Effects of Livestream Affordances on Consumer Purchase Willingness: Explicit IT Affordances Perspective

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Abstract—Livestreaming marketing, the new electronic commerce element, has become an optional marketing channel following the COVID-19 pandemic, and many sellers are leveraging the features presented by livestreaming to increase sales. This study was conducted to measure real-time observable interactions between consumers and sellers. Based on the affordance theory, this study conceptualized constructs representing the interactive features and examined how they drive consumers' purchase willingness during livestreaming sessions using 1238 datasets from Amazon Live, following the manual observation of transaction records. Using structural equation modeling, the ordinary least square regression suggests that live viewers, new followers, live chats, and likes positively affect purchase willingness. The Sobel and Monte Carlo tests show that new followers, live chats, and likes significantly mediate the relationship between live viewers and purchase willingness. The study presents a way of measuring interactions in livestreaming commerce and proposes a way to manually gather data on consumer behaviors in livestreaming platforms when the application programming interface (API) of such platforms does not support data mining algorithms.

Keywords—Livestreaming marketing, live chats, live viewers, likes, new followers, purchase willingness.

I. INTRODUCTION

ONLINE sellers have, over the years, adopted imagery and text descriptions for their products and services on online shopping platforms. However, these description methods impede the reduction of uncertainties and the growth of consumer engagement on shopping platforms [1]. This hindrance persisted over the years until the introduction of the participatory web (Web 2.0). Web 2.0 brought about livestreaming commerce (a component of electronic commerce that subsumes online and social media) to support stakeholder contributions and social interactions to aid the digital marketing of products and services [2], [3]. This electronic commerce component is a new business model characterized by unique features that enable consumers and sellers to interact and reduce product uncertainties. The introduction of livestreaming marketing in business-to-consumer (B2C) commerce has provided possibilities to achieve a more social presence and trustworthy transaction platform whiles bridging the face-to-face gap between offline and online marketing [4]. Livestreaming marketing is an engaging and consumer-centered environment that provides a human-computer mediated interaction between existing or potential consumers (viewers of a livestreaming session) and the seller (the streamer or anchor of the livestreaming session) [5].

Previous studies on livestreaming have focused on social media and gaming platforms [5]-[7]. Some studies on livestreaming in B2C examined the phenomenon from a psychological perspective and motivations for shopping through live stream marketing using questionnaires and focal-group interviews [8]-[10]. Other studies evaluated influencer endorsement on consumer purchase in livestreaming marketing [3] and brand followers' impact on purchase intentions [11] in livestreaming commerce on Chinese online shopping platforms. However, significant outcome variations concerning different countries and shopping platforms are very high [11]. The use of survey respondents is coupled with the probability that some respondents have no experience in the subject matter, therefore losing touch with the focus of the examination. According to the study by [12], US firms' COVID-19 attention focus increases when faced with significant disruption; however, this was inapplicable in the case of Chinese firms. On the upside, the coronavirus pandemic caused many firms to seize the opportunities presented by livestreaming. This decision by firms convinced many social media and electronic commerce platforms to include the livestreaming feature; this new commerce trend is expected to dominate the online markets in the coming years.

This study explained how the interactive features on a livestreaming marketing platform (Amazon Live) drive the willingness to purchase. Specifically, we examine the direct and indirect effects of the interactive elements (live viewers, live chats, new followers, and like) on willingness to purchase the products or services being demonstrated. The study uses actual data from livestreaming sessions from the Amazon Live platform, an electronic commerce giant that recently (2019) included livestreaming marketing [13].

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II. LITERATURE REVIEW

We explain the concept of livestreaming marketing as a component of electronic commerce and introduce the interactive possibilities of livestreaming marketing as an alternative shopping channel on which our work is based. Accordingly, we present a synopsis of the development and existing streams of literature on livestreaming marketing. Finally, we outline the Affordance theory as the theoretical underpinning of our research.

