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Benchmarking for impulsive behavior of customers during live streaming: A dual-stage SEM and MCDM analysis

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Abstract

Live streaming changed the traditional e-commerce landscape. Commerce of live streaming is distinguished by reducing the distances between customers and sellers, increasing interaction, exchanging information, and allowing the ability to respond to customers directly. Nevertheless, sellers seek to understand the factors that increase impulse buying behaviors. This research seeks to solve this problem by investigating the effect of anchor factors such as para-social interaction, anchors' professionalism and situational factors such as buying motivation, time pressure, and product involvement on the impulsive behavior of customers. Multi-Criteria Decision Analysis (MCDM) and Structural Equation Modeling (SEM) was used to understand the causal relationships and to rank customers based on their impulsive behavior for trading platforms that use live streaming. The results showed that there is a direct effect relationship between para-social interaction, anchors' professionalism, buying motivation, time pressure, and product involvement and impulsive buying behavior.

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MCDM methods identified the highest impulsive buying behavior customers who could be identified as the opinion leaders of these platforms. However, customers with the least impulsive behavior can be focused on by giving them gifts and discounts, sending them previous customer experiences, or giving them coupons. This research makes contributions to academics and practitioners by identifying the best and worst customers in order to improve social commerce.
Keywords: Para-social interaction, anchors' professionalism, buying motivation, product involvement, impulsive behavior.

المستخلص

غيّر البث المباشر مشهد التجارة الإلكترونية التقليدي. تتميز تجارة البث المباشر بتقليل المسافات بين العملاء والبائعين وزيادة التفاعل وتبادل المعلومات والسماح بالقدرة على الاستجابة للعملاء بشكل مباشر. ومع ذلك ، يسعى البائعون إلى فهم العوامل التي تزيد من سلوكيات الشراء الدافعة. يسعى هذا البحث إلى حل هذه المشكلة من خلال التحقيق في تأثير عوامل الارتكاز مثل التفاعل شبه الاجتماعي ، واحتراف المراسي والعوامل الظرفية مثل الدافع الشرائي ، وضغط الوقت ، ومشاركة المنتج على السلوك الاندفاعي للعملاء. تم استخدام تحليل القرار متعدد المعايير (MCDM) ونمذجة المعادلة الهيكلية (SEM) لفهم العلاقات السببية وتصنيف العملاء بناءً على سلوكهم المندفع لمنصات التداول التي تستخدم البث المباشر. أظهرت النتائج أن هناك علاقة تأثير مباشرة بين التفاعل شبه الاجتماعي ، واحتراف المراسي ، وتحفيز الشراء ، وضغط الوقت ، ومشاركة المنتج وسلوك الشراء المندفع. حددت أساليب MCDM العملاء ذوي السلوك الشرائي الأكثر اندفاعًا والذين يمكن تحديدهم كقادة رأي لهذه المنصات. ومع ذلك ، يمكن التركيز على العملاء ذوي السلوك الأقل اندفاعًا من خلال منحهم الهدايا والخصومات ، أو إرسال تجارب العملاء السابقة لهم ، أو منحهم قسائم. يقدم هذا البحث مساهمات للأكاديميين والممارسين من خلال تحديد أفضل العملاء وأسوأهم من أجل تحسين التجارة الاجتماعية.

الكلمات المفتاحية: التفاعل شبه الاجتماعي ، احترافية المراسي ، حافز الشراء ، الانخراط في المنتج ، السلوك الاندفاعي.

Introduction

Live broadcasting is considered one of the tools of social commerce, which constituted a major transformation in the field of online commerce, due to the enjoyment of this medium in an atmosphere of democracy that transcends the dominance of traditional media institutions such as television and radio (Lo et al., 2022). Traditional and electronic commerce transactions have shifted to focus on commerce via livestreaming. Livestreaming commerce is a new marketing channel that takes advantage of livestreaming to market and sell products. Live broadcasting increased the interaction between customers and sellers, which created a huge revolution in the field of commercial transactions compared to the traditional electronic business model (Ming et al., 2021). Live broadcast contributes to reducing distances and increasing customer support with information by directly responding to customers and getting to know them closely, and electronic word of mouth activities also increase. Moreover, streaming commerce has become an essential channel around the world that companies used, and sales reached about $6 billion in 2020 (Hallanan, 2020). The literature focused on the concept of impulsive buying behavior due to the spread of electronic commerce, electronic payment, and social commerce. However, generalizing the findings of the

previous literature to a specific context is not feasible due to the different cultures of customers and also the distinctive nature of commerce via live broadcasting (Zhang et al., 2022).

