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Article

Assessing the impact of social media interaction in s-commerce strategies mediated by relationship quality

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Abstract: In the rapidly evolving landscape of digital marketing, the influence of social media on consumer behavior has become a focal point of scholarly inquiry. This study delves into the intricate dynamics between social media interaction and the quality of relationships in the context of s-commerce, examining how these interactions impact customer loyalty and purchase intentions. It is imperative to note that while the study does explore the mediating role, it is not the primary focus. The core objective revolves around understanding the nuanced relationships between social media interaction and relationship quality. This clarification ensures a precise delineation of the research scope and objectives. Furthermore, it is worth emphasizing that while the study delves into customer loyalty, this aspect is not explicitly reflected in the title. However, the examination of loyalty remains an integral component of the research, providing a holistic view of customer behavior in the digital marketplace. By addressing the interplay between social media engagement and relationship quality, this study aims to provide valuable insights for businesses navigating the complexities of s-commerce. Through this research, we seek to illuminate the pivotal role of social media interactions in shaping customer-company relationships, thus offering actionable insights for practitioners and enriching the academic discourse in the field of digital marketing.

Keywords: s-commerce; social media interaction; relationship quality; purchase intention; loyalty intention

1. Introduction

The utilization of social media as a popular marketing strategy tool among companies has become a striking phenomenon (Gioia and Manz, 1985). In the realm of social media, social networking platforms have opened up opportunities for interactive communication between sellers and customers (Dwivedi et al., 2020). The adoption of s-commerce as a marketing channel provides benefits by generating customer awareness, building virtual communities, and creating traction for marketing efforts (Haque and Mazumder, 2020). However, recent surveys highlight that while s-commerce is capable of being used to sell products or services, consumers tend to prefer marketplace platforms in making purchases.

The recent emergence of the live s-commerce phenomenon has opened up new opportunities for consumers to obtain product information instantly and interact directly (Dwivedi et al., 2020; Yahia et al., 2018; Zhan et al., 2016). With a live streaming approach, this s-commerce model provides a virtual shopping experience, forming a more personalized interaction between sellers and buyers. In line with the growth of live streaming platforms such as TikTok, selling products in the context of live streaming is a key objective. The main objective of this research is to provide

practical guidance for e-commerce platforms in optimizing live streaming through identifying factors that affect live streaming performance effectively. Additionally, this research proposes a framework that integrates social media interaction (SMI), relationship quality in s-commerce (RQC), live streamer (LST), product quality (PQL), average time (AVT), viewership (NOW), live streaming duration (LSD), purchase intention (PIT), and loyalty intention (LYI) to improve customer engagement.

By having a deeper understanding of the content or message delivered through SMI and its effect on consumer experience, sellers can effectively apply social media as an efficient marketing tool (Duarte et al., 2018). Active engagement and interaction among users in s-commerce will support in strengthening the relationship between sellers and customers, ultimately contributing to the achievement of desired marketing goals (Alejandro et al., 2011). Furthermore, this research will also investigate the impact of live streamer characteristics and customer responses on live streaming performance in an s-commerce platform environment. Furthermore, how social media marketing activities and customer experience interact with each other and influence loyalty and purchase propensity within the framework of s-commerce activities will also be explored. The results of this study are expected to provide insights and guidelines for companies or merchants in deciding whether s-commerce is suitable as a marketing tool and selecting the appropriate type of marketing content to sustainably improve business performance.

Although many studies have looked at the utilization of social media in marketing strategies, there is still a lack of in-depth understanding of how factors such as live streamer characteristics, social media interactions, and relationship quality in s-commerce interact to effectively improve live streaming performance in the context of "live s-commerce" (Gioia and Manz, 1985; Dwivedi et al., 2020; Haque and Mazumder, 2020; etc.). In addition, no research has comprehensively explored how personalized interactions in a virtual environment, such as live streaming, can influence customer perceptions of a product or service, and how this affects long-term loyalty and purchase propensity within the framework of s-commerce activities. A significant research gap therefore lies in the need for further assessment of the complex relationships between these factors and their impact on marketing outcomes and customer engagement in an increasingly digitally connected marketing era.

This research involves a growing understanding of the transformation of marketing through social media and the adoption of new concepts such as "s-commerce" and "live s-commerce". Recent research shows that companies are increasingly relying on social media to build interactive interactions with customers, while the concept of live s-commerce brings a new dimension through live streaming that facilitates personalized interactions between sellers and buyers virtually. Factors such as the characteristics of live streamers, the quality of relationships in s-commerce, and the influence of social media interactions and personal experiences on them are continuously explored to optimize marketing performance. The application of these techniques is increasingly important in the face of the growth of live streaming platforms such as TikTok that are changing the way companies communicate with audiences and influence purchase decisions and customer loyalty in a changing business ecosystem.

2. Review of literature

2.1. Direct interaction

With the advancement of technology and the development of business models, consumers now have a variety of ways to understand the products they are considering. Initially, in the e-commerce era, consumers were only able to view product descriptions on website platforms. Later, e-commerce companies began to introduce evaluation systems that allowed consumers to make decisions based on reviews from previous buyers. However, through live streaming, consumers can interact directly with live streamers to obtain more in-depth information (Gioia and Manz, 1985). In the context of live streaming, consumers can gain a deeper real-time understanding of the product through direct interaction with the live streamer, the behavior exhibited by the live streamer, and participation in the chat with other viewers. This approach can be explained using substitute learning theory. The concept of substituted learning was introduced by Gioia and Manz (1985), where people learn from the behaviors and outcomes they notice, not just from their personal experiences. Substituted learning can be divided into two forms, namely independent substitution learning and interactive substitution learning. Independent substitution learning occurs when a person observes and adopts knowledge or behavior from observation, while interactive substitution learning involves sharing and joint participation. In traditional e-commerce, reading comments can be considered as independent substitution learning, while in live streaming, interactions such as liking, sharing, and purchasing by other consumers can be observed in the live streaming interface, making it an interactive substitution learning model that involves consumers. In this study, we will investigate the impact of the interactive substitution learning perspective on the purchase decisions made by consumers.

