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FIRM-CREATED AND USER-GENERATED CONTENT SERVE AS QUALITY SIGNALS: THE CASE OF OCOP PRODUCTS IN VIETNAM

CONTEÚDO CRIADO PELA EMPRESA E GERADO PELO USUÁRIO SERVEM COMO SINALIZADORES DE QUALIDADE: O CASO DOS PRODUTOS OCOP NO VIETNÃ

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Abstract
This article examines the role of firm-generated content and user-generated content as quality signals for Vietnam's OCOP products. Drawing on signaling theory, planned behavior theory, and perceived risk theory, this research investigates how firm-generated content and user-generated content influence perceived quality, perceived sacrifice, and purchase intention for OCOP products. We conduct a survey of 600 university students, using Structural equation modeling (SEM) to analysis; results show that both firm-generated content and user-generated content positively affect perceived quality and purchase intention while reducing perceived sacrifice, confirming their value as effective quality indicators. Furthermore, perceived quality and perceived sacrifice partially mediate the relationships between, firm-generated content, user-generated content and purchase intention. Importantly, Female consumers place greater weight on user-generated content than male consumers. For established brands, firm-generated content has a stronger impact on purchase intention, whereas for emerging brands, user-generated content exerts a more pronounced influence. These findings help managers build effective digital marketing strategies to promote consumers' intention to purchase OCOP products.

Resumo
Este artigo examina o papel do conteúdo gerado pela empresa e do conteúdo gerado pelo usuário como sinais de qualidade para os produtos OCOP do Vietnã. Com base na teoria da sinalização, na teoria do comportamento planejado e na teoria do risco percebido, esta pesquisa investiga como o conteúdo gerado pela empresa e o conteúdo gerado pelo usuário influenciam a qualidade percebida, o sacrifício percebido e a intenção de compra dos produtos OCOP. Realizamos uma pesquisa com 600 estudantes universitários, usando modelagem de equações estruturais (SEM) para análise; os resultados mostram que tanto o conteúdo gerado pela empresa quanto o conteúdo gerado pelo usuário afetam positivamente a qualidade percebida e a intenção de compra, ao mesmo tempo em que reduzem o sacrifício percebido, confirmando seu valor como indicadores eficazes de qualidade. Além disso, a qualidade percebida e o sacrifício percebido mediam parcialmente as relações entre o conteúdo gerado pela empresa, o conteúdo gerado pelo usuário e a intenção de compra. É importante ressaltar que as consumidoras dão mais importância ao conteúdo gerado pelo usuário do que os consumidores. Para marcas estabelecidas, o conteúdo gerado pela empresa tem um impacto mais forte na intenção de compra, enquanto que para marcas emergentes,

Keywords: Firm-Generated Content, User-Generated Content, Purchase Intention, Perceived Quality, Perceived Sacrifice.

o conteúdo gerado pelo usuário exerce uma influência mais pronunciada. Essas descobertas ajudam os gerentes a construir estratégias de marketing digital eficazes para promover a intenção dos consumidores de comprar produtos OCOP.

Palavras-chave: *Conteúdo gerado pela empresa. Conteúdo gerado pelo usuário. Intenção de compra. Qualidade percebida. Sacrifício percebido.*

1 INTRODUCTION

The development of the Internet and mobile devices has created a new landscape for user-generated content (UGC). Consumers increasingly share product reviews, shopping experiences, and service ratings on social media and e-commerce platforms. This UGC, alongside firm-generated content (FGC) as a branding tool, plays a crucial role in motivating purchases and building trust in products. As the number of Internet users rises, both FGC and UGC represent a growing trend in media communication, providing businesses with opportunities to reach potential customers and enhance sales effectiveness.

Scholars are interested in FGC and UGC, applying various theoretical frameworks such as the knowledge persuasion model (Friestad & Wright, 1994), the information acceptance model (Sussman & Siegel, 2003), the theory of reasoned action (TRA) (Fishbein & Ajzen, 1975), the theory of planned behavior (TPB) (Ajzen, 1991), and the S-O-R model (Stimulus-Organism-Response). Recent studies indexed in Scopus have explored the influence of FGC and UGC on purchase intention (Kedan et al., 2021), product evaluation and brand equity (Bahtar & Muda, 2016; Rachna & Khajuria, 2017; Bruhn et al., 2012; Smith et al., 2012), and brand loyalty through social media content (Tyrväinen et al., 2023). Few studies, however, utilize signaling theory, although Chen et al. (2023) examined FGC, UGC, and professional-generated content (PGC) focusing on automobile sales. Their study used a database of large manufacturing enterprises, which may result in inconsistent signals (Kirmani & Rao, 2000). Our research applies signaling theory, TPB, and risk theory to analyze UGC and FGC as signals of product quality for OCOP products.

OCOP products, or "One Commune One Product" items, provide local goods and tourism services characterized by local culture and advantages. However, their consumption in Vietnam faces challenges, primarily due to insufficient product information. Many OCOP products are inadequately advertised, failing to capture consumer attention. Furthermore, pricing issues arise, as some OCOP products are priced higher than their market equivalents, and distribution channels are limited and not fully leveraging modern digital technologies.