Much of the previous literature focused on interaction and views during a live broadcast. The results of previous studies have reported the scarcity of investigations into impulsive customers during live broadcasts (Zuo & Xiao, 2021). To fill the gap in the previous literature, this study investigates impulsive buying behavior by investigating the effect of anchor and situational factors on impulsive buying during live streaming. Moreover, this research contributes to the enrichment of the literature by investigating the effect of emotional theories on the behavior of customers. This study departed from the previous literature by investigating the influence of para-social interaction anchors' professionalism, buying motivation, time pressure, product involvement on the behavior of customers in the live broadcast commerce. Intense competition led to e-commerce being expanded. So, sellers had to use live broadcasts to stay away from the crowded online market (Lo et al., 2022). Many practitioners seek to understand the factors that increase impulsive behavior of customers during live streaming. Time is a decisive factor in live streaming, as the broadcast reaches 8 hours. Therefore, understanding the impulsive behavior of customers is critical. Investigating the antecedents of impulsive behavior of customers presents the most important factors that contribute to increasing the purchasing activities of customers via the Internet. Practitioners can improve business processes in the live broadcast commerce (Xue et al., 2020). This study contributes to providing an up-to-date perspective on impulsive buying for consumers.

2. Hypotheses development

2.1. Impulsive buying behavior

Descriptions of impulse buying were primarily concerned with the product when predicting a purchase. The consumer and his characteristics were not considered in the earlier studies as a factor influencing impulse purchases. By examining the various behavioral aspects of impulse buying, researchers from a later year sought to understand individual impulsiveness. According to Rook (1987), when a consumer makes an impulse purchase, they are overcome by an immediate, intense, and enduring desire. Impulse buying, according to him, is an unintentional, non-reflective reaction that happens right away after being exposed to stimuli inside the store. According to Rook and Fisher (1995), impulse buying is an unplanned behavior characterized by hasty decision-making and a propensity for quick product acquisition. Impulse buying is "a sudden, compelling, hedonically complex buying behavior in which the rapidity of an impulse decision process precludes thoughtful and deliberate consideration of alternative information and choices." In contrast to utilitarian behavior, which seeks functional benefits and economic value in the shopping process, hedonic behavior is marked by pleasure (Muruganantham & Bhakat, 2013).

Impulse buying is significant because it allows companies to market their new products by utilizing highly effective communication in media stores to convey information about promotions. This has the potential to influence consumers' emotions and lead to spontaneous purchases. Businesspeople must make the most of the existence of this type of behavior, namely impulse buying. To build long-term relationships, they must be able to provide consumers with security guarantees (Han et al., 1991). Impulsive purchasing involves a complex process. But because of its importance, researchers have spent decades looking at impulsive buying from a variety of angles. There are two streams to previous research on impulsive purchases (Wang et al., 2022). The investigation of the potential effects of impulsive purchasing behavior is the focus of the first stream. The other stream is pertinent to factors that influence impulsive purchasing behavior, including culture, one's perception of oneself, and the types of food consumed. The two main categories of potential triggers for impulsive purchasing behavior are external and internal determinants, with the former being unrelated to consumers and the latter being linked to their inherent traits.