In the context of live streaming, live streamers provide explanations and conduct product trials to provide consumers with comprehensive information. Consumers who watch live streaming are able to understand and learn about the product directly and more clearly. They can also ask questions directly to the live streamer to get a better understanding. Meanwhile, consumers can see the participation of other consumers through actions such as liking, sharing, commenting, and rewarding on screen. Information influence theory states that people tend to make their decisions by looking at the behavior of others in uncertain situations. Hence, live streaming viewers can see how other viewers respond to live content under the influence of information. Previously, research has tended to focus more on consumer behavior and psychology when searching for product information individually and making product decisions in an individual context, without considering the interpretation of consumption behavior involving real-time responses of others. The more participation of other viewers, the more valuable the live content is to viewers in discovering the information presented by the live stream. The more information available, the more knowledge consumers can gain, creating a broader interactive learning experience.

Besides the social interaction and entertaining aspects, the main purpose of Social Media Interaction (SMI) activities in s-commerce is to build strong communication between sellers and customers, which in turn can generate positive relationships and

generate interest in the products offered by sellers. SMI is one of the marketing tools that play a role in increasing customer engagement (Dwivedi et al., 2020). In the context of online shopping, trust becomes an important factor among customers due to the characteristics of products that cannot be physically felt (Haque and Mazumder, 2020). This trust is also influenced by the reputation of sellers and products in s-commerce activities (Yahia et al., 2018). On the other hand, Zhan et al. (2016) found that the level of customer satisfaction is influenced by the use of social media. In this case, the company's convenience in operating online can also affect the level of customer satisfaction (Duarte et al., 2018). Both trust and satisfaction are considered dimensions of relationship quality (Alejandro et al., 2011; Zhang et al., 2011). This study proposes H1 based on the conceptual framework outlined above.

- Hypothesis 1 (H1): SMI has a positive influence on RQC in s-commerce activities.

Nowadays, customers have an easier ability to interact with sellers through social media, including live streaming features on s-commerce platforms. This situation encourages sellers to make certain adjustments or adaptations to create and provide a positive customer experience. Rajaobelina (2017) underlines that customer experience has an important role in improving the relationship between sellers and buyers. Experiences that give a positive impression have a significant impact on improving relationship quality and formulating marketing strategies (Fernandes and Pinto, 2019). Therefore, this study incorporates H2 into the conceptual framework based on the understanding that has been described.

- Hypothesis 2 (H2): ESG has a positive influence on RQC in s-commerce.

2.2. Non-interactive information

In addition to interactive substitution learning, in the context of live streaming, consumers also have access to some non-interactive information, especially regarding the number of followers of the live streamer and products that have been saved. Research by Xu and Lee (2020) has investigated the impact of promotion through electronic word of mouth on future purchase decisions. Recommendations or information spread through social media can increase the level of awareness among others and attract more contributions. Findings from the study by Tian et al. (2021) also indicate that an individual's previous behavior can serve as a qualitative signal that influences the decision of potential subsequent supporters. The number of followers owned by a live streamer has a positive influence on consumer purchasing decisions, because consumers who watch live streams can see that followers of live streamers have product preferences or attributes similar to them. The more followers a live streamer has, the stronger the support from other consumers for the live streamer, and the higher the level of trust in the live streamer, which in turn increases the likelihood of developing a positive attitude towards the recommended product. In other words, consumers become more inclined to make purchases based on these views.

- Hypothesis 3 (H3): PQL has a positive influence on RQC in s-commerce.

Item categories presented in live streams have great potential to increase sales, as they attract the attention of customers who are looking for product variety and increase

their chances of finding items that suit their desires. Products that are featured live become visible in the shopping cart, allowing consumers to clearly see the items that have been entered and even request further explanation from the live streamer on items that interest them. As customers have already decided to add products to the shopping cart, this action reflects a strong intention to make a purchase. Therefore, when various products are displayed in a live stream, customers are more likely to select their favorite products for purchase.

- Hypothesis 4 (H4): AVT has a positive influence on RQC in s-commerce.

Live-streaming is an evolved form of conventional e-commerce, and the same principles of accessibility apply in the context of live-streaming. Visit duration, which reflects the time users spend on the platform, plays an important role in existing research frameworks (Lin et al., 2010). The time spent in watching a live stream is equivalent to the duration of a visit in a traditional e-commerce store (Lin et al., 2010). Studies indicate a positive and significant relationship between session duration and sales conversion, meaning that the longer users are in the session, the more likely they are to make a purchase. This finding supports the general view of the value that results from customer engagement with an online retailer's platform.

In addition, the number of visitors also plays an important role in marketing strategies (Luo et al., 2020). Research by Luo and colleagues (2020) used regression models to investigate the dynamic relationship between visit behavior variables and sales performance. They analyzed the significance of various metrics in explaining sales performance. Their results showed that visit behavior metrics have a strong relationship with sales performance metrics. Of the various metrics, repeat visits metric has the strongest association with sales performance, followed by the number of visitors. Research by Rishika and her team (2013) indicated that customer participation in a company's efforts on social media contributed to an increase in the frequency of customer visits. Their findings suggest that the effect of such participation is more pronounced when activity on social media platforms is high, and applies particularly to customers who have a close relationship with the company, tend to purchase premium products, and exhibit transaction aversion and low price sensitivity. The study also notes that similar findings apply to aspects of customer profitability. Research by Mallapragada et al. (2016) focused on two key visit behavior elements, namely page views and visit duration. Their results revealed a significant impact of visit behavior on online sales performance.