A. Livestreaming Marketing

Livestreaming marketing is an electronic commerce component sellers use to sell goods and services through live video streaming platforms [14]. In traditional online shopping, consumers must browse descriptions, existing consumer reviews, and brand credits before making purchase decisions about a product or service they desire, making purchase decisions relatively tedious. On the contrary, livestreaming marketing reduces monotonous browsing actions and simplifies complex judgment programs during livestreaming sessions, lowering consumers' difficulty in buying decisions. The frequent, continuous construction of consumption scenarios (production demonstration tutorial) during livestreaming sessions improves consumers' understanding of product usage. Additionally, sellers' detailed on-site responses to consumers' questions during livestreaming sessions make up for missing product information or service descriptions. Finally, livestreaming e-commerce enhances the buying willingness of consumers by referring to the purchase decisions of others.

A typical marketing session on a livestreaming platform comprises five components: the streamer, the viewers, the streaming window, the interaction, and the content. The streamer refers to the seller who markets, demonstrates, and sells the products or services of the brand. The viewers subsume all existing or potential consumers watching the live session on the platform. The streaming window represents the design and interface of the live broadcast. Interaction refers to the live communication between the seller and the existing and potential consumers. Finally, the content is the seller's product information being demonstrated to the current and potential consumers.

The rising acceptance of livestreaming marketing has caused several studies to investigate various aspects of the new electronic commerce component. However, the conceptualization of the recent phenomenon is still evolving. From the consumer purchase perspective, studies have examined network size, shopping orientation, and digital celebrities to determine consumers' shopping behaviors in livestreaming marketing [15], [16]. A mass of existing literature has focused on the online influencer aspect of livestreaming and empirically studied the effect of these influencers on firms' sales activities [17], [18]. Reference [19] also investigated the effects of live-stream adoption on online retail by combining deep learning and econometric methods.

From the consumer engagement perspective, studies have also examined the effect of interactivity, trust, and perceived value on consumer engagement on livestreaming platforms [20]. According to [21], consumer engagement involves consumers' continuous actual behavioral activities directed to a firm with which they intend to perform a transaction.

Based on the available literature and the context of the current research, we focus on the engagement and purchase intention perspectives. We then investigate the engagement activities (measured by livestreaming, live chats, new followers, and likes) performed by consumers during a livestreaming session and how these activities influence purchase willingness (click-through) on livestreaming sessions conducted on the Amazon Live platform.

B. Affordance Theory

The affordance theory, emerging from an ecological psychology study concerning animals' environmental perception [22], has been increasingly adopted in the uses of information technology (IT) artifacts and their repercussions in information system research [23]-[25]. The theory represents the possibilities of goal-oriented actions afforded by technical objects to a specific user group [26]. It supports explaining the relationship between IT capabilities and activities in a particular context. Affordances subsume the relationship between users, and IT features with variations depending on their use and context [27]. Reference [28] examined six sub-dimensions of affordances (visibility, metavoicing, triggered attending, guidance shopping, social connecting, and trading), enabling interactions between peer users and focal actors in an online network.

Similarly, this study applies IT affordance in livestreaming marketing. It is the possibilities of interaction-oriented actions offered by the livestreaming marketing platform (Amazon Live) to the consumers and sellers during livestreaming sessions.

C. IT Affordance on Livestreaming Marketing Platform

Livestreaming marketing leverages the platform's (Amazon Live) power to facilitate online transactions in a social, collaborative, and interactive way through live broadcasting sessions. Amazon Live leverages IT features so that consumers can find live streams hosted by sellers on the shopping platform and immediately join a livestreaming session as viewers to participate in various interactive behaviors with the seller and other live viewers. Studies have confirmed social relationships among users through social networking sites (SNSs) [29]. In a cross-sectional survey, [30] evaluated the possibilities of bonding and bridging social capital through SNSs. Reference [31] also argued that the affordance of online social commerce helps explain the creation of buyer-seller social ties through IT.

Inspired by prior research, we conceptualize the constructs of this study based on the dimensions of IT affordance; visibility, metavoicing, social connectedness, and trading [31]. Specifically, we examine the varied effects of live viewers, new followers, live chats, and likes on purchase willingness. The constructs of this study represent the explicit affordances of the livestreaming electronic commerce platform. Explicit affordances refer to apparent features (like button, follow button, and chatbox) on the livestreaming window that allows

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consumers to interact with the seller during a livestreaming session.