Addressing the gap between theoretical insights and practical realities, our study titled "Firm-Created Content and User-Generated Content as Quality Signals: A Case Study of OCOP Products in Vietnam" will explore the roles of FGC and UGC as quality signals and provide actionable insights for businesses and localities to boost OCOP product consumption.

2 ITERATURE REVIEW

2.1. Signaling theory

Signaling Theory, rooted in information economics, addresses the information asymmetry between product sellers and buyers, where sellers typically possess more knowledge about their products' quality and associated risks, especially since product quality can only be fully assessed post-use. Buyers often depend on "signals" – specific actions undertaken by sellers to highlight product quality differences (Akerlof, 1970; Spence, 1973). Key characteristics of signals include clarity, consistency, and reliability (Erdem & Swait, 1998). This study applies Signaling Theory by suggesting that sellers utilize reliable signals (FGC, UGC) to enable buyers to infer product quality, fostering trust in the product.

2.2 Theory of perceived risk (TPR)

TPR initiated by Bauer in 1960, defines consumer behavior concerning risk as actions leading to uncertain and often negative outcomes. While Bauer's work did not exhaustively outline all components, it emphasized perceived uncertainty and unfavorable results. TPR theory has been applied to examine purchasing intentions, focusing on perceived sacrifice, which reflects the effort and risk involved when products do not meet expectations(Zeithaml, 1988; Dodds et al. .1991, and Amiri Aghdaie et al. ,2012). As consumers evaluate product quality through received signals, they also weigh associated risks, suggesting a trade-off when selecting products with non-observable quality. Signals enhance quality perceptions while reducing perceived sacrifice.

2.3 Theory of planned behavior (TPB)

The TPB was proposed by Ajzen (1991) and developed from the theory of reasoned action (TRA). TPB identifies that attitude towards behavior (A), subjective norm (SN), and perceived behavioral control (PBC) shape an individual's intention and behavior. TPB asserts that when a person believes that his behavior will bring positive results, is consistent with the expectations of relatives, and is consistent with his ability, he will have an intention and will act. Applying this theory, we propose that when consumers perceive product quality, their belief in product quality is sufficiently large, and their perceived sacrifice is acceptable; they intend to buy the product.

2.4. Concepts

2.4.1 Purchase intention (PI)

According to Dodds et al. (1991), purchase intention is a person's ability and willingness to purchase a product based on their purchase considerations. Purchase intention refers to the extent to which a customer would like to purchase a product in the future after viewing UGC (Geng & Chen, 2021; Lim, 2020; Wang et al., 2023).

2.4.2 Perceived quality (PQ)

Perceived quality refers to the subjective evaluation of a product by consumers. While actual quality encompasses the tangible advantages and technical features of a product, perceived quality is more abstract and is shaped by consumer judgments (Zeithaml, 1988; Lim, 2020). Building on Zeithaml's research, Aakko & Niinimäki (2022) and Wang et al., (2023). define perceived quality as a judgment dependent on personal context, akin to an attitude. Taylor & Baker (1994) found that purchase intention is a linear function of perceived quality and satisfaction, while Erdem et al. (2006) indicated that perceived quality positively influences purchase intentions. Specifically, a higher perception of product quality leads to a greater intention to purchase (Saleem et al., 2015; Wang et al., 2023). Thus, the hypothesis is:

H1: Perceived quality has a positive effect on purchase intention.

2.4.3 Perceived sacrifice (PS)

To acquire a product, consumers must incur costs related to purchasing and gathering information to mitigate uncertainty (Erdem & Swait, 1998). These costs can include monetary, time, search, and psychic costs, collectively termed perceived sacrifice (Zeithaml, 1988; Lim, 2020; Almuraqab et al., 2024). Erdem et al. (2006) identified risk perception and search costs as two components that directly influence purchase intention. Additionally, Lim, (2020) emphasized that time, effort, and psychic costs impact purchase intentions. Shiu et al. (2010) found that increased perceived uncertainty lowers purchase intention. Therefore, as perceived sacrifice rises, purchase intention diminishes. The hypothesis is:

H2: Perceived sacrifice negatively affects purchase intention.

2.4.4 Firm-generated content (FGC)

FGC encompasses marketing communications managed by a company, consisting of content created on official brand pages through social media channels (Colicev et al., 2019; Piotrowicz and Cuthbertson, 2014; Tyrväinen et al., 2023). It aims to shape consumer perceptions, enhancing their knowledge of the brand (Stephen and Galak, 2012). FGC significantly boosts sales and positively influences consumer quality perceptions, which increases purchase intentions (Tyrväinen et al., 2023; Kedan et al., 2021). By providing information about products and brands, FGC helps consumers understand and assess product characteristics. Therefore, we propose the following hypotheses:

H3a: FGC has a positive effect on perceived quality.