2.2. The relationship between anchor (i.e., Para-social interaction and anchors' professionalism) and impulsive buying behavior

It has been attempted to assess the effects of motivational factors on the cognitive reactions of consumers and the emergence of practical behaviors by them. The behaviors manifest as a proclivity for unplanned purchases or an insistence on going shopping with no plans. Customers value para-social interaction behaviors as one of the new cognitive reactions (Alizadeh, 2019). Parasocial interaction explains imagined social relationships and interactions with people who are distant from us and do not reciprocate individual communication or interest (Stever, 2017). The concept of parasocial interaction is based on media and communication theory. In the context of consumer behavior, parasocial interaction explains how a consumer's perceptions and behaviors, including purchase behavior, are influenced by their imagined intimacy, friendship, and identification with another individual (Shen et al., 2022). Meanwhile, para-social interactions are a type of social interaction that occurs in a social commerce setting. Interactions in this environment can be compared to friendships formed by individuals based on their need for people. In fact, social interaction is a one-way relationship that a user establishes with other users in the social commerce environment, particularly with famous people or experts, that is derived from imagination. In fact, in this type of relationship, people imagine they have a face-to-face relationship with people in cyberspace (Hsu, 2020). Customers develop a sense of closeness with products through par asocial interaction; this expressive and conceptual perception of closeness then motivates followers to purchase products (Sun, 2010). Hwang and Zhang (2018) argued that par asocial interaction is required to increase an individual's willingness to buy.

According to Freud, impulse behavior is the manifestation of two opposing forces: pleasure and reality principles. Impulsive buying is distinguished by relatively rapid

decision-making and a subjective bias toward immediate possession. This type of behavior is more arousing, unintended, less deliberate, and more irresistible than planned buying behavior. In contrast to planned purchases, impulse purchases are unstructured and instant purchases in which the consumer is not looking for a product and have no plan to purchase (Yang et al., 2022). Professionalism is one of the factors that can lead to impulsive purchasing behavior (Chen et al., 2022). According to professionalism, consumers' behavioral decisions—their responses—about whether to approach or avoid something are influenced not only by their attention to external environmental factors (their stimulation), but also by their sensory cognition of their internal states (Zhang et al., 2022). Professionalism is frequently used to explain consumer behavior or consumer will, especially when based on how external environmental factors affect consumers' internal psychological states and behavioral responses to impulsive buying behavior (Li et al., 2022). Customers who make impulsive purchases act as a link between companies and customers due to their professionalism, popularity, interactivity, and affinity. Professionalism aids business owners in brand building, product promotion, and information delivery. Regarding the marketing strategy, professional customers encourage impulsive purchasing by educating consumers about the products (Liang & Zuo, 2023). Therefore, the following hypothesis is proposed.

H1 to H2: There is a relationship between anchor factors (i.e., Para-social interaction and anchors' professionalism) and impulsive buying behavior.

2.3. The relationship between situational (i.e., Buying motivation, time pressure, and product involvement) and impulsive buying behavior

Purchasing motivation occurs when a person shops because it makes them happy, and they find it interesting. Because it involves emotional reactions, sensual pleasures, dreams, and aesthetic considerations, this motivation is based on subjective or emotional thinking. Therefore, buying motivation is what drives consumers to shop because they enjoy it so much that they don't consider the advantages of the goods they buy (Mamuaya, 2018). Motivation is one consumer characteristic that may affect impulsive purchasing. where Motivation is the term for the experiential and emotional factors that encourage customers to participate in shopping-related activities. that shoppers who have goals in mind when they shop are more likely to be interested in having fun and having a good time while they shop (Chang et al., 2011). If consumers are shopping, their emotions may lead them to purchase a product without prior planning.so, The desire to shop for pleasure, stress relief, mood changes, or the opportunity to socialize with loved ones is known as motivation (Horváth & Adıgüzel, 2018). Impulse buying at low to moderate levels can be an enjoyable activity encouraged by a consumer's pursuit of a shopping experience; however, impulse buying at high levels can be harmful and potentially self-destructive (Bahrah & Fachira, 2021). Buying motivation is a closely related factor. It encourages impulsive purchases. Purnomo and Riani (2018) discovered that hedonic shopping motivation had a

significant effect on impulse buying. buying motivation is a factor that can influence impulse purchases. According to Yistiani et al. (2012) and Park and Lennon (2006), impulsive purchasing behavior is frequently influenced by a variety of factors. The one is motivation. It suggests that consumers may make impulse purchases. If they are motivated by hedonic traits rather than pleasure, fantasy, and emotional fulfillment. Because the shopping experience includes hedonic needs, the product to be purchased appears to be chosen haphazardly. As a result, consumers will make impulse purchases (Widagdo & Roz, 2021).

