

An Eye Tracking Study of Live E-commerce: The Impact of Hosts' Channel Background on Consumers' Attention to Products

Sheng Haotian¹, Wang Yubin²

¹University of Notre Dame, IN, 46556, USA

²Rutgers University, NJ, 08854, USA

Abstract: Nowadays, livestream shopping has become a new drastically growing segment of e-commerce. Since it's more interactive and direct comparing to traditional online shopping. It brings benefits for consumers and new opportunities for merchants. Typically, there would be at least one host in a livestream session who is responsible for interacting with consumers. More and more merchants are combining influencer e-commerce and livestream shopping together. They invite influencers as the host to sell products in a live session. This research investigated if the consistency between the influencer's channel background and the product type would affect people's attention to promoted products. An eye tracker was used to record people's visual data during the experiment. This helps quantify people's attention in a live session. 25 participants in total were recruited for this study. Eye tracking parameters including first fixation duration, total fixation duration, and fixation count were analysed. According to the result, when the host's background was consistent with the product type, people's attention to products was not significantly increased. This finding could facilitate the development of live e-commerce. When identifying influencers to promote products in a livestream session, influencer's channel backgrounds are not critical factors to take into consideration. Merchants may focus on other aspects, such as the number of subscribers or their stickiness. The above findings contributes to the development of the livestream shopping business.

Keywords: live-stream; e-commerce; eye-tracking; host; influencer

1. Introduction

With the intense development of technology, the way that consumers do shopping has dramatically changed. Offline shopping was the traditional way. Normally people needed go to shopping malls, stores, shops etc. in person or salesmen would approach consumers via door-to-door promotion [1]. In late 20th and early 21st century, the development of semiconductor and Internet industries brought changes. Individuals or companies were allowed to buy and sell goods or services online [2]. Instead of meeting each other physically, people could browse goods or services and make deals online directly. At the beginning, people could only place orders via desktops. Very quickly portable devices i.e. laptops, tablets, smartphones are all eligible for online shopping [3]. E-commerce became more and more important in people's life. Compared to the traditional offline shopping, online shopping shorted the product distribution chain, increased efficiency, and broaden opportunities for both consumers and merchants. In recent ten years, a new form of e-commerce has become more and more dominant which is livestream e-commerce. This is a novel shopping form which is developed based on e-commerce. Livestream e-commerce integrated livestream video and online shopping, which allows consumers to watch and shop at the same time. Typically, there would be at least one host in a livestream session to introduce products and interact with consumers. Consumers' questions and requests could get responses in real time. Interactive and immersive are the features of live shopping. China pioneered in live shopping. From 2017 to 2020, the sales in China skyrocketed from \$ 3 billion in 2017 to \$171 billion in 2020 at a compound annual growth rate of almost 280%. And the number is expected to reach \$423 billion by 2022 [4]. Not only in China, livestream e-commerce also plays important roles in other countries. For instant, in the US the livestream shopping is also growing and will reach \$25 billion by 2023 [5]. The outbreak of COVID further boosted the development of livestream e-commerce [6]. Since people had limited opportunities to go out and do shopping. The future of live shopping is promising across the globe.

Livestream shopping has brought e-commerce and the retail industry into a new rea. It's crucial to have more understanding of livestream e-commerce. There are many existing studies focusing on

traditional online shopping. In recent years, some researchers have paid attention to live shopping. Several researches discussed about the impact of key factors e.g. perceived value, perceived trust, perceived usefulness on consumers' behavior during a live session [7][8]. They have compared the importance of above factors in a livestream session and evaluate which is the dominant one to influence consumers' purchasing behaviors. Some are focusing on value compatibility and value identity through live streaming [9][10]. They investigated how consumer perceive products' value during live shopping session. As a promising and quick developing segment, more studies need to be done to deepen the understanding of live shopping. This study discusses from a different angle, which is the host. The host is not widely discussed in research yet. Along with the development of influencer marketing, more and more merchants are combining influencer ecommerce and live shopping together. They invite influencers as hosts to promote products. Influencers are Internet celebrities. They have channels on various social media platforms, i.e., TikTok, WeChat, YouTube, Instagram, Facebook, Snapchat, and Twitter. Since influencers have the power of affecting purchasing decisions, especially affecting their subscribers. Merchants are willing to invite influencers as the host in live shopping sessions. As mentioned above, influencers are from specific channels, i.e. food, technology, fashion & beauty. This study is aiming at investigating if the consistency between hosts' channel backgrounds and product types would affect consumers attention to the promoted products. For instance, if an influencer from food channel sells food products would increase the endorsement or interests during a live shopping session. The present study leveraged eye-tracking to record people's gaze behavior in a live shopping session. Consumers' attention may indicate their interests towards the products and further affect their buying decisions. Eye-tracking technology could provide quantitative data to help evaluate people's visual attention. Hence it enables to understand if the channel background would affect consumers' attention to the products. The results would provide insights to livestream merchants when looking for ideal hosts.