Risk perception can be mitigated when online consumers receive and understand product information prior to making a purchase (Bahtar & Muda, 2016). FGC introduces product features and brands, aiding consumers in reducing risk perceptions. However, it may also foster negative attitudes and resistance if perceived as overly persuasive (Mayrhofer et al., 2020). Hence, we suggest:

H3b: FGC has a negative effect on perceived sacrifice.

FGC serves as a signal of product quality and brand reputation, positively impacting purchase intention (Kedan et al., 2021). Research indicates that FGC strongly influences customers' purchase intentions (de Costa & Aziz, 2021; Sandunima & Jayasuriya, 2024). Thus, we propose:

H3c: FGC has a positive impact on purchase intention.

2.4.5 User-generated content (UGC)

UGC arises when previous buyers share their experiences online, making it accessible to potential consumers. These potential buyers tend to trust UGC created by other users, as they believe these users have no commercial interests, viewing them as impartial evaluators who share both positive and negative experiences (Bahtar & Muda, 2016; Mir & Rehman, 2013). UGC serves as a rapidly spreading medium for brand discussions and offers deeper customer insights (Christodoulides et al., 2012). It positively impacts perceived brand quality (Rachna & Khajuria, 2017) because consumers see UGC as independent from corporate influences, thereby viewing it as more trustworthy. Therefore, we propose:

H4a: UGC positively influences perceived quality.

Individuals with high risk perceptions tend to seek information through UGC, especially when purchasing new or costly products (Bahtar & Muda, 2016). UGC does not activate persuasive knowledge, which reduces the effectiveness of sales tactics. As a result, UGC often leads to higher purchase intentions compared to traditional brand postings and advertisements (Mayrhofer et al., 2020). Consumers feel more reassured when viewing UGC, aiding their purchase decisions. Thus, we propose:

H4b: UGC has a negative influence on perceived sacrifice.

UGC has both a direct and positive impact on purchase intention (Sandunima & Jayasuriya, 2024) and shows indirect positive effects on purchase intention, as supported by prior research (Tung et al., 2023; Mir & Rehman, 2013; Bahtar & Muda, 2016; Mayrhofer et al., 2020; Geng & Chen, 2021). Accordingly, we propose:

H4c: UGC positively influences purchase intention.

2.4.6 Comparing the differences according to control variables

To provide implications and solutions for businesses, our research compared the differences in evaluating the roles of FGC and UGC in purchase intention by gender; compared the differences according to brand (new brand and strong brand) in customers' evaluation of the roles of FGC and UGC in purchase intention. The hypotheses are:

H5a: There is a difference in the evaluation of the roles of FGC and UGC in purchase intention between male and female customers.

H5b. There is a difference in the assessment of the role of FGC and UGC in customers' purchase intentions between new branded products and strong-branded products.

2.4.7 Testing the mediating role of PQ and PS

In hypothesis H3a, FGC positively affects PQ; hypothesis H3c states that FGC positively affects PI, and hypothesis H1 suggests that PQ positively affects PI. Does PQ mediate the relationship between FGC and PI? Similarly, does PQ mediate the relationship between UGC and PI?

With the same bridging argument, does PS mediate the relationship between FGC and PI and the relationship between UGC and PI?

Our study explores the mediating role of PQ and PS. The hypotheses are:

H6a: PQ plays a mediating role in the relationship between FGC and PI and in the relationship between UGC and PI.

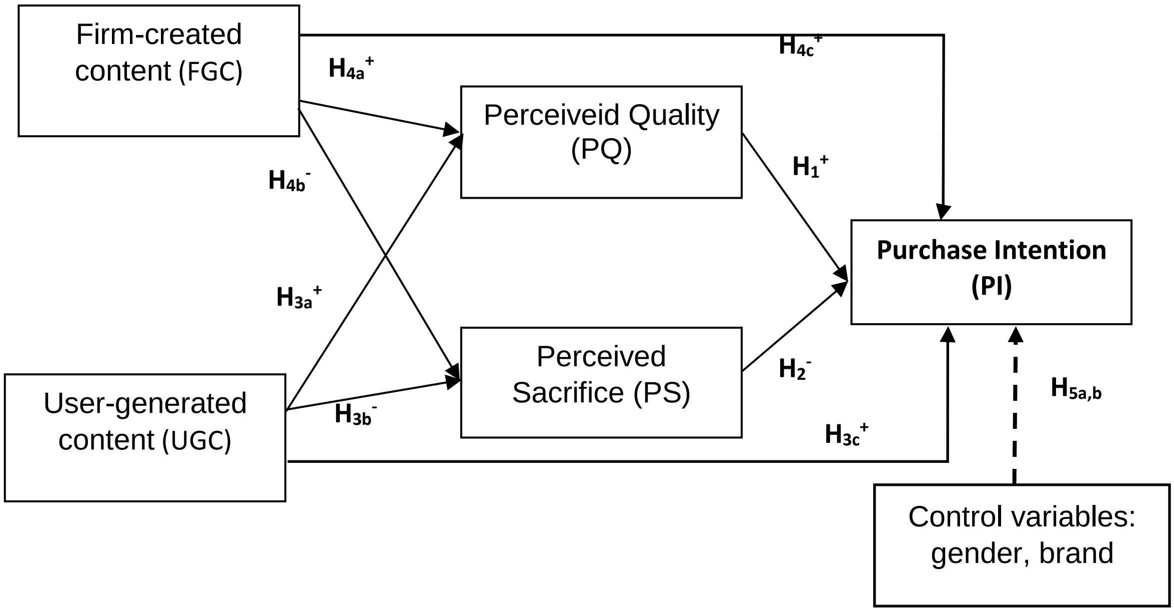
H6b: PS plays a mediating role in the relationship between FGC and PI and in the relationship between UGC and PI.