Impulse buying is a type of irrational behavior; the impact factor has been a research hotspot for academics and a focus for businesses. Based on our analysis of the impulse buying phenomenon and the literature on impulse buying, we conclude that time pressure is a significant influencing factor in impulse buying. There have been conflicting results from earlier studies looking at how time pressure affects impulsive buying. For instance, when there is more time available, consumers are more likely to be exposed to and process in-store stimuli as well as recall memories of products, which can lead to impulsive purchasing (Amos et al., 2014). which implies that a lack of time constraints will lead to more impulsive buying. However, another study discovered that the affective components of impulsive shopping in duty-free shops are exacerbated by time pressure (Sohn & Lee, 2017). On the one hand, prior research claims that time pressure positively influences impulsive buying, emphasizing the affective aspects of such behavior; on the other hand, literature also suggests that the adverse effect emphasizes the cognitive aspects of impulsive buying. In accordance with the logic, the time pressure effect may be dependent on the specific characteristics of impulsive buying, such that time pressure is positively related to affective characteristics of impulsive buying but negatively related to cognitive characteristics of impulsive buying (Liu et al., 2022).

Product involvement is defined as "an unobservable state reflecting the amount of interest, arousal, or emotional attachment a consumer has with a product." (Lukito & Tulipa, 2015). Depending on the product category, each consumer's level of product involvement lies along a continuum. Although every consumer can show any level of product involvement with any category of products, most consumers generally tend to show higher levels of involvement with some product categories than others (Liang, 2012). Although the relationship between product involvement and compulsive buying behavior has not been analyzed, the discovery that compulsive buyers are typically materialistic provides additional evidence for the existence of a positive relationship between product involvement and compulsive buying behavior (Yurchisin & Johnson, 2004). When Browne and Kaldenberg (1997) discovered that people who were materialistic also displayed a high level of product involvement, it stands to reason those compulsive buyers, who frequently exhibit a materialistic mindset, would also have a high level of product involvement. Therefore, the following hypothesis is assumed:

H3 to H5: There is a relationship between situational factors (i.e., Buying motivation, time pressure, and product involvement) and impulsive buying behavior.