- Hypothesis 5 (H5): NOW has a positive influence on RQC in s-commerce.
- Hypothesis 6 (H6): LSD has a positive influence on RQC in s-commerce.

In platforms such as live-streaming, live streamers provide more detailed information to consumers through product explanations, which in turn increases the level of transparency in the shopping process. The more transparent the shopping environment, the greater the comfort and trust felt by consumers in going through the purchase process. This is what encourages consumers to be more actively engaged in shopping behavior. The time spent on each live streaming session varies, and it is generally considered that the longer the live streaming session lasts, the more knowledge about the product is conveyed by the live streamer, which in turn reduces the level of risk perceived by consumers in making a purchase.

2.3. Relationship quality and two customer behavioral outcomes

Tajvidi et al. (2018) have outlined that the main focus in marketing is the development of relationships between two entities, namely providers and buyers. Anastasiei and Dospinescu's (2017) view asserts that trust is an integral part of relationship quality, which is determined by the implied messages conveyed by the provider. Relationship quality is a critical element in creating positive relationships (Bejou et al., 1996) and plays an important role in maintaining buyer loyalty (Giovanis et al., 2015). In addition, relationship quality also affects repeat purchase intentions (Chen and Chang, 2018; Oliveira et al., 2017).

Conceptually, relationship quality is constructed as a composite or multidimensional entity, consisting of three interrelated components: trust, satisfaction, and commitment (Palmatier et al., 2006; Garbarino and Johnson, 1999). However, in this study, the focus is only on the aspects of trust and satisfaction. This was chosen for the following reasons: First, several previous studies have described relationship quality as a second-order construct linked by elements of trust and satisfaction as its dimensions (Rajaobelina and Bergeron, 2009; Hsu et al., 2017; Chen and Liu et al., 2013; Chen and Jong et al., 2014), hence omitting the commitment variable is not expected to have a substantial effect on the measurement of relationship quality. Second, commitment as a factor referring to relationship outcomes (Kim et al., 2006), is actually related to customer loyalty (Liu et al., 2011). However, there are also opinions in the literature that argue that commitment should not be included in the relationship quality construct (Hamid et al., 2022; Takakuwa, 2021; Holmlund, 2008).

Most previous studies have considered relationship quality as a mediator between triggering factors and outcomes. For example, a study found that relationship quality between users and social network platforms acted as a mediator in the influence of social support on s-commerce usage intention (Yadav and Rahman, 2018). Another finding by Masri et al. (2020) showed that customer satisfaction has a positive effect on the intention of continued use. Furthermore, information system quality was shown to have a positive impact on satisfaction, trust, and intention to use. On the other hand, perceived value is also shown to affect customer satisfaction and trust. Research by Zhang et al. (2016) shows that loyalty is the result of relationship quality, which is further influenced by self-congruity, social norms, information quality, and interactivity.

Rapid developments in the digital media sphere have encouraged companies to engage with customers through these media, especially through social media, in order to manage relationships and enhance interactive marketing, leading to increased profits. In an s-commerce environment, a company's success depends on consumer actions, including purchase intentions and customer loyalty. Relationship quality, as a significant dimension, has a positive impact on purchase intention (Bonsón Ponte et al., 2015; Lu et al., 2016; Ali, 2016), while satisfaction has also been shown to have a significant effect on purchase intention (Hsu and Lin, 2015; Le, 2021). Furthermore, customer loyalty is an important indicator that reflects a solid relationship between seller and buyer (Rakhmansyah et al., 2022; Ky Vien, 2021). Customer interactions through virtual channels also play a role in shaping ongoing customer loyalty (Schiffman and Kanuk, 2009). Based on the above analysis, in this context, hypotheses

H7-H8 are proposed as follows...

- Hypothesis 7 (H7): RCQ has a positive influence on PIT in s-commerce.
- Hypothesis 8 (H8): RCQ has a positive influence on LYI in s-commerce.

The basis of the marketing concept is the belief that building and maintaining quality relationships with customers will result in positive effects for the business, such as customer loyalty, word-of-mouth, and improved sales performance (Yeon Kim and Chung, 2011). Therefore, maintaining the use of the services provided by a business venture becomes critical. Relationship quality plays an important role in retaining existing customers, as acquiring new customers requires more time and effort (Lu et al., 2010). In addition, the success of service providers has been shown to lie in customers being willing to provide feedback after experiencing the service.

Customer behaviors, such as purchase intentions and loyalty intentions, have a direct impact on companies and are influenced by the concept of relationship quality (Garbarino E and Johnson MS, 1999). Customers feel empowered when they engage in interactions with the company, as this brings benefits to them. Furthermore, customers can provide support to the company and even provide feedback for improvement, if they see potential improvements or shortcomings in the service.

In this study, the variables of purchase intention and loyalty are considered as indicators of customer behavior that illustrate the benefits of utilizing social media interaction (SMI) as a marketing tool. Purchase intention refers to a customer's desire to purchase a product (Chou, 2020). Schiffman and Kanuk (2009) define purchase intention as the level of customer tendency to buy a particular product, with the higher the level of tendency, the more likely the customer will make the purchase. In the process of purchasing a product, customers will seek relevant information based on their perceptions and the surrounding context. If a sufficient amount of information has been obtained, customers are likely to perform analysis, consideration, comparison, and finally, the actual purchase action. Previous research has shown that purchase intention can be interpreted as an important indicator of customer behavior (Yeon Kim and Chung, 2011; Lu et al., 2010).