2.5 Research model

Based on signal theory and the quality signal research models of Dodds et al. (1991) and Erdem et al. (2006), through one-on-one interviews with sellers, suppliers, and focus group interviews with buyers and synthesizing research results, the author proposes a research model as shown in Figure 1.

Figure 1

Research models



3 METHODOLOGY

This study was conducted using a cross-sectional design. This method is suitable for identifying and evaluating behavior and expectations and is considered one of the most commonly used designs in the social sciences.

3.1 Research design

This study utilized a research design comprising qualitative and quantitative phases. Initially, the preliminary study involved developing hypotheses, theoretical models, and concept scales based on signal theory, TPB theory, and existing literature. A focus group interview with 10 customers who purchased OCOP products online helped refine the concept scales and research models for market relevance. Subsequently, preliminary quantitative research was conducted by surveying 120 customers, assessing scale reliability and validity through Cronbach's alpha and exploratory factor analysis (EFA).

The formal quantitative study employed convenience sampling to interview customers. Following Hair et al. (2010), the sample size was set at a minimum of five times—preferably ten times—the number of observed variables. We applied Cronbach's alpha, EFA, confirmatory factor analysis (CFA), and structural equation modeling (SEM) using SPSS and Amos. A Bootstrap test with 5,000 resamples was performed to evaluate the estimates (Hair et al., 2017).

Research products included representative items such as organic coconut jam from Sokfarm Tra Vinh and dried lotus seeds from Nam Huy Dong Thap Co., Ltd., alongside reputable brands like Phu Quoc Khai Hoan fish sauce and Thiên Vương Sky Pearl rice. Participants received explanations on FGC and UGC, viewed related videos thrice, and completed the survey using a 7-point Likert scale.

3.2 The scale

The scale of concepts is inherited from previous studies: The Firm Generated Content scale with 6 observed variables and the User Generated Content scale with 6 observed variables, both scales are applied according to the scale of Tyrväinen et al. (2023) and the basic properties of signals (Erdem & Swait, 1998); the Perceived Quality scale with 5 observed variables and the Purchase Intention scale with 4 observed variables based on the scales of Dodds et al. (1991), Thielemann et al. (2018), Geng & Chen (2021); scales measuring perceived sacrifice with 4 observed variables based on the scale of Erdem et al. (2006).

3.3 Preliminary research results

3.3.1 Qualitative research results

We conducted group discussions with 10 students (customers) to build scales and models. To develop scales from previous studies, the qualitative research results provided the scales used in the quantitative research survey, and the number of people interviewed suggests eliminating the UGC6 variable (UGC's information was easy to understand), as it did not fit the actual market conditions, and other variables explained the meanings of this variable.

3.3.2 Preliminary quantitative research results

The results of the survey of 120 students using SPSS software for analysis showed that Cronbach's alpha coefficients were all greater than 0.7, and the correlation item-total coefficients of the variables were greater than 0.3. The KMO coefficient was greater than 0.8; the eigenvalue coefficient was 1.064, extracting 5 factors; the total variance extracted was 64.262%, which was greater than 0.5; the factor weights ranged from 0.522 to 0.958 and were greater than 0.5. With these results, it shows that the measurement scales are reliable, have convergence value, and have discriminant validity, which are qualified to conduct formal research (Appendix A).

4 RESULTS

4.1 Official research results

4.1.1 Sample implementation

According to Hair et al. (2010), a sample size that is 10 times the number of observed variables is good, and the number of observed variables is 24. As the study compared differences, the sample size needed is 24*10*2= 480; to account for the possibility of invalid questionnaires and to increase reliability (as the research subjects are students), a total of 610 questionnaires were distributed. The inquiry was carried out by class. 66 percent of the 600 completed questionnaires were from men and 34% were from women (of which 47.167% were from the Faculty of Management, 11.833% were from the Faculty of Economics, 13.333% were from the Faculty of Accounting, 3.333% were from the Faculty of Finance, 1.833% were from the Faculty of Law, 11.5% were from the Faculty of Logistics, and 11% were from other faculties such as Agriculture -

Aquaculture, Pedagogy, Tourism - Restaurant & Hotel Management, Foreign Languages, Basic Sciences,...). (Appendix B)

4.1.2 Results of reliability analysis and scale validity

The results of reliability analysis and scale validity are shown in Table 1.