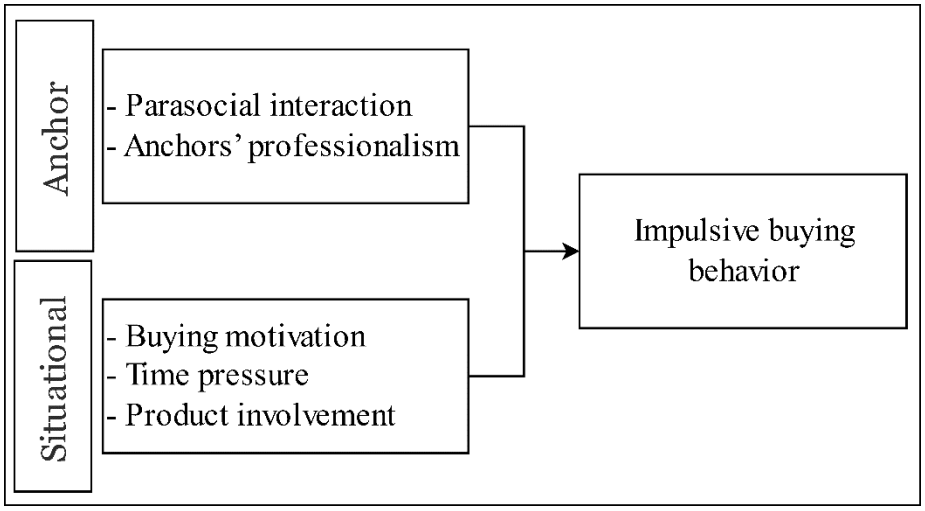

Figure 1. Research framework

3. Methodology

Recently, electronic commerce has expanded in Iraq. Many websites and delivery services have appeared, and the use of mobile phones in e-commerce has increased. Moreover, many e-commerce platforms that sell using live streaming have grown. To investigate the impulsive behavior of customers, 83 customers in Basrah were targeted. The authors used the market interception process by asking customers if they had ever made online purchases via live broadcast in order to accurately identify the study sample. According to the previous literature, the sample size is considered sufficient because it is ten times larger than the structural paths. The study sample ranged from 63% females and 37% males, while 34% were holders of a bachelor's degree and 22% had a diploma, and the rest had postgraduate degrees. The authors used a number of reliable measures that will be described in the statistical section. This study used a five-point Likert scale. This study also addressed a common problem of bias by analyzing the rate of variance, which was less than 50%. This finding confirms that there is no concern about common method bias.

4. Data analysis

This study used two statistical methods. The first stage included testing the causal relationships through the use of structural equations modeling. While the second stage included the use of MCDM methods to rank customers from best to worst on the basis of impulsive buying behavior. The first stage is divided into two parts, which are testing the measurement model and testing the structural model. The authors tested the measurement model with convergent and discriminant validity. In the process of evaluating convergent validity factor load (FL > .7), extracted mean variance (AVE > .5) and consistency reliability (CR > .7) should be considered. Table 1 shows the convergent validity test.

Table 1. Convergent validity test

Variables	**Items**	**Loading factor**	**CR**	**AVE**	**Ref.**
Parasocial interaction	Platforms of social commerce show me what other members are like	0.736	0.873	0.624	Xiang et al. (2016)
	The interaction with other members on platforms of social commerce make me feel comfortable	0.872			
	I found myself comparing my opinion about products and brands with what other members said	0.709			
	I can trust the information I get from other members on platforms of social commerce	0.816			
	I would tell my friends about members on platforms of social commerce	0.873			
	When some members on platforms of social commerce post information, they seemed to understand the kinds of things I want to know	0.790			
Anchors' professionalism	n the scenario of livestream shopping, I think the products recommended by anchors are reliable	0.753	0.761	0.693	Liu et al. (2022)
	In the scenario of livestream shopping, I trust the anchors	0.739			
	n the scenario of livestream shopping, I think the anchors have professional skills	0.735			
	In the scenario of livestream shopping, I think the anchors have a good understanding of the products they recommend	0.746			
Buying	Each customer requires a	0.711	0.89	0.59	Robinso

motivation	unique approach		5	9	n et al. (2002)
	When I feel that my sales approach is not working, I can easily change to another approach	0.756			
	I like to experiment with different sales approaches	0.764			
	I am very flexible in the buying approach I use	0.863			
	I feel that most buyers can be dealt with in pretty much the same manner	0.873			
	I change my approach from one customer to another	0.865			
Time Pressure	No time pressure/Too much time pressure	0.809	0.763	0.724	Peng et al. (2019)
	More than adequate time available/Not adequate time available	0.837			
	Need not more time to concern this buying making/Need lot more time to concern this buying making	0.764			
Product involvement	This product is important to me	0.734	0.734	0.715	Peng et al. (2019)
	This product makes me excited	0.702			
	This product is interesting to me	0.765			
	This product is needed for me	0.863			
	This product means a lot to me	0.716			
	This product is involving to me	0.788			
	This product is fascinating to me	0.773			
Impulsive buying behavior	I have tendency to buy products and services spontaneously, unreflectively, immediately and kinetically through a social commerce	0.724	0.819	0.637	Chung et al. (2017)
	“Just do it” describes the way I buy things	0.836			
	I often buy things without thinking	0.729			

	"Buy now, think about it later" describes me	0.817			

Table 1. shows that there is no concern about convergent validity because the loading factor and CR values for all items and variables were greater than 0.7 and also the AVE values were higher than 0.5. However, the authors tested discriminant validity using the heterotrait-monotrait ratio of correlations (HTMT) criterion method as shown in Table 2.