III. THEORETICAL MODEL AND HYPOTHESIS DEVELOPMENT

We propose to model how interaction-oriented actions (viewers of livestreaming session, new seller followers, live chats among the viewers and the streamer, and viewers' likes) affect consumers' purchase willingness (click-through of the products on display during livestreaming sessions) based on the affordance theory. We summarized our hypotheses in Fig. 1. A detailed discussion of the specific relationships is presented below.
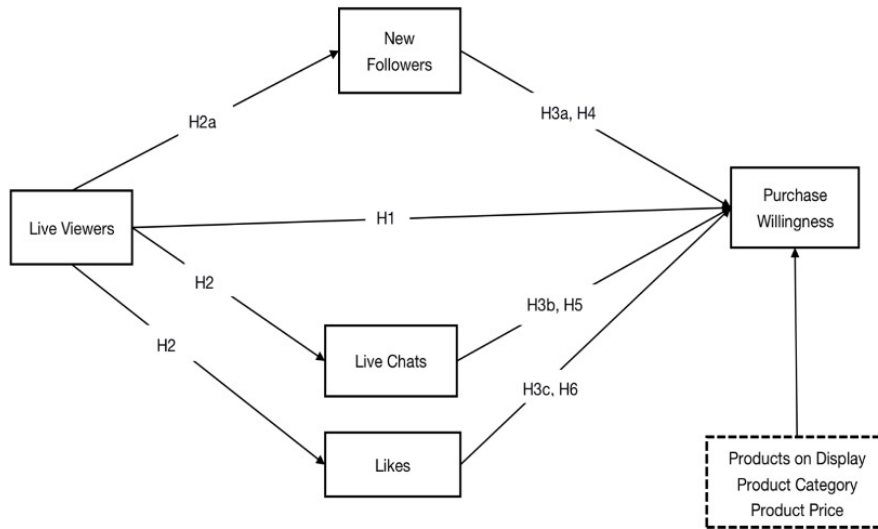

Fig. 1 Research model

A. Live Viewers and Purchase Willingness

The IT affordances posit that visibility allows sellers to visually demonstrate their product and related knowledge simultaneously [31]. In livestreaming marketing, consumers on the online shopping platform (Amazon) have access to several live broadcasts (livestreaming sessions) where sellers broadcast product and service usage demonstrations. Consumers choose to "enter" a livestreaming session where products or services they would like to know about are being demonstrated, thus, increasing the number of viewers watching the broadcast. Products or services being demonstrated are displayed on the livestreaming window. When consumers are interested in any product or service, they can click through on the product or service to be directed to the purchase transaction page. Every click-through made is indicated on the livestreaming window with a floating icon of the specific product or service that received the click-through. These actions become visible to other viewers and, in turn, strengthen their willingness also to make purchases. The number of click-throughs (purchase willingness) made during a livestreaming session will depend on the number of viewers watching the livestreaming session. We thus propose:

H1. The number of live viewers has a direct positive influence on purchase willingness during a livestreaming session.

B. Live Viewers, New Followers, Live Chats, and Likes

Interaction is an intrinsic quality in any medium of communication. It is confirmed that interactive behaviors on SNSs collaborate with trust elements that influence the presence and popularity of brands [32]. According to IT affordances, creating connections between buyers and sellers becomes easy and quickly allows two-way communication [28]. Applying this affordance dimension to livestreaming marketing, viewers who are not yet followers of the seller decide to follow if they are satisfied with the ongoing product or service demonstrations, to get notified anytime the seller goes live; this is termed as new followers. The number of followers a seller will acquire during a livestreaming session also depends highly on live viewers.

Secondly, the metavoicing affordance allows for an informal two-way interactive channel of communication that promotes product-related information exchange between buyers and sellers [31]. In livestreaming marketing, the platform provides a chat window for live comments and conversations that promote an exchange of product-related information among the livestreaming viewers and the seller. The viewers also display their satisfaction with ongoing product or service demonstrations by clicking the like button on the livestreaming window. Viewers can click the like button to express that they enjoy the seller's information. However, the volumes of conversations generated through the chat window by the two parties and the number of likes a seller receives during a livestreaming session are likely to increase as more viewers join the session. Based on this, we propose that:

H2a. The number of live viewers has a positive effect on the number of new followers during a livestreaming session.