Table 1

Reliability and exploratory factor analysis

Observable variables	Loading Factors > .5					Corrected Item-Total Correlation > .3
	1	2	3	4	5	
UGC1. UGC's information about the product is complete, clear, and specific			.658			.639
UGC2. UGC's information is reliable			.863			.702
UGC3. UGC's information is very useful			.775			.689
UGC4. UGC's information gives me confidence in the product and brand			.681			.643
UGC5. UGC's Information is highly consistent			.579			.598
PI1. After searching and browsing FGC, UGC, I have a great possibility to consider buying recommended products				.661		.673
PI2. I am willing to buy products recommended in the FGC and UGC				.803		.749
PI3. I'll recommend to others the products recommended in the FGC and UGC				.903		.784
PI4. If I buy, I will continue to buy products recommended in UGC, FGC				.705		.708
FGC1. FGC's information about the product is complete, clear, and specific	.721					.691

FGC2. FGC's information is reliable	.901					.771
FGC3. FGC's information is very useful	.829					.765
FGC4. FGC's information gives me confidence in the product and brand	.788					.729
FGC5. FGC's Information is highly consistent	.593					.626
FGC6. FGC's Information was easy to understand	.610					.717
PS1. I didn't know about X, before buying it					.726	.690
PS2. I need more information about X					.841	.740
PS3. It takes me more time to use X					.848	.770
PS4. I buy X, the probability of me wasting is very high.					.741	.740
PQ1. X is a seemingly good product		.654				.684
PQ2. I hope X is of high quality		.842				.742
PQ3. X meets high production process standards		.854				.762
PQ4. X has reliable quality		.796				.721
PQ5. I believe in X's quality		.655				.683
Number of observable variables	6	5	5	4	4	∑=24
Eigenvalue > 1	9.986	2.034	1.627	1.402	1.366	
Cronbach's α >.7	.894	.882	.846	.873	.877	
Cumulative % > 50%	39.996	46.733	51.983	56.304	60.464	
KMO >.7						.939
N						600

Source: Author's analysis

The results of Cronbach's alpha evaluation showed that all the measurement scales achieved necessary reliability. The EFA was evaluated, and the Eigenvalue coefficients were greater than 1, the total variance extracted was 60.464%, which was greater than 0.5, and the factor weights were all larger than 0.5. We conducted Harman's one-factor test, which revealed that the first factor accounted for only 41.61% of the variance, lower than the 50% threshold for common method bias to appear (Cooper et al., 2020). (Appendix D)

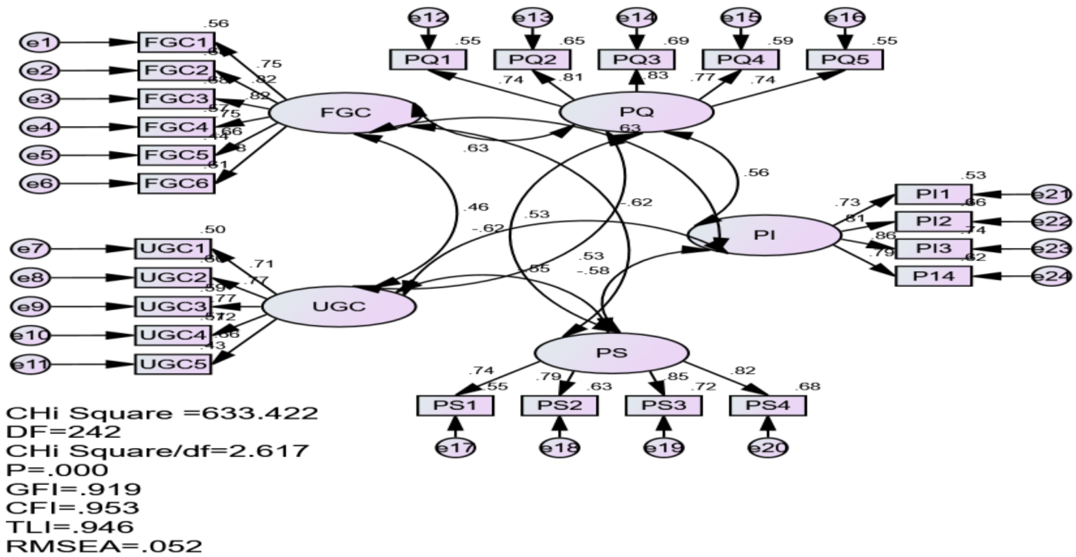
This indicates that the measurement scales are reliable and have sufficient discriminant validity to pass the CFA.

4.1.3 CFA results

The CFA results indicate a good model fit with Chi-square/df = 2.617 (<3), P = 0.000, GFI = 0.919, CFI = 0.953, TLI = 0.946, and RMSEA = 0.052, thereby allowing for further analysis.