Table 2. Discriminant validity

Variables	**1**	**2**	**3**	**4**	**5**	**6**
1. Para-social interaction						
2. Anchors' professionalism	0.323					
3. Buying motivation	0.471	0.284				
4. Time Pressure	0.249	0.460	0.361			
5. Product involvement	0.198	0.247	0.467	0.517		
6. Impulsive buying behavior	0.266	0.309	0.109	0.257	0.235	

The results of Table 2. show that all values of the correlation matrix of the HTMT method were less than 0.85. These results confirm that there is no concern about discriminant validity. The second stage of the PLS-SEM analysis involves testing the structural model. The bootstrapping method with 5000 (one-tailed, 0.05; 83 case data) bootstrap re-sampling and bias-corrected confidence intervals were utilized to examine the significance of the path coefficients. Table 3. shows the results of the hypothesis test.

Table 3. Assessment of structural model

Constructs	**Original Sample**	**Sample Mean**	**Standard Deviation**	***T***	***p*-Values**	**Result**
Para-social interaction -> impulsive buying behavior	0.102	0.201	0.050	2.040	0.000	Supported
Anchors' professionalism -> impulsive buying behavior	0.175	0.339	0.060	2.917	0.000	Supported
Buying motivation -> impulsive buying behavior	0.110	0.293	0.039	2.821	0.000	Supported
Time Pressure -> impulsive buying behavior	0.201	0.392	0.047	4.277	0.000	Supported

Product involvement -> impulsive buying behavior	0.116	0.363	0.038	3.053	0.000	Supported

The result shows there is a significant relationship between para-social interaction, anchors' professionalism, buying motivation, time pressure, product involvement, and impulsive buying behavior. The second step involved the use of MCDM methods to determine the importance of variables in order to provide insights into the industry about the most important factors affecting impulsive behavior of customers during live broadcasts. In addition, MCDM methods support ranking customers from best to worst based on their buying behavior. MCDM methods are divided into two types. The first type is concerned with recording a weight for the variables by adding a percentage for each variable to determine the importance of the criteria. There are many ways to assign weight to variables such as AHP and ANN. However, the methods of giving weight to the variables suffer from the inability to rank the alternatives. To this end, there are ways to rank the alternatives from best to worst, such as VIKOR and TOPSIS. This study used the ANN method to assign weight to the variables and the VIKOR method to rank customers from best to worst based on impulsive buying behavior during the live streaming. Table 4. shows the results of the ANN.

Table 4. Results of the ANN method

Variables	**Importance**	**Normalized Importance**
Para-social interaction	0.212	69%
Anchors' professionalism	0.056	18%
Buying motivation	0.306	100%
Time Pressure	0.272	89%
Product involvement	0.153	50%

The results show that buying motivation was the most contributing factor to impulsive buying behavior during the live streaming, followed by time pressure and para-social interaction. In order to shed light on the behavior of customers, investigate the most purchasing customers during the live streaming, and address the weakness of purchases among some customers, the results of Figure 2. show the ranking of customers from best to worst based on impulsive buying behavior using the VIKOR method.