H2b. The number of live viewers is positively associated with the volume of live chats during a livestreaming session.

H2c. The number of live viewers is positively associated with the number of likes during a livestreaming session.

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C. Live Viewers, New Followers, Live Chats, Likes, and Purchase Willingness

Trading affordance posits that smooth transactions between buyers and sellers are enabled after the information uncertainties about products are removed or significantly reduced [31]. In livestreaming marketing, the platform allows viewers to click-through on a product or service demonstrated in a livestreaming session. This click-through action will direct the viewer to a transaction page where the viewer can then buy the product. Prior studies have found that consumers interact more with videos than still images since noticeable cues drive consumers to pay more attention to the essential and functional aspects [33]. A higher consumer interactive experience with a seller will lead to desirable purchases [21], [34].

Similarly, this study focuses on three interactive behaviors (new followers, live chats, and likes) witnessed during livestreaming sessions. Sellers get new followers from viewers who enjoy and are satisfied with their demonstration. Viewers also comment, ask questions, and get answers from the seller. They willingly click the like button to show appreciation and interest in the ongoing demonstrations. These three interactive behaviors improve the willingness to purchase a product from the seller through the transaction page. At the same time, the purchase willingness of viewers watching a livestreaming session is defined by interactive behaviors conducted during the session. We, therefore, propose that:

H3a. New followers have a positive mediation effect on the relationship between the number of live viewers and purchase willingness during a livestreaming session.

H3b. Live chats have a positive mediation effect on the relationship between the number of live viewers and purchase willingness during a livestreaming session.

H3c. Likes have a positive mediation effect on the relationship between the number of live viewers and purchase willingness during a livestreaming session.

H4. New followers have a direct positive relationship with purchase willingness during a livestreaming session.

H5. Live chats have a direct positive relationship with purchase willingness during a livestreaming session.

H6. Likes have a direct positive relationship with purchase willingness during a livestreaming session.

D. Controlled Variables

Other variables influencing the willingness to purchase a product demonstrated during a livestreaming session are subsumed as control variables (number of products on display, product category, and product price). Price is a significant factor in determining consumers' product purchase decisions [35]-[37]. Price reduction and promotional prices are considered more favorable in consumers' consumption decisions, increasing purchase willingness to purchase.

The existing literature has posited evidence that the number of products and the category of products on display influences the marketing decision-making processes. Clothing and baby product categories have been argued to have an increased effect on sales, while electronic appliances have been documented to receive low sales in online shopping [38]. It has also been revealed that the higher the number of products or services on display, the higher the traffic and sales received by sellers compared to those with fewer items on display [39]. These arguments are the bases for controlling product price, the number of products on display, and product category.

IV. METHOD

A. The Livestreaming Marketing Platform

Many consumers have included livestreaming shopping as an alternating shopping channel, even more so with the coronavirus 2019 outbreak [3]. Especially in China, livestreaming has been a ubiquitous shopping channel among Chinese online shoppers since 2016 [40]. Internet users worldwide have associated livestreaming with gaming and entertainment until recently. On February 7, 2019, the e-commerce giant Amazon launched a dedicated portion of its website called Amazon Live, allowing various sellers to showcase their products through livestreaming videos [13]. The Amazon Live registration is open to sellers on the Amazon Live Creator IOS mobile app. Through the app, they can go live from their phone or through encoder software using professional cameras [13]. These live-stream videos from sellers appear on the Amazon mobile apps on all operating systems and Amazon.com/live (website version). Consumers can choose from multiple live streams that most interest them. Consumers can tap on different videos to change the stream, scroll down to watch recent live videos, and view upcoming live streams. Amazon Live covers all products, including apparel, electronics, home appliances, kitchen items, cosmetics, and health products. Amazon Live allows sellers to interact with consumers in real-time through live chats and to reach more shoppers.