Figure 2

CFA test results



Source: Author's analysis

As shown in Table 2a, the correlation coefficients, estimated linking standard errors (SE), and P-values for the pairs of concepts all have P-values below 0.05, indicating that these concepts are discriminative. Additionally, the correlation coefficients, estimated at a 95% confidence level, differ from 1. The standardized regression weights for the scales exceed 0.5, ranging from 0.658 to 0.861, and are statistically significant, confirming the scales' convergent validity (Appendix C).

Table 2a

CFA test results

			Estimates	S.E.	C.R.	P
FGC	<-->	UGC	.461	.056	8.106	***
UGC	<-->	PS	-.555	.058	-9.164	***
PS	<-->	PI	-.581	.060	-9.890	***
PQ	<-->	PI	.560	.056	9.402	***
FGC	<-->	PQ	.631	.073	10.391	***
UGC	<-->	PQ	.531	.053	8.715	***
PQ	<-->	PS	-.621	.069	-10.384	***
FGC	<-->	PS	-.624	.076	-10.682	***
FGC	<-->	PI	.635	.066	10.336	***
UGC	<-->	PI	.526	.048	8.611	***

Source: Author's analysis

Table 2b illustrates that the Composite Reliability (CR) of the measurement concepts is above 0.7, with an extracted variance consistently greater than 0.5. The CR ranges from 0.848 to 0.896, while the Average Variance Extracted (AVE) spans from 0.527 to 0.642, indicating reliable and convergent measurement concepts. The maximum shared variance (MSV), ranging from 0.308 to 0.403, is lower than the AVE, thus meeting the requirements for discriminant validity. This confirms the measurement concepts satisfy the criteria for testing the model and research hypotheses.

Table 2b

CFA test results

	CR	**AVE**	**MSV**	**MaxR(H)**	**FGC**	**UGC**	**PQ**	**PS**	**PI**
FGC	0.896	0.589	0.403	0.902	**0.768**				
UGC	0.848	0.527	0.308	0.852	0.461***	**0.726**			
PQ	0.884	0.604	0.399	0.888	0.631***	0.531***	**0.777**		
PS	0.878	0.642	0.390	0.883	-0.624***	-0.555***	-0.621***	**0.802**	
PI	0.875	0.637	0.403	0.883	0.635***	0.526***	0.560***	-0.581***	**0.798**

Source: Author's analysis

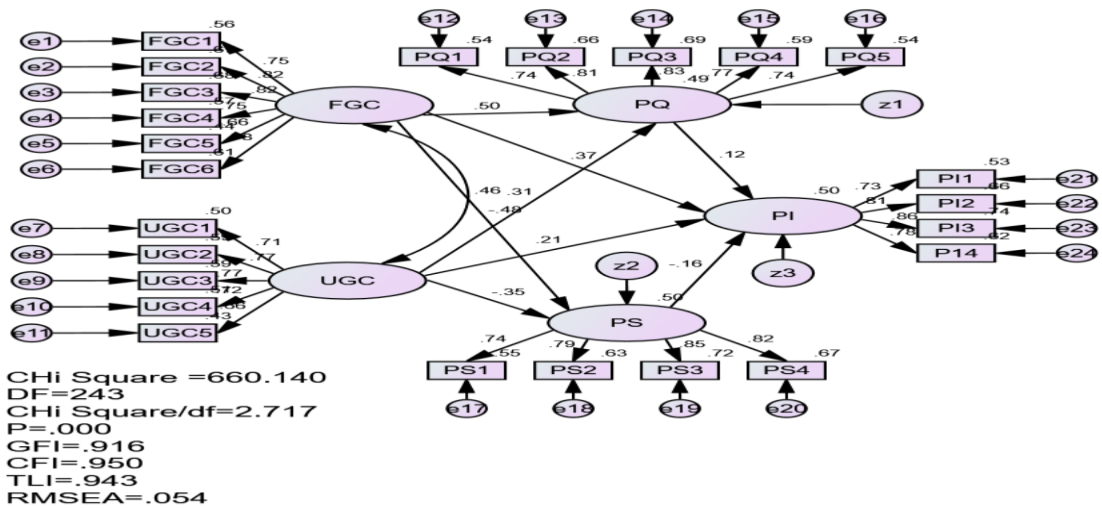
4.1.4 SEM testing results

The model displays 243 degrees of freedom, with a Chi-square value of 660.140 and P = 0.000, resulting in a Chi-square/df of 2.717 (<3), GFI = 0.916, TLI = 0.943, CFI = 0.950 (all >0.9), and RMSEA = 0.054 (<0.08). These results indicate that the model fits the market data well.

The R^2 values reveal that UGC and FGC account for 50% of the variance in perceived sacrifice (PS) and 49% of the variance in perceived quality (PQ), while UGC, FGC, PS, and PQ together explain 50% of the variance in purchase intention (PI) (see Figure 3).