On the other hand, customer loyalty refers to the ability of customers to continuously make purchases from a seller (Paramita and Tjahjono, 2021). Customer loyalty has a sustainable impact on company profits (Chou, 2020). Loyal customers play an important role in maintaining positive communication and relationships with companies (Liao, 2020). Customers who are highly dependent on a brand or company will reduce their exposure to competitors. Thus, marketing efforts made by competitors have a more limited impact on the purchasing choices of these customers, and customers tend to remain loyal to the brands or companies they already know (Anima Estetikha, 2017; Ajiono, 2023).

3. Methodology

This research adopts a data collection method in the form of an online-based questionnaire survey, which was conducted in the period January 2023 to July 2023. The participants involved in this study are s-commerce users who have experience in using social media as a product purchasing platform. To ensure data accuracy and relevance, a screening process was conducted to identify and eliminate participants

who had no experience in social commerce transactions. From a total of 422 respondents who intended to fill out the questionnaire, 377 respondents were identified who qualified as respondents who had experience in social commerce. The demographic composition of the respondents can be found in **Table 1**.

Table 1. Sample demographics.

Characteristic	Items	Frequency	Percentage
Gender	Male	125	33.26
	Female	252	66.84
Age	16–20	68	18.04
	21–25	123	23.87
	26–30	66	22.81
	31–35	54	19.63
	>36	21	15.65
Experiences using s-commerce	1< year	100	26.53
	1–2 years	80	41.64
	2>	120	31.83

The questionnaire used in this study is divided into two main sections, namely demographic information and questions used to measure the research hypotheses. The overall framework of the questionnaire has been developed based on the previous research foundation, which is illustrated in **Figure 1**. The questions in the questionnaire are based on the initial study and scales that have been verified for validity. To ensure that the questionnaire had good content validity, the content of the questionnaire was re-verified. In this study, a seven-level Likert scale was used to measure respondents' responses. The use of Likert scales with a greater number of levels aims to increase the accuracy of the measurement of these scales (Churchill and Peter, 1984).

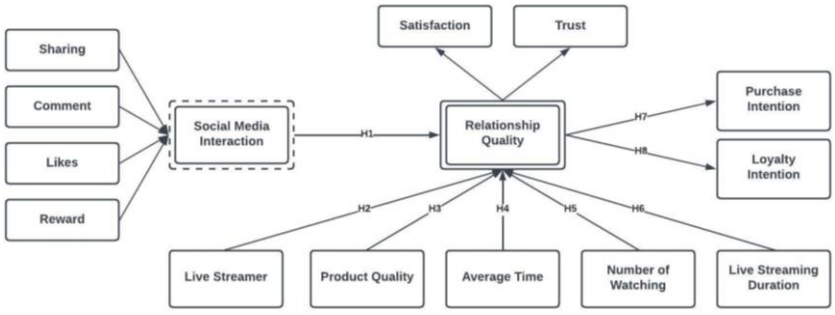

Figure 1. Research framework.

In the questionnaire section, each respondent was asked to provide their email address to ensure that participation in the survey was one-time only. VIF (Variance Inflation Factor) analysis was conducted to evaluate the presence of multicollinearity between constructs (Kline, 1998) as well as verify the relevance of this model (Dospinescu et al., 2019). The calculation results using SmartPLS showed the VIF value in the internal model. Hair et al. (2016) indicated that the VIF value for variables should be < 5.0. As shown in Table 2, the VIF values in the internal model of this study

vary between 1.000 and 3.475, indicating that there is no multicollinearity problem between the latent constructs.

Table 2. Inner VIF result.

Construct	VIF
SMI → RQC	2.319
LST → RQC	3.182
PQL → RQC	3.324
AVT → RQC	3.110
NOW → RQC	3.197
LSD → RQC	3.475
RQC → PIT	1.000
RQC → LYI	1.000

4. Data analysis

It is essential to note that within the realm of SEM, we utilized the Partial Least Squares (PLS) method for parameter estimation. PLS is a widely recognized approach for estimating SEM models, particularly in situations where complex cause-and-effect relationships need to be explored simultaneously. Unlike traditional covariance-based SEM, PLS focuses on optimizing the estimation of model parameters, making it well-suited for our study's intricate model, which involves multiple paths and constructs. The choice of PLS as our estimation technique stems from its ability to handle formative and reflective indicators concurrently, a crucial advantage given the diverse nature of our constructs. However, it is essential to clarify that PLS is a parameter estimation technique within SEM, not a distinct analytical method comparable to SEM.

By employing SEM, specifically the PLS method, we aimed to meticulously analyze the relationships between variables, providing a robust foundation for our study's conclusions and implications. This approach ensures the depth and accuracy of our findings, enabling a comprehensive understanding of the factors influencing customer interactions and behavior in the context of s-commerce.

Measurement and Partial Least Squares (PLS) analysis were conducted using SmartPLS 3 software. In the measurement stage, reliability and validity analyses were conducted, while the analysis stage involved testing path coefficients and the strength of the structural model. Both stages aim to ensure the reliability and validity of the constructs, while examining the interactions between them (Petter et al., 2007). This study analyzed the causal interactions between SMI, LST, PQL, AVT, NOW, LSD, RQC, PIT, and LYI practices, where each construct consists of various measurement items that have been examined in previous studies.