2. Method

2.1. Participants

A total of 25 participants ($M=32.73$, $SD=11.23$) including 5 males and 20 females were randomly recruited in a mall in Shanghai, China. To ensure all participant were aware of live shopping, a pre-experiment survey was conducted. All participants had experience of livestream shopping previously. Participants were informed they would watch a livestream shopping video. Participants were divided into two experimental groups randomly.

2.2. Stimuli

A sixteen-second livestream shopping video was recorded as the experimental material. To exclude the bias brought by different levels of familiarity or preference of the influencer, a non-famous Chinese female influencer was chosen as the host, which ensured most participants will not be familiar with her. The female host was promoting food product in the video. The food was significant and clear in the video. To explore participants' attention distribution, 2 area of interest (AOI) were picked from the video, which were the host (Host) and the food (Food). In further results analysis, statistical analysis would be done towards above AOIs.

2.3. Experimental Design

The study used a between-subject design. Participants were randomly divided into two groups. In the first group, participants were only informed they were going to watch a livestream shopping record beforehand (Unknown Group). In the second group, apart from above information, participants were also informed that the host was an influencer from "food channel" (Known Group). This is aiming to compare if the match between the product type "food" and the host's channel background "food channel" will affect participants attention to the promoted products.

Participants were asked to sit in front of the screen with an eye tracker mounted at the bottom (TOBII-4C). The screen and the eye tracker were connected to a laptop with TOBII PRO LAB software. Before starting the experiment, participants signed the consent form first and agreed to participate the experiment voluntarily. To ensure all participant were familiar with live shopping, all participants in this study had watched live shopping sessions before. Following a successful nine-point calibration, the experiment started. Different experimental guide slides were displayed to the two groups respectively. One mentioning the channel background of the host, and the other didn't. The recorded livestream shopping

clip was played for sixteen seconds afterwards. During the experiment, participants were told to stay focused and stare at the screen all the time to ensure the accuracy of eye-tracking data. Participants' gaze data was recorded by the eye tracker. Each task took about five minutes to complete. A snack was given to each participant as a gift after completing the experiment.

2.4. Data Analysis

To analyze if the channel background of the host will affect people's attention to a livestream session, three eye tracking parameters were used for analysis, which are total fixation duration (TFD), fixation count (FC), first fixation duration (FFD). To compare if there are statistical differences between Known and Unknown groups, following t-tests were conducted, Known Group (Face) and Unknown Group (Face), Known Group (Food) and Unknown Group (Food). Within-group t-tests between Face and Food were also carried out, which are Known Group (Face) and Known Group (Food), Unknown Group (Face) and Unknown group (Food). This is to understand how participants in the two groups view a live session and how do they allocate their attention.

3. Result

T-tests for Face and Food were conducted between Unknown Group and Known Group. For TFD of Food between Unknown Group ($M=3.31$, $SD=2.30$) and Known Group ($M=4.33$, $SD=2.08$), the difference was not significant ($t=-0.96$, $p>.05$). For FC of Food between the Known Group and Unknown Group ($M_{\text{known}}=10.10$, $SD_{\text{known}}=5.41$; $M_{\text{unknown}}=14.50$, $SD_{\text{unknown}}=10.00$), it showed no significant difference ($t=-0.91$, $p>.05$). Finally, the difference between Known Group and Unknown Group ($M_{\text{known}}=0.54$, $SD_{\text{known}}=0.60$; $M_{\text{unknown}}=14.50$, $SD_{\text{unknown}}=0.40$) of FFD was also not significant ($t=-0.27$, $p>.05$).

Within-group t-tests shows, TFD of Known Group shows a significant ($t=1.71$, $p<0.05$) difference between Host ($M=5.49$, $SD=3.29$) and Food ($M=3.31$, $SD=2.30$). However, in Unknown Group, there is no significant difference between Host ($M=7.44$, $SD=3.92$) and Food ($M=4.33$, $SD=2.08$). There is no statistical difference between Host (FC: $M_{\text{known}}=13.10$, $SD_{\text{known}}=7.09$; $M_{\text{unknown}}=11.00$, $SD_{\text{unknown}}=3.51$; FFD: $M_{\text{known}}=0.54$, $SD_{\text{known}}=7.09$; $M_{\text{unknown}}=0.60$, $SD_{\text{unknown}}=3.51$) and Food (FC: $M_{\text{known}}=10.10$, $SD_{\text{known}}=5.41$; $M_{\text{unknown}}=14.50$, $SD_{\text{unknown}}=10.00$; FFD: $M_{\text{known}}=0.54$, $SD_{\text{known}}=0.27$; $M_{\text{unknown}}=0.60$, $SD_{\text{unknown}}=0.40$) for FC ($t_{\text{FC}}=1.00$, $P_{\text{FC}}>0.05$) and FFD ($t_{\text{FFD}}=-1.32$, $P_{\text{FFD}}>0.05$) between Known Group and Unknown Group.