B. Data Collection

We gathered 1238 public and actual live data from the Amazon Live platform using the manual observation of livestreaming records between 20:00 and 21:00 (UTC -06:00), confirming the peak times for online shopping. Each night on Mondays and Thursdays from 20:00 to 21:00 (peak time) is when consumers are more likely to make online purchases [41]. A total of 16 graduate research assistants were trained as a team to engaged in the data collection process from the shops over the period of time. Five random live streams per shop per month (August, September, and October) were gathered, and the average was calculated. Our preliminary observations indicated that most sellers have at least one livestreaming session per week. Each shop received five observations per month, but specific days for each shop were random.

Regarding the data collection process, we first assigned specific shops, using the shop IDs of the sellers on the platform, to each member of the team. Second, members of the research team conducted a 30-minute screen recording of trading observation of their assigned shops within the peak time (20:20 to 20:50) over the three months period. The trading records within the peak time frame is assumed to manifest the actual data of the shops under observation. From this process, each

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shop had 15 data items, and the computed averages represented the trading records of the shops. Finding the mean score representations was the focus instead of examining time-series transactions. Shops that stopped streaming were not included in the final analysis.

Data mining through a natural language processor is famous in online data collection. However, the API and cookies on the platform (Amazon Live) related to this study are currently not supported by available mining algorithms. According to [42], the manual way of collecting data in these cases is more reliable.

C. Metrics of Interactive Features in Livestreaming Marketing

Survey and interview instruments have been popular for measuring consumer engagement [43]. Though these instruments measured specific constructs such as likes, comments, exposure time, and other engagement behaviors, they can be assessed directly using user-generated data from the respective platforms. We adapted to survey versions of the consumer engagement scales. We gathered the actual count of likes, live chats, new followers, live viewers, and purchase intention click-throughs from the livestreaming marketing sessions [44], [45]. Viewership (the number of existing and potential consumers watching the livestreaming session) is a primary indicator of livestreaming engagement. An increased volume of viewers is argued to have improved engagement behaviors with SNSs as it ensures user gratification [46]. This study measured viewership by an actual count of live viewers watching a livestreaming session of a seller during peak time. Other constructs included new followers, live chats, likes, and purchase willingness. The new follower construct is measured by the actual count of new followers the seller accrued during the peak. The viewers who are not yet followers of the seller decide to click the follow button to be notified when the seller goes live. The actual count of user-generated conversations among the viewers and between the viewers and the seller measures Live chats. During the livestreaming session, viewers chat among themselves and direct questions to the seller concerning the products or services being demonstrated; these questions and answers are publicly displayed in the chat window. The viewers' actual count of likes clicked during the livestreaming session measures like construct. The like button is a feature that viewers click to express their positive feeling about liking the live demonstration of a product or service.

The primary dependent construct, purchase willingness, is measured by the actual count of product click-throughs during the livestreaming session. On a livestreaming window, there is a list of hyperlinked images of the products being demonstrated. Viewers can click on a product they are interested in, and they will be directed to a transaction page to begin a purchase transaction. After a viewer clicks on a hyperlink, it pops up on the livestreaming window, which is also visible to other viewers. These were based on the constructs employed in survey-based research [11], [45], [47].

V. DATA ANALYSIS

A. Descriptive Statistics

We used 1238 valid Amazon Live platform observations to test the hypothesis. The number of viewers ranged from 1 to 1900 with (mean =, SD =,); the number of new followers (mean =, SD =,); and purchase willingness (mean =, SD =,). Table I shows a detailed representation of the descriptive statistics.

B. Hypothesis Testing

First the covariance-based structural equation modeling techniques through Stata 16.0 were specified to test the model. Second, the collected data were transformed to logarithmic forms to avert misrepresentation in the data and regularize large values. The aim for data transformation is to confirm that the dataset conforms to the required assumptions of a multivariate multiple linear regression analysis. The logarithmic transformation of the dataset is significant to the skewness nature of the data and standard continuous datasets [48]. Third, the linearity of the variables was tested by using a scatter plot to assess a visual representation of the independent variables. Next, we used kernel density estimation with normal density to visualize the data for multivariate normality. We checked for multicollinearity issues by assessing all the variance inflation factor (VIF) values for each explanatory variable in the model. The values (lowest = 1.07; highest = 1.66) indicate no multicollinearity problems in the regression model [49]. Finally, an autocorrelation analysis used the Durbin-Watson test with a d-statistics value of 1.112, representing low levels of serial correlation. The analysis was conducted at a bootstrapped confidence interval (CI) of 95%, as supported in previous studies [50], [51]. The model explained 65.73% of the variance in purchase willingness during livestreaming marketing sessions on Amazon Live; after controlling for product category, price, and the number of products on display.