Figure 3

SEM test results



Source: Author's analysis

Hypothesis testing results in Table 3 show that user-generated content positively influences perceived quality (βUGCPQ = 0.315, P = 0.000), confirming H3a, while also reducing perceived sacrifice (βUGCPS = -0.347, P = 0.000) and increasing purchase intention (βUGCPI = 0.206, P = 0.000), supporting H3b and H3c. Firm-generated content similarly enhances perceived quality (βFGCPQ = 0.497, P = 0.000) and reduces perceived sacrifice (βFGCPS = -0.476, P = 0.000), confirming H4a and H4b. It also positively impacts purchase intention (βFGCPI = 0.366, P = 0.000), affirming H4c. Additionally, perceived quality impacts purchase intention (βPQPI = 0.117, P = 0.031), confirming H1, while perceived sacrifice negatively affects purchase intention (βPSPI = -0.163, P = 0.003), confirming H2 (see Table 3).

Table 3

Results of testing the hypothesis

			Standardized estimates	S.E.	C.R.	P
PQ	<---	FGC	.497	.042	10.376	***
PS	<---	FGC	-.476	.044	-10.379	***
PS	<---	UGC	-.347	.061	-7.443	***
PQ	<---	UGC	.315	.056	6.757	***
PI	<---	PQ	.117	.049	2.152	.031
PI	<---	PS	-.163	.045	-2.949	.003
PI	<---	UGC	.206	.056	3.942	***
PI	<---	FGC	.366	.047	6.068	***

Source: Author's analysis

4.1.5 Bootstrap testing

The bootstrap test results with N = 5000 show that the test values show some deviation, but the absolute values of Bias/SE-Bias ≤ 2 (meaning that the deviation from 0 is not statistically significant at a 95% confidence level) and the estimated values in the model can be considered reliable. The test results summarized in Table 4 show that all hypotheses are accepted (see Table 4).

Table 4

Summary of results

Hypothesis				Standardized regression	Bias/ SE-Bias	P	Conclusion
H_1	PI	<---	PQ	.117	2	.031	Accepted
H_2	PI	<---	PS	-.163	-1	.003	Accepted
H_{3a}	PQ	<---	UGC	.315	2	.000	Accepted
H_{3b}	PS	<---	UGC	-.347	-1	.000	Accepted
H_{3c}	PI	<---	UGC	.206	-2	.000	Accepted
H_{4a}	PQ	<---	FGC	.497	-2	.000	Accepted
H_{4b}	PS	<---	FGC	-.476	1	.000	Accepted
H_{4c}	PI	<---	FGC	.366	-2	.000	Accepted

Source: Author's analysis

4.1.6 Testing differences according to control variables

4.1.6.1 Testing the difference by gender

To examine gender differences in evaluating the role of firm-generated content (FGC) and user-generated content (UGC) on purchase intention (hypothesis H5a), a multigroup analysis was conducted comparing invariant and variant models. Table 5 indicates a significant difference, leading to the acceptance of hypothesis H5a. The findings reveal that female customers place higher value on UGC, while male customers are more influenced by FGC. Additionally, UGC impacts women's perception of quality more than men's, and FGC has a greater effect on men's perception of quality. FGC reduces perceived sacrifice more for men, whereas UGC does so more for women, indicating that female customers generally trust UGC more than male customers, who in turn prefer FGC (see Table 5).

Table 5

Table comparing the differences between two groups of male and female customers

			Male group		Female group		Difference between male and female groups
			Estimates	P	Estimates	P	
PQ	<---	FGC	0.692	0.000	0.320	0.000	0.372
PQ	<---	UGC	0.243	0.000	0.402	0.000	-0.159
PS	<---	FGC	-0.573	0.000	-0.290	0.000	-0.283
PS	<---	UGC	-0.259	0.000	-0.526	0.000	0.267
PI	<---	PQ	0.193	0.041	0.217	0.007	-0.024
PI	<---	PS	-0.140	0.033	-0.162	0.095	0.022
PI	<---	UGC	0.083	0.155	0.374	0.000	only female
PI	<---	FGC	0.437	0.000	0.126	0.114	only male
Comparison table of Chi Square							
					Chi square	df	Chidist(14.853, 6)= 0.021431
mutable model					1065.558	486	
immutable model					1080.411	492	
+;-					14.853	6	

Source: Author’s analysis

4.1.7 Testing differences by brand

Table 6 reveals statistically significant differences, leading to the acceptance of hypothesis H5b regarding the assessment of FGC and UGC's roles in purchase intention between new and strong branding. Both FGC and UGC influence perceived quality in both brand groups, but their effects are stronger for strong brands. FGC affects perceived sacrifice more for strong brands, while UGC does so more for new brands. Consequently, FGC has a greater impact on purchase intention for strong brands, whereas UGC does for new brands (see Table 6).