The PLS approach is more suitable for this study than other structural equation modeling (SEM) analysis methods, for several relevant reasons. First, PLS is well suited for examining cause-and-effect relationships between variables and is able to address complex models and measure items simultaneously (Chin and Newsted, 1999). PLS is also able to evaluate predictive models involving diverse constructs and research variables (Chen and Lin, 2015). Within the framework of this study, the analysis observed multiple paths and relationships between SMI, LST, PQL, AVT,

NOW, LSD, RQC, and the two behavioral outcomes PIT and LYI, which collectively form a complex model. To conduct a PLS analysis, the sample size should be at least 5 to 10 times the total number of paths in the model. In this study, the sample size reached 377, while the total number of paths was 8, which met the requirements and became suitable for PLS analysis (Urbach and Ahlemann, 2010).

Second, previous studies have identified SMI as a second-order formative construct (Endsuy, 2021; Ran, 2023). The advantage of PLS also lies in its ability to handle formative and reflective indicators simultaneously, which is different from covariance-based SEM (Chi, 2021; Riawan, 2022). On the other hand, other analysis methods can only assess reflective indicators. However, along with its advantages, PLS also has some limitations (Riyanto, 2021). First, PLS-SEM optimizes the model-parameters and then estimates the path coefficients of the structural model in the second stage. To overcome this potential problem, researchers deep in social media marketing have gone through a thorough verification process of the questionnaire, ensuring that the measurement items match the research context, so that accurate results can be generated. Another limitation of PLS-SEM is the lack of a global measurement tool that can measure the level of model fit. Therefore, in this study, goodness of fit obtained through manual calculation was used, referring to previous relevant studies.

4.1. Outer model and validation

There are three basic aspects tested on the outer model: reliability analysis, convergent validity, and discriminant validity. All constructs in this study have composite reliability values that meet the criteria of 0.7 or above, indicating that the constructs are reliable. In the guidelines proposed by Ran (2023), a construct is deemed to exhibit convergent validity when the factor loading of the predictor surpasses 0.5, and the Average Variance Extracted (AVE) value exceeds 0.5. Factor loadings and reliability test results are presented in **Table 5** for the various construct items.

Furthermore, discriminant validity is identified by comparing the factor loadings of each latent item against the related construct and other constructs. If the factor loadings of each item are higher against the related construct than the other constructs, then discriminant validity can be considered met (Hair et al., 2016). The analysis of cross-loadings and factor loadings shows strong discriminant validity, which can be seen in **Tables 3** and **4**.

Table 3. Factor loadings and cross-loadings.

	AVT	COM	LYI	LIK	LST	NOW	PIT	PQL	REW	SAT	SHA	LSD	TRU
AVT1	0.799	0.455	0.503	0.399	0.606	0.590	0.437	0.594	0.476	0.447	0.431	0.600	0.441
AVT2	0.779	0.369	0.480	0.463	0.565	0.579	0.502	0.538	0.442	0.467	0.437	0.521	0.491
AVT3	0.826	0.490	0.524	0.477	0.604	0.614	0.498	0.630	0.466	0.513	0.493	0.645	0.481
COM1	0.461	0.814	0.542	0.468	0.453	0.499	0.442	0.440	0.430	0.505	0.418	0.485	0.489
COM2	0.439	0.831	0.488	0.476	0.448	0.432	0.526	0.408	0.446	0.474	0.477	0.420	0.496
LYI1	0.531	0.452	0.741	0.469	0.497	0.513	0.519	0.532	0.466	0.492	0.490	0.534	0.520
LYI2	0.486	0.525	0.796	0.465	0.483	0.507	0.445	0.480	0.472	0.493	0.494	0.543	0.520

Table 3. (*Continued*).

	AVT	COM	LYI	LIK	LST	NOW	PIT	PQL	REW	SAT	SHA	LSD	TRU
LYI3	0.457	0.488	0.804	0.536	0.466	0.492	0.553	0.437	0.461	0.549	0.436	0.504	0.590
LIK1	0.479	0.482	0.536	0.834	0.427	0.454	0.531	0.407	0.506	0.509	0.424	0.499	0.436
LIK2	0.443	0.465	0.503	0.818	0.472	0.458	0.534	0.526	0.456	0.526	0.404	0.470	0.547
LST1	0.660	0.389	0.511	0.458	0.793	0.582	0.473	0.590	0.515	0.451	0.469	0.588	0.465
LST2	0.635	0.472	0.514	0.425	0.825	0.660	0.460	0.616	0.414	0.457	0.473	0.609	0.567
LST3	0.484	0.459	0.462	0.432	0.799	0.611	0.425	0.564	0.430	0.442	0.447	0.564	0.463
NOW1	0.581	0.470	0.515	0.434	0.617	0.808	0.452	0.614	0.486	0.444	0.433	0.655	0.472
NOW2	0.633	0.447	0.531	0.448	0.612	0.808	0.505	0.640	0.450	0.438	0.469	0.613	0.476
NOW3	0.605	0.468	0.534	0.469	0.653	0.834	0.489	0.680	0.532	0.475	0.410	0.696	0.534
PIT1	0.426	0.459	0.480	0.486	0.439	0.438	0.744	0.424	0.394	0.485	0.438	0.457	0.501
PIT2	0.464	0.450	0.506	0.480	0.374	0.434	0.767	0.439	0.512	0.543	0.475	0.420	0.533
PIT3	0.478	0.435	0.496	0.509	0.475	0.478	0.772	0.442	0.474	0.476	0.487	0.416	0.492
PQL1	0.628	0.470	0.495	0.444	0.640	0.653	0.443	0.829	0.487	0.447	0.463	0.607	0.491
PQL2	0.638	0.405	0.501	0.474	0.593	0.634	0.489	0.841	0.433	0.519	0.406	0.623	0.472
PQL3	0.557	0.406	0.534	0.481	0.590	0.678	0.487	0.816	0.442	0.456	0.406	0.629	0.521
REW1	0.490	0.395	0.479	0.463	0.453	0.457	0.485	0.443	0.804	0.510	0.419	0.487	0.439
REW2	0.458	0.478	0.502	0.496	0.469	0.528	0.511	0.458	0.840	0.476	0.475	0.423	0.458
SAT1	0.493	0.441	0.509	0.503	0.484	0.428	0.504	0.492	0.435	0.776	0.471	0.499	0.483
SAT2	0.425	0.471	0.555	0.463	0.396	0.401	0.542	0.388	0.454	0.786	0.488	0.431	0.513
SAT3	0.475	0.479	0.470	0.501	0.429	0.470	0.498	0.463	0.512	0.778	0.428	0.502	0.459
SHA1	0.463	0.440	0.443	0.430	0.444	0.451	0.496	0.413	0.436	0.472	0.829	0.386	0.486
SHA2	0.482	0.467	0.562	0.405	0.513	0.438	0.524	0.440	0.471	0.516	0.837	0.451	0.504
LSD1	0.568	0.497	0.569	0.518	0.591	0.681	0.454	0.609	0.464	0.491	0.408	0.826	0.517
LSD2	0.611	0.437	0.549	0.449	0.597	0.647	0.473	0.633	0.429	0.511	0.428	0.829	0.497
LSD3	0.648	0.428	0.554	0.490	0.622	0.666	0.478	0.616	0.478	0.514	0.413	0.829	0.440
TRU1	0.538	0.451	0.519	0.441	0.463	0.460	0.511	0.459	0.382	0.535	0.444	0.477	0.757
TRU2	0.370	0.421	0.517	0.412	0.458	0.500	0.511	0.425	0.437	0.427	0.453	0.440	0.728
TRU3	0.411	0.476	0.539	0.484	0.480	0.409	0.487	0.461	0.414	0.435	0.443	0.402	0.770

