gap by investigating the negative effects of flow in the context of

live streaming. Furthermore, the primary significance lies in elucidating how impulse buying and consumer regret act as mediators in the development of product return intentions, specifically facilitated by the flow experience within the context of social media live streaming.

Second, the interaction effect that flow consciousness may have on the relationship between impulse buying and consumer regret is analysed. As a result, it can be inferred that the presence of flow consciousness negatively moderates the relationship between impulse buying and regret, making a valuable contribution to the advancement of research in this area (Barta et al., 2022). Notably, the study observes that the awareness of flow among customers leads to an amplification of both process regret and outcome regret.

Third, given that the majority of social media live streamers are individual sellers operating on a small scale, they hold a significant presence in social media commerce yet have received limited attention in existing research

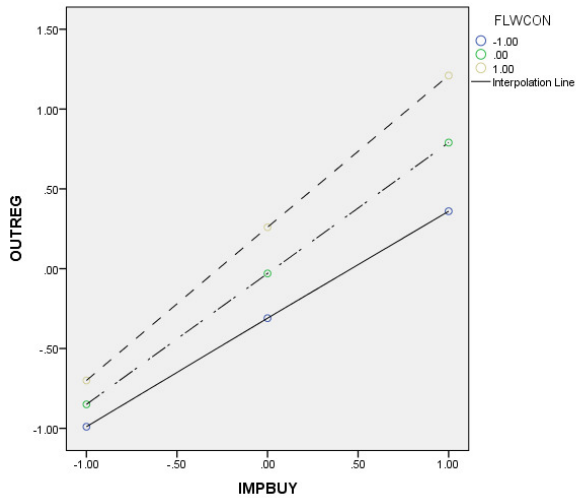


Figure 3.

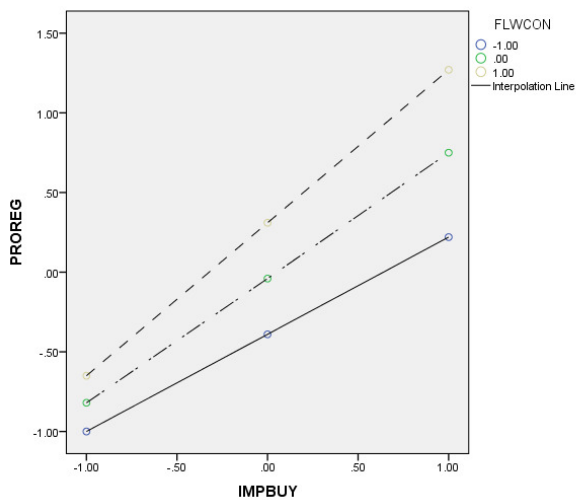


Figure 4.

(Wongkitrungrueng & Assarut, 2020). As a result, the study brings a valuable contribution in the area of product return intention by exploring the trajectory that consumers navigate when transitioning from product purchase to return intention, especially in the context of transactions with small-scale sellers. This is particularly significant since small sellers often encounter difficulties in managing product returns and are underexamined in the extant research.

7. Practical Contributions

From a managerial perspective, ensuring high information, service, and system quality in live streaming is vital for both large and small sellers. While large corporations can rely on mass media and events to enhance their reputation, small businesses struggle to establish trust. Additionally, large retailers excel in offering diverse assortments, promotions, competitive pricing, and convenience, areas where small sellers often lag behind. Therefore, small businesses must prioritize enhancing information, service, and system quality to foster authenticity, crucial for building

credibility and driving growth. The positive influence of information quality, service quality, and system quality in live streaming on flow state also highlights the essential requirement for small sellers to invest resources in elevating these characteristics. Nonetheless, small sellers should thoroughly assess all aspects of the flow state. While, flow state can offer numerous advantages for both sellers and customers, it also presents certain drawbacks, such as post-purchase regret and subsequent returns. Effectively managing this aspect would improve consumer satisfaction and decrease return rates. Sellers should ensure that their products meet customer expectations to minimize returns. Although exaggerating expectations, during live streaming to induce flow or to create a pleasurable experience, may lead to short-term sales boosts, the long-term profitability of such tactics remains uncertain (Dailey & Ülkü, 2018). They should also integrate a “pause and validate” mechanism within the checkout process. This can reduce the feelings of regret that customers may have about the purchase process.

Sellers often aim to create a state of flow to engage customers and drive spontaneous purchases, benefiting them financially. However, relying solely on flow may not boost online shopping. While flow influences impulsive behaviour, practical features are more influential in long-term shopping decisions. Sellers should prioritize enhancing the informational value on live streaming platforms by providing thorough information and promptly addressing inquiries. It’s not always prudent to prioritize creating a pleasurable experience without careful consideration, as the results showed that consumers impulsively buy unnecessary items and later regret their decisions. Improving live streaming quality and promoting mindful consumption can help alleviate regret. This can be achieved through marketing campaigns, blog posts, or educational content on social media platforms, which is also financially viable for small sellers, leading to enhanced customer satisfaction and increased sales over time (Shahpasandi et al., 2020). Our findings also show that flow consciousness strengthens the relation between impulse buying and regret. In such instances, sellers may send a post-purchase email to thank customers and highlight product benefits that align with their needs. Sellers may also showcase user-generated content of other satisfied customers that can reinforce the product’s potential to bring pleasure and happiness.

8. Social Implications

Small Businesses play a crucial role in fostering job opportunities and economic prosperity within local communities (J. Lee & Park, 2024). Investigating the influence of live streaming on these businesses, the study aims to enrich the well-being of small businesses and society at large. Comprehending the way that how live streaming induces flow states, influences impulse buying, and shapes return intentions can help small businesses refine their return policies accordingly. This will streamline seller’s operations and encourage sustainability by reducing logistical and repackaging costs. By raising awareness of the environmental impact of returns, the research promotes the adoption of sustainable practices among both businesses and

consumers, such as minimizing unnecessary purchases and refining product selection processes.

9. Limitations and Future research directions

This study has several limitations. Although the study has examined two types of regret that customers may feel after making a purchase, there is a room for the future research to include other forms of regret that could arise before making a purchase, like anticipated regret (Verkijika, 2019). Future investigations could additionally examine the impact of regret based on the nature of the product. The influence of regret might vary between hedonic and utilitarian products (Duan et al., 2022; Filieri et al., 2021). Additionally, the current study has focused exclusively on fashion items; hence, there is potential for future research to encompass a broader range of products. This study has focused on examining the impact of customer regret on the intention to return purchased items, future research could extend its scope by exploring whether such consumer regret paradoxically lead to subsequent purchases from the same retailer, even following a prior experience of regret stemming from a purchase with that retailer. Furthermore,

while this study specifically focuses on small-scale sellers, it would be beneficial to investigate how live streaming is utilized by sellers of various sizes (small-scale versus large corporations) and its effects on firms' performance. Additionally, our model could be enhanced by incorporating additional variables such as the personality traits of customers or sellers. Although this research has examined product return intentions, there is potential to explore other consequences, such as negative engagement or the generation of negative reviews stemming from regret. This analysis would offer insights into whether effectively addressing consumer regret can alleviate other undesirable behaviors beyond product return intentions. Moreover, relying on cross-sectional data may introduce various bias and prevents the establishment of causality (Maier et al., 2023). It would be valuable for future investigations to tackle the constraints associated with cross-sectional data. Implementing research designs that encompass multiple methods could be used to enhance the depth of studies using this type of data.

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