In testing the hypothesized relationships, we first computed the correlation matrix to summarize the data for the variables in the model using the pairwise correlation test. The results in Table II indicate a significant correlation ($p < 0.001$) between every two variables in the model. We then assessed the mediational hypothesis using the Sobel [52], [53] and Monte Carlo [54] tests with 95% confidence intervals.

TABLE I
DESCRIPTIVE STATISTICS

Variables	Range	Mean	SD
Live Viewers	1-1900	289.740	270.889
New Followers	1-855	63.960	89.937
Live Chats	1-8580	129.450	460.608
Likes	10-180144	8315.150	25442.020
Purchase Willingness	1-6587	50.350	219.898
Product on Display	1-172	40.080	29.689
Product Category	1-10	3.43	2.195
Product Price	2-34900	263.679	649.853

In Table III, we presented the direct effect of the model. Live viewers have a significant positive impact on purchase willingness ($\beta = 0.079$, $p < 0.001$), new followers ($\beta = 0.236$, $p < 0.001$), live chats ($\beta = 0.124$, $p < 0.001$), and likes ($\beta = 0.139$,

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$p < 0.001$); supporting H1, H2a, H2b, and H2c. New followers directly affect purchase willingness ($\beta = 0.424$, $p < 0.001$), supporting H4. Live chats ($\beta = 0.250$, $p < 0.001$) and likes ($\beta = 0.187$, $p < 0.001$) have significant direct effects on purchase willingness, which supports H5 and H6, respectively.

TABLE II
CORRELATION ANALYSIS OF KEY VARIABLES

	PW	LV	NF	LC	L
PW	1				
LV	0.282#	1			
NF	0.724#	0.255#	1		
LC	0.618#	0.175#	0.521#	1	
L	0.604#	0.119#	0.454#	0.548#	1

Notes: LV (Live viewers), NF (New followers), LC (Live chats), L (Likes), PW (Purchase willingness) Significance level *$p < 0.5$, **$p < 0.1$, #$p < 0.001$.

TABLE III
HYPOTHESIZED DIRECT EFFECTS

Path	β	LLCI	ULCI
LV→PW	0.079#	0.050	0.107
LV→ NF	0.236#	0.186	0.286
LV→ LC	0.124#	0.085	0.163
LV→ L	0.139#	0.074	0.204
NF→PW	0.424#	0.387	0.460
LC→PW	0.250#	0.201	0.299
L→PW	0.187#	0.158	0.216

Notes: LV (Live viewers), NF (New followers), LC (Live chats), L (Likes), PW (Purchase willingness) Significance level *$p < 0.5$, **$p < 0.1$, #$p < 0.001$ at a 95% confidence interval (LLCI-ULCI) excluding zero.

The mediation analysis results presented in Table IV indicate that live viewers indirectly influence purchase willingness through new followers ($\beta = 0.1$, $p < 0.001$), live chats ($\beta = 0.031$, $p < 0.001$), and likes ($\beta = 0.026$, $p < 0.001$); supporting H3a, H3b, and H3c respectively. The ratio of indirect effect to total effect (RIT) and direct effect (RID) shows that 56% (RIT = 0.560) of live viewers' impact on purchase willingness is mediated by new followers, making the mediated effect about 1.3 (RID = 1.274) times as large as the direct effect of live viewers on purchase willingness.