Table 4. Reliability analysis and convergent validity.

Measurement items	Factor loading/weight	Composite reliability	AVE	Measurement items	Factor loading/weight	Composite reliability	AVE
SHA	0.23 (Weight)	n/a Formative construct	n/a Formative construct	AVT3	0.826	-	-
COM	0.18 (Weight)			NOW1	0.808	0.857	0.667
LIK	0.19 (Weight)			NOW2	0.808		
REW	0.21 (Weight)			NOW3	0.834		
SHA1	0.829	0.867	0.877	LSD1	0.826	0.867	0.685
SHA2	0.837			LSD2	0.829		
COM1	0.814			LSD3	0.829		
COM2	0.831			LYI1	0.741	0.824	0.610
LIK1	0.834			LYI2	0.796		

Table 4. (*Continued*).

Measurement items	Factor loading/weight	Composite reliability	AVE	Measurement items	Factor loading/weight	Composite reliability	AVE
LIK2	0.818			LYI3	0.804	-	-
REW1	0.804			PIT1	0.744		
REW2	0.840			PIT2	0.767	0.805	0.630
LST1	0.793			PIT3	0.772		
LST2	0.825	0.847	0.649	SAT1	0.776		
LST3	0.799			SAT2	0.786	0.823	0.608
PQL1	0.829			SAT3	0.778		
PQL2	0.841	0.868	0.687	TRU1	0.757		
PQL3	0.816			TRU2	0.728	0.796	0.585
AVT1	0.799	0.843	0.642	TRU3	0.770		
AVT2	0.779			-			

4.2. Inner model result and hypotheses testing

PLS internal model analysis was used in this study to test the hypotheses. **Table 5** provides an explanation of the hypothesis testing results, including path coefficients, *p* values, and *t* values. The findings of this analysis show that all hypotheses are proven to be significant and have a positive direction. Visualization of the hypothesis results is also presented in **Figure 2**.

Table 5. Summary of the inner model.

Hypotheses		Path coefficient	*t*-Value	Result
H1	SMI → RQC	0.611	9.515	Supported
H2	LST → RQC	0.690	9.025	Supported
H3	PQL → RQC	0.209	2.658	Supported
H4	AVT → RQC	0.253	2.925	Supported
H5	NOW → RQC	0.268	2.905	Supported
H6	LSD → RQC	0.137	2.273	Supported
H7	RQC → PIT	0.738	11.959	Supported
H8	RQC → LYI	0.752	13.833	Supported

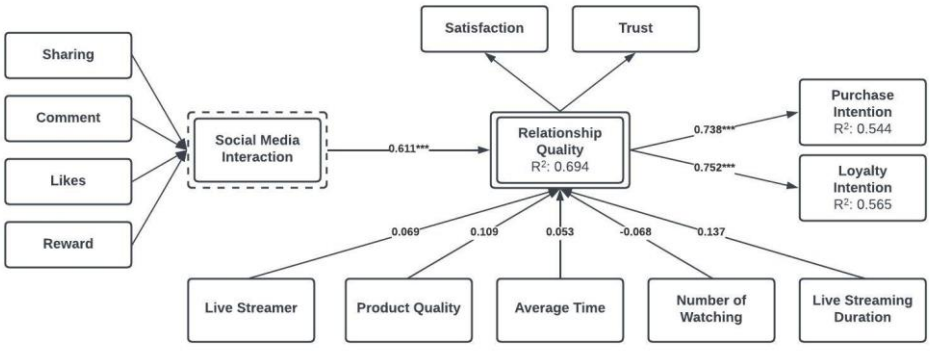

Figure 2. A framework of the inner model results.