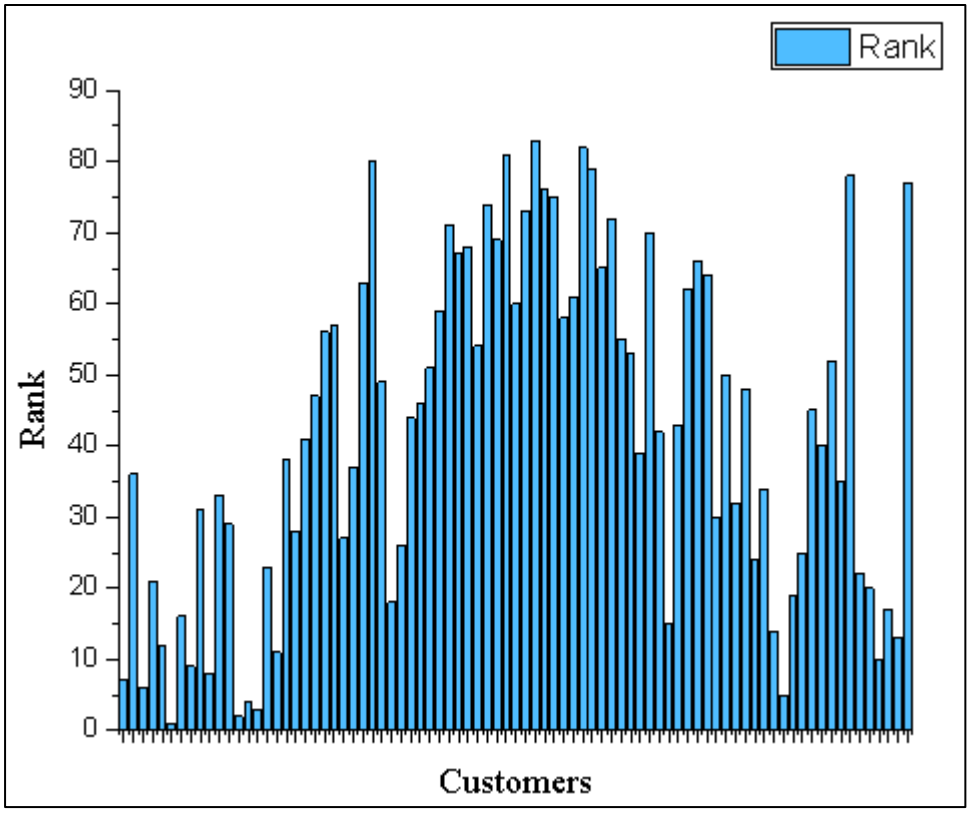

Figure 2. Rank customers based on impulsive buying behavior.

6. Conclusion

This study examined the relationships between anchor (i.e., Parasocial interaction and anchors' professionalism), situational (i.e., buying motivation, time pressure, and product involvement), and impulse-buying behavior. The findings revealed that the need for parasocial interaction, as well as the professionalism of the anchors, positively influences impulse-buying behavior. For marketers, this implies that the need for parasocial interaction is influenced by how one purchases products. Given that companies are the primary factors that influence and shape new products, they must understand how consumers use their products to be popular. Furthermore, consumers with higher levels of professionalism have higher impulse-buying tendencies, particularly when purchasing products. This finding backs up the findings of a previous study by Joo Park et al. (2006).

Buying motivation affects impulsive purchases. This demonstrates that as consumer buying motivation for products increases, so does their desire to satisfy the needs for buying that have become a part of their lifestyle so that they always appear attractive in the community. As a result, they are more willing to make sacrifices to achieve their goals and are therefore more likely to make impulsive purchases. Also, time pressure has an impact on impulsive purchasing. It can be said that the time pressure indicator encourages consumers to make impulsive purchases. This is a normal occurrence

because sometimes someone who values their time also considers it when making a purchase. Furthermore, Product involvement is very important in impulse buying. Those who are high on impulse or are deeply invested in these products. It is likely that the reason for this purchasing behavior is that products and services are essential to people's daily lives and thus consumption patterns. This increases participation in buying impulsive behavior.

This study provided several contributions to the literature and industry. Theoretically, this study expanded e-commerce theories by investigating the influence of emotions on customers' behavior towards social commerce platforms. In addition, the study of customer behavior during the live streaming is interesting because it sheds light on the most important determinants of intentions to use online purchases. Practically, this study provided decisive evidence about the most important factors affecting impulsive buying behavior of customers in Iraq. Buying motivation was the most contributing factor to impulsive buying behavior during the live streaming, followed by time pressure and para-social interaction. In this context, ranking customers from best to worst based on buying behavior provides insight into the industry about the best customers to deal with on e-commerce platforms. Companies can identify social media opinion leaders to motivate them to activate positive content about these companies and convince potential customers to buy. However, customers at the bottom end of the ranking due to their low purchasing behavior can be treated with caution. We suggest offering them a number of discounts and gifts, as well as sending them video clips about the experiences of previous customers in order to turn their negative attitudes into positive.

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