TABLE IV
MEDIATION ANALYSIS RESULTS

Path	β	LLCI	ULCI	RIT	RID
LV→NF→PW	0.100#	0.077	0.123	0.560	1.274
LV→LC→PW	0.031#	0.020	0.043	0.283	0.395
LV→L→PW	0.026#	0.013	0.039	0.249	0.331

Notes: LV (Live viewers), NF (New followers), LC (Live chats), L (Likes), PW (Purchase willingness), RIT (ratio of indirect effect to total effect); RID (ratio of indirect effect to direct effect). Significance level *$p < 0.5$, **$p < 0.1$, #$p < 0.001$ at a 95% confidence interval (LLCI-ULCI) excluding zero.

Similarly, about 28% (RIT = 0.283) of the impact of live viewers on purchase willingness is mediated by live chats contributing to a mediated effect of about 0.4 (RID = 0.395) times as large as the direct effect of live viewers on purchase willingness. Likes mediate about 25% (RIT = 0.249) of the impact of live viewers on purchase willingness amounting to a mediated effect of about 0.3 times as large as the direct effect of live viewers on purchased willingness. The result of the structural model is presented in Fig. 2.
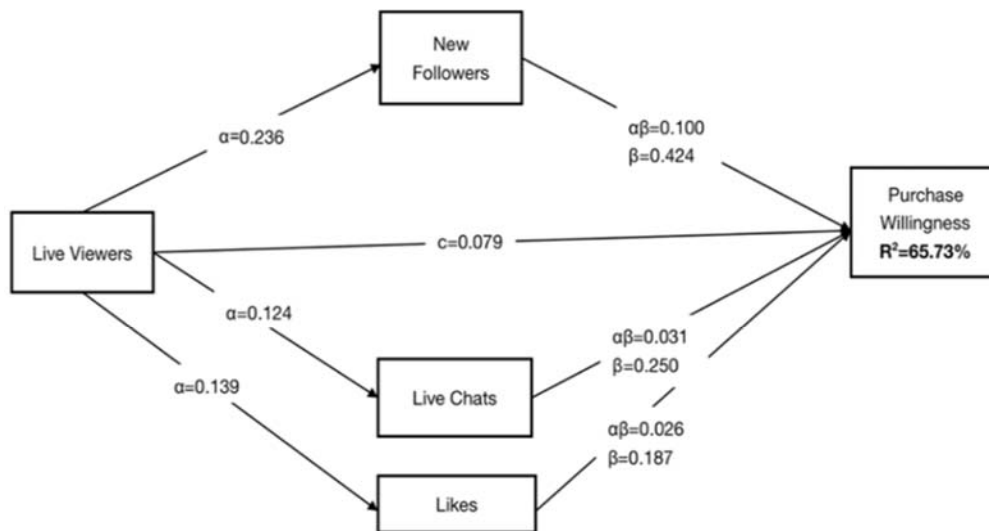
Notes: *$p<0.5$, **$p<0.1$, #$p<0.001$
Effects of control variable: Product on display ($\beta=0.139$, $p<0.001$); product category ($\beta=0.205$, $p<0.001$); and price ($\beta=0.549$, $p<0.001$) significantly affect purchase willingness

Fig. 2 Structural model results

VI. DISCUSSION

Livestreaming has recently received attention from the field of electronic commerce research. However, most researchers in this field have focused more on the perspective of the online celebrity impacts [3], [8], the adoption of livestreaming electronic commerce [55], [56], and livestreaming video content purchase behavior [14]. Most of this research has also been based on survey and questionnaire items [8], [56] and

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focuses primarily on China [3], [56]. The context-dependent nature of consumer behavior calls for examining the behavioral factors in different settings to understand the concept better [57], [58]. In this study, we use actual user-generated secondary gathered from the livestreaming marketing platform to establish the relationship between consumers' actual interactions and purchase willingness during a livestreaming session started by a seller. The study focused on the Amazon Live marketing platform to better understand the livestreaming marketing business model from a different perspective. The Chinese livestreaming marketing platforms are less popular or inaccessible in Western countries.

We studied actual visible consumer interactions (the number of live viewers, new followers, live chats, and likes) with a seller as independent constructs and their association with purchase willingness in livestreaming. The results from our analysis confirmed the positive relationship between consumers' interactions with a seller and the desire to purchase during livestreaming sessions [39].