*** *p*-value < 0.001.

Table 5 and **Figure 2** show that SMI has a positive and significant influence on RQC, which supports H1 (SMM → RQC: $\beta = 0.611$, t-value = 9.515). In addition, the analysis shows that ESG has a positive and significant impact on RQC, which supports H2 (ESG → RQC: $\beta = 0.690$, t-value = 9.025). Next, the analysis shows that PQL has a positive and significant impact on RQC, which supports H3 (PQL → RQC: $\beta = 0.209$, t-value = 2.658). Based on the analysis results that AVT has a positive and significant impact on RQC, which supports H4 (AVT → RQC: $\beta = 0.253$, t-value = 2.925). Based on the analysis results that NOW has a positive and significant impact on RQC, which supports H5 (NOW → RQC: $\beta = 0.137$, t-value = 2.273). Based on the analysis results that LSD has a positive and significant impact on RQC, which supports H6 (LSD → RQC: $\beta = 0.137$, t-value = 2.273). Furthermore, based on the analysis results that RQC has a positive and significant impact on PIT, which supports H7 (RQC → PIT: $\beta = 0.738$, t-value = 11.953). Finally, RQC has a significant and positive impact on LYI H7 (RQC→LYI: $\beta = 0.752$, t-value = 13.833).

4.3. Testing of mediation effects

Path analysis and the Sobel test were used to assess whether the mediating variables considered in this study have statistical significance or not (Chi, 2021). **Table 6** presents the results of the Sobel test used to obtain the t-value and p-value estimates, with the aim of determining whether the indirect effects are significant or not. All t-values for the mediators exceed 1.96, indicating that there is a significant mediating effect between the independent variable and the dependent variable.

Table 6. Results of mediation effects.

Construct	Construct relationship	*t*-value of path coefficient	Sobel test	*p*-value
SMI → RQC → PIT	SMI → RQC; RQC → PIT	9.515; 11.959	7.445	0
SMI → RQC → LYI	SMI → RQC; RQC → LYI	9.515; 13.833	7.839	0
LST → RQC → PIT	LST → RQC; RQC → PIT	9.025; 11.959	7.203	0
LST → RQC → LYI	LST → RQC; RQC → LYI	9.025; 13.833	7.558	0
PQL → RQC → PIT	PQL → RQC; RQC → PIT	2.658; 11.959	2.594	0.009
PQL → RQC → LYI	PQL → RQC; RQC → LYI	2.658; 13.833	2.610	0.009
AVT → RQC → PIT	AVT → RQC; RQC → PIT	2.925; 11.959	2.841	0.004
AVT → RQC → LYI	AVT → RQC; RQC → LYI	2.925; 13.833	2.861	0.004
NOW → RQC → PIT	NOW → RQC; RQC → PIT	2.905; 11.959	2.822	0.004
NOW → RQC → LYI	NOW → RQC; RQC → LYI	2.905; 13.833	2.842	0.004
LSD → RQC → PIT	LSD → RQC; RQC → PIT	2.273; 11.959	2.233	0.025
LSD → RQC → LYI	LSD → RQC RQC → LYI	2.273; 13.833	2.242	0.024

5. Discussion

This study incorporates the Social Media Interaction (SMI) concept, as outlined by Chi (2021), and examines the pivotal variables of direct and indirect interaction within the realm of s-commerce activities. The incorporation of these three factors is attributed to the influence of relationship quality on two types of customer behavior that arise in the s-commerce environment, an increasingly important marketing tool.

The empirical findings in this study support a positive and significant relationship between these factors and relationship quality, which in turn has the potential to influence purchase intentions and customer loyalty. In line with previous research, the importance of quality content in social media to achieve effectiveness in marketing activities and provide positive customer experiences has been emphasized (Anastasiei and Dospinescu, 2017). The implications of the findings and empirical contributions of this study provide valuable insights for both academics and practitioners in the industry.

5.1. Theoretical implications

The results of this study have important theoretical implications in the realm of s-commerce and digital marketing. The findings provide valuable new insights into the dynamics of interaction between customers and sellers in a live s-commerce environment. The theoretical implications that can be drawn from this research include several fundamental aspects.

First, the positive and significant influence of factors such as Social Media Interaction (SMI), Live Streamer (LST), Product Quality (PQL), and other dimensions on Relationship Quality in S-Commerce (RQC) provides a strong empirical basis for the development of customer relationship quality models in the digital realm. The findings validate the view that the active interaction and dialog that takes place between sellers and customers through social media plays an important role in forming solid and mutually beneficial relationships.

Second, theoretical implications arise from the finding that Relationship Quality in S-Commerce (RQC) has a positive and significant impact on Purchase Intention (PIT) and Loyalty Intention (LYI). This illustrates the importance of relationship quality in stimulating purchase intention and customer loyalty. These implications support the concept that strong emotional bonds between sellers and customers are of key importance in driving repeat purchase actions and long-term support.

Furthermore, this research presents a valuable contribution in formulating a more complete picture of the ecosystem in live s-commerce. The findings regarding the complex interactions between various factors such as live streamer characteristics, product quality, as well as other related factors illustrate the complex dynamics in this ecosystem. The implications draw attention to the need for a holistic approach in designing marketing strategies on these platforms.

5.2. Managerial implications

The findings of this study have valuable implications for the management of companies that are considering the utilization of social media as a marketing tool. This study highlights the importance of carefully designing social media-based content to build and maintain quality customer relationships in the context of s-commerce activities. The managerial implications of the findings lead to several important aspects.