Above results are listed in Table 1 as shown below.

Table 1: TFD, FC, and FFD of Unknown and Known groups

	TFD (s)		FC		FFD (s)	
	Unknown	Known	Unknown	Known	Unknown	Known
Host	7.44	5.49	11	13	0.31	0.36
Food	4.33	3.31	14.5	10	0.60	0.54

4. Discussion

This study is one of the first to leverage eye-tracking technology to investigate the impact of hosts' background on consumers' attention in livestream shopping. Attention reflects how attractive the product is and may affect the further purchase decision. A livestream shopping clip was chosen as the experimental material, in which a female Chinese host was promoting food products. The purpose of this study is to investigate if the influencers' channel background, who is the hosts, would affect consumers' attention to promoted products in a live shopping session. All participants were familiar with live shopping. During the experiment, the control group was only told to watch a livestream shopping clip. In the other group, participants were informed that the host was an influencer from the food channel. This is emphasizing the host's channel background matches the promoted food products. According to the result, participants' attention to products, the food, was not significantly increased when they knew the host is a food channel influencer. Since there is no significant statistical difference between the two groups. This suggests people's attention on promoted products was not affected by the host's channel background. According to a previous study from Karry "trust" is an important decisive factor to purchase

behavior^[11]. When watch live sessions, there are many factors could influence consumers' purchasing decision, i.e. perceived value, value identity, perceived usefulness, and perceived trust^{[11][2]}. Among all factors, perceived trust is the one closely related to the host. Trust is a strong endorsement of the product. Consumers tend to believe the information provided, the product quality etc. Yide Sun also found similar conclusions in the study of consumers' impulsive buying behavior^[12]. Based on results of this study, the channel background is not a good endorsement of the products. By merely knowing the hosts' channel background, the audience would not allocate more attention to related products. The potential reason is the channel background couldn't function as an "expert identity", at least at the first glance. For merchants like brand owners, retailers, who would like to invite influencers as the host to do livestream selling, a simple match between influencers' channel and the product type couldn't increase consumers' attention on products. On one hand, when inviting influencers, it's not necessary to limit the channel within the type of the product. The consistency between the channel background and the product is not a key factor. On the other hand, perhaps familiarity to the host is a better way to provide trust^[13]. Merchants could do some more introduction to the hosts before selling products. This may help increase the yield rate of audience who is not subscribers of the influencers. Meanwhile, in Known Group people paid more attention to the host rather than that of the food. While Unknown Group doesn't reveal significant differences. The potential reason is in Known Group the primary experimental instruction was focusing on the "influencer". That made participants tend to pay more attention to the host.

There are some limitations in this research. Firstly, as a preliminary study, the number of male participants is comparatively limited. There are only 5 males out of 25 participants. In future study, more males could be recruited. Results analyses could also be conducted based on gender, so that it could generate a more detailed understanding to figure out if there is any difference between the females and males. Secondly, future experiments can expand the type of products. More types of products could be included, e.g. electronic products, clothes, makeup products. Apart from food or consumer goods, other types of products could also be explored. Different product types may have different background requirements on hosts. For instance, consumers may react differently when purchasing electronic products which are more complicated and expensive. More researches on other types could generate more holistic understandings.

5. Conclusion

Above all, livestream shopping is a rapidly developing segment across the globe. Many livestream shopping sessions invite influencers as hosts. Since merchants would like to leverage the influence of the influencers. This study discussed if the channel background consistency between the influencer and the product's type would affect people's attention on products. An influencer from food channel sales food products was discussed in this research. According to the results, when releasing the influencer's channel background, participant didn't allocate more attention to the food product. This indicates the consistency between the product type and the influencer's channel background won't increase people's attention on the promoted product. Attention indicates consumers' interests towards the product and may further affect the purchasing decision. This finding provides insights to the livestream e-commerce industry. A simple match between the host's background and the type of the product would not increase consumers' attention on products. When merchants consider to invite influencers as hosts, it's not necessary to limit to a specific channel. Other aspects of the influencer's background (e.g., subscribers' stickiness) might be more important to achieve a higher conversion rate. Further research on more product types could give a holistic understanding of this topic.

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