The assessments of the impacts of live viewers on new followers, live chats, and likes were all significantly positive, attributed to the literature-based evidence that engagement with brands reinforces committed consumers and improves the popularity and presence of brands [21], [59]. The number of new followers, live chats, and likes gained by a seller during a livestreaming session directly influenced purchase. This outcome shows that increased consumer interactions with a seller result in an increased willingness to purchase products or services from the seller. The development aligns with previous works posited that a higher engaging consumer experience causes favorable outcomes like increased sales [21], [34].

However, we established from the results that the number of live viewers has a low direct influence on purchase willingness; this can be explored from the mediation analysis. The mediation test result shows that new followers mediated 56% of the relationship between live viewers of the session and their willingness to purchase. Live chats during the livestreaming session mediated 28.3% of the relationship between live viewers and their willingness to purchase. Finally, live viewers' positive expression of liking an ongoing live demonstration of a product or service by clicking the "like" button mediated 24.9% of the relationship between live viewers and their purchase willingness. Therefore, we posit that the number of new followers, live chats, and like partially explains the relationship between live viewers and purchase willingness.

A. Theoretical Implications

China saw a magnificent increase in the adoption of livestreaming as a marketing and shopping medium by consumers and brands during the coronavirus surge. However, livestreaming marketing in other parts of the world is still unpopular and primarily associated with video gaming and entertainment, which was the focus of some studies [5], [60]. First of all, to the best of our knowledge, this study is among the first to investigate livestreaming commerce in a purely Western e-commerce platform with manually recorded data. Some social media platforms (for example, Facebook and Instagram) have recently included a livestreaming feature where brands can market their product to interested consumers who directly initiate contact with the brand to make purchases. However, this study examined livestreaming marketing on a purely electronic commerce platform (Amazon), where all transactions arising from a livestreaming session happen on the same platform. In that light, we theoretically revealed the relationships between consumers' interaction with a seller during a livestreaming session and willingness to purchase. We empirically tested the variations of those relationships on a purely electronic marketing platform.

Secondly, consumers' interactions with brands were subsumed and measured as a single consumer engagement construct using a survey questionnaire or interview data. The issue with such data is that some respondents have limited or no experience with the investigated subject matter. On the contrary, this study identified visible interactive features on the livestreaming marketing platform representing viewers, new followers, chats, and likes, measured as particular independent variables. These variables can be further investigated as livestreaming marketing grows as a business model.

Moreover, this study improves the existing livestreaming marketing literature by revealing how livestreaming viewers influence purchase willingness. Specifically, we unveil an empirical mediation process that posits that live viewers indirectly increase purchase willingness via new followers, live chats, and likes.

B. Managerial Implications

Concerning the implications for practice, this study first reveals to sellers and brands using livestreaming marketing the varied effects of interactive features on purchase willingness. Specifically, new followers had the most substantial direct impact on purchase willingness and the most potent mediation effect on the relationship between live viewers and purchases. Practitioners adopting livestreaming marketing can leverage the outcome of this study to improve the volume of interactive behaviors from viewers during a livestreaming session. Contrary to traditional commerce, where consumer reviews are more vital to brands, this study indicates that all interactive features on a livestreaming marketing platform demand equal attention to predict a higher purchase willingness from viewers.

Secondly, our findings indicate new followership as the interactive feature with the most substantial effect on purchase willingness. Audio-visuals arguably engage consumers more; thus, viewers follow sellers during a livestreaming session to receive notifications for future livestreaming sessions. This study, therefore, advises sellers and brands to expand their followership through livestreaming sessions to increase purchase willingness.

C. Limitations and Future Research

Despite the practical implications for theory and practice, this study has some limitations that can be addressed in future studies. First, our attention was confined to a distinct set of explanatory variables, possibly neglecting potential explanatory variables. Future studies can investigate the moderating effects of streamers' gender and livestreaming duration on purchase willingness.

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Moreover, this research was based on a cross-sectional analysis which might be a limitation of the study's generalizability. Future studies can consider observing several livestreaming accounts over an extended period to examine the variance in the interactive elements and purchase willingness of viewers.

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