First, interactions through social media have a central role in shaping Relationship Quality on S-Commerce (RQC), in accordance with the results supporting Hypothesis 1. Thus, marketing managers need to understand the

importance of building engaging content or messages, with creative elements such as compelling narratives, musical elements, and attractive designs. Through content that invokes positive emotions, customers can engage more deeply with the company.

Second, the implications of Hypothesis 2 on the positive influence of Live Streamer (LST) on Relationship Quality underscore the importance of selecting live streamers with characteristics that enable personal and in-depth interaction with the audience. Marketing managers need to consider factors such as authenticity, engagement, and attractiveness of live streamers in the context of s-commerce.

Furthermore, the findings supporting Hypothesis 3, Hypothesis 4, and Hypothesis 6 indicate the need to focus on product quality and interaction duration. Marketing managers need to invest efforts in ensuring the marketed products are of good quality and extending the duration of interactions in live streaming. This can increase customers' positive perceptions of the company and product, strengthen relationships, and ultimately drive purchase intentions and loyalty.

The results supporting Hypothesis 5 illustrate the importance of active customer participation in live streaming activities on Relationship Quality on S-Commerce (RQC). Marketing managers can design strategies that encourage customer participation through live interaction, Q&A sessions, or other creative elements. This can create a more valuable experience for customers.

Finally, the implications of Hypothesis 7 and Hypothesis 8 confirm that relationship quality, as measured by Relationship Quality on S-Commerce (RQC), has a significant influence on Purchase Intention (PIT) and Loyalty Intention (LYI). Therefore, marketing managers need to recognize that investing in building strong and positive relationships with customers can have a long-term impact on purchase intentions and loyalty levels.

Overall, the managerial implications arising from these findings encourage marketing managers to optimize interactions through social media, select appropriate live streamers, improve product quality and interaction duration, and understand the important role of relationship quality in stimulating purchase intentions and loyalty. By applying these findings in their marketing strategies, companies can build stronger relationships with customers and achieve better results in s-commerce activities.

5.3. Practical guidance for practitioners

Content Design and Live Streamer Selection: Our findings emphasize the need for companies to invest in crafting compelling and emotionally resonant content. Leveraging creative elements like captivating narratives and appealing designs can effectively capture the audience's attention. Moreover, when choosing live streamers, authenticity, engagement, and attractiveness should be key considerations. Personal and genuine interactions with the audience significantly bolster customer trust and engagement levels.

Product Quality and Interaction Duration: Ensuring the quality of marketed products and extending the duration of interactions during live streaming sessions are paramount. High-quality products and prolonged interactions foster positive customer perceptions, strengthening relationships, and driving purchase intentions and customer loyalty.

Active Customer Participation: Actively encouraging customer participation during live streaming activities is vital. Strategies such as live interactions, Q&A sessions, and polls enhance customer engagement substantially. Involving customers in the content creation process creates a sense of community, leading to more meaningful interactions and stronger brand loyalty.

5.4. Future research directions

In-Depth Customer Interaction Studies: Future research endeavors could delve deeper into customer interaction behaviors during live streaming sessions. Analyzing specific triggers for active participation can offer valuable insights into tailoring marketing strategies to cater to diverse customer segments effectively.

Exploring Industry-Specific Dynamics: Given the diversity of industries, further studies should focus on sector-specific dynamics within s-commerce. Every industry possesses unique customer behaviors and preferences, necessitating specialized marketing approaches to ensure maximum impact and resonance.

Examining Cross-Cultural Variances: Investigating how cultural differences influence customer responses in s-commerce environments holds immense potential. Cross-cultural studies can provide nuanced perspectives on the impact of social media interaction on relationship quality and subsequent customer behaviors, paving the way for culturally sensitive marketing strategies.

By incorporating these specific recommendations and future research directions into the discussion, this research paper evolves into a comprehensive resource. It not only provides actionable insights for practitioners seeking to enhance their strategies in the ever-changing landscape of s-commerce but also offers researchers a roadmap for further exploration and in-depth analysis within this dynamic field.

6. Conclusion

In the context of utilizing social media as a marketing strategy tool, this study has revealed a number of findings that are valuable to companies in optimizing s-commerce activities. The results of this study consistently support the proposed hypotheses, leading to significant implications for practitioners and future research directions.

Through a series of hypothesis tests, this study confirms that factors such as Social Media Interaction (SMI), Live Streamer (LST), Product Quality (PQL), Average Time (AVT), Number of Watching (NOW), and Live Streaming Duration (LSD) have a positive and significant impact on the quality of relationships between customers and companies in the context of s-commerce. Thus, these results provide practical guidance for companies in developing more effective content strategies, selecting appropriate live streamers, and ensuring adequate product quality and interaction to create strong relationships with customers.

Furthermore, the relationship quality established between customers and companies, as measured by Relationship Quality on S-Commerce (RQC), was also shown to have a significant influence on customers' Purchase Intention and Loyalty Intention. These implications underscore the importance of investing in building and maintaining positive customer relationships over the long term, which will have a

positive impact on customer purchase and retention rates.

For future research, several directions of development can be explored. First, further research can delve deeper into the factors that influence customer interaction during live streaming, so that companies can be more effective in encouraging active participation. In addition, more moderating or mediating variables can be included to deepen the understanding of the mechanism behind the relationship between the variables.

Second, the research can be extended by considering different industries or types of products offered by companies. Each industry may have unique characteristics that influence how consumers interact with content and make purchases through social media. More sector-specific research could provide deeper insights into the prevailing dynamics.

Overall, this research provides a rich insight into how companies can design more effective marketing strategies through social media in the context of s-commerce. Through further understanding of the factors that influence customer relationships and their impact on purchase intentions and loyalty, companies can prepare themselves to face the challenges related to marketing in the digital age and achieve sustainable success.

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