Table 6

Comparison table of differences between new and strong brand products

			Strong brand group		New brand group		Difference between strong and new brand brand
			Estimates	P	Estimates	P	
PQ	<---	FGC	0.529	0.000	0.457	0.000	0.072
PQ	<---	UGC	0.316	0.000	0.312	0.000	0.004
PS	<---	FGC	-0.553	0.000	-0.408	0.000	-0.145
PS	<---	UGC	-0.248	0.000	-0.431	0.000	0.183
PI	<---	PQ	0.061	0.461	0.165	0.020	Only New brand
PI	<---	PS	-0.196	0.017	-0.135	0.075	-0.061
PI	<---	UGC	0.166	0.022	0.240	0.002	-0.074
PI	<---	FGC	0.391	0.000	0.351	0.000	0.040
Comparison table of Chi Square							

	Chi square	df	Chidist(14.136, 6)= 0.028153
mutable model	956.659	486	
immutable model	970.795	492	
+;-	14.136	6	

Source: Author's analysis

4.1.8 Testing the mediating role of PQ and PS

The mediation test results for PQ and PS are presented in Table 7. Specifically, FGC exerts a significant indirect effect on PI via PQ (β = 0.058, p = 0.05), and UGC exerts a significant indirect effect on PI via PQ (β = 0.037, p = 0.05), indicating that PQ partially mediates the relationships between FGC, UGC, and PI.

Similarly, FGC exerts a significant indirect effect on PI via PS (β = 0.078, p = 0.01), and UGC exerts a significant indirect effect on PI via PS (β = 0.057, p = 0.01), indicating that PS likewise functions as a partial mediator in the relationships between FGC, UGC, and PI.

Table 7

Results of the mediate role testing

	Direct effects	P-value	Indirect effects	P-value	Conclusion
FGC --> PQ --> PI	0.366	0.000	0.058	0.05	partial mediating
UGC --> PQ --> PI	0.206	0.000	0.037	0.05	partial mediating
FGC --> PS --> PI	0.366	0.000	0.078	0.01	partial mediating
UGC --> PS --> PI	0.206	0.000	0.057	0.01	partial mediating

5 DISCUSSION

Both firm-generated content and user-generated content increase the perceived quality of OCOP products and reduce customers' perceived sacrifice in forming their intention to purchase OCOP products; the results are consistent with studies (Tyrväinen et al., 2023), (Bahtar & Muda, 2016), (Mir & Rehman, 2013), (Rachna & Khajuria, 2017). This shows that information signals from FGC and UGC are clear, consistent, and trustworthy, received by customers and inferred about product quality, thereby reducing concerns about loss when purchasing and increasing trust in product quality. It can be said that FGC and UGC are signals about product quality.

FGC and UGC both have an impact on the intention to purchase OCOP products, which is consistent with the studies of (Tung et al., 2023; Mir & Rehman, 2013; Bahtar & Muda, 2016; Mayrhofer et al., 2020; Geng & Chen, 2021; de Costa & Aziz, 2021; Sandunima & Jayasuriya, 2024; Kedan et al., 2021). In the study comparing male and female customers, the study found that male customers focus on information from FGC, while female customers are interested in UGC. This is consistent with the market reality in Vietnam, where most male customers are interested in brands and less concerned with product details; conversely, female customers with a habit of researching details and seeking experience from previous buyers tend to search for information from UGC.

In comparing the differences between brands, UGC has a strong effect on new brands, while FGC has a strong effect on strong brands, this result is similar to the study of Aljarah et al., (2024). This is consistent, for new brands have low trust in both brand and business, so customers choose to share the experience of previous buyers to decide; for strong brands, trust in the brand and business is high, so customers seek information from the supplier to make a choice.

The validation results indicate that PQ and PS serve as positive partial mediators in the relationships among FGC, UGC, and PI. This confirms that, based on comprehensive and reliable measurements, FGC and UGC exert positive direct effects on PI as well as positive indirect effects on PI through PQ and PS.

6 CONCLUSION

In the past some decades, social media has become a major concern of scholars, examining the impact of information sources (here UGC, FGC) on consumer behavior such as UGC and FGC influence brand loyalty; impact on purchase intention and decision, approached by applying theories such as the persuasive knowledge model (Friestad & Wright, 1994), the information acceptance model (Sussman & Siegal, 2003), the TRA theory (Fishbein & Ajzen, 1975), TPB (Ajzen, 1991) as the basis for research achieved certain successes, but studies only consider FGC, UGC as product introduction and brand sincerity, based on interactions between products and customers through social media; Our research applies signal theory, planned behavior theory, risk theory to study UGC, FGC as quality signals based on interaction between toghther humans via UGC and FGC signals proving the role of signaling product quality of new products and products with unobservable quality of UGC, FGC. Through experimental research, our study determines that FGC and UGC have an impact on the quality of perception, sacrifice perception, and intention to purchase OCOP products. This result indicates that FGC and UGC are signals indicating the quality of products with difficult observability. By comparing the differences between customer groups and the characteristics of brand research, it is found that female customers value UGC more in product evaluation, while male customers focus on FGC. For new brands, UGC plays a strong role as a quality indicator, while FGC works for strong brands. This result provides an important basis for the marketing activities of businesses.

A key insight of this study is that perceived quality (PQ) and perceived sacrifice (PS) act as partial mediators, strengthening the positive impact of firm-generated content (FGC) and user-generated content (UGC) on purchase intention (PI).

Our findings present an opportunity for startups, emerging firms, and companies with products whose quality is hard to evaluate to use FGC and UGC as quality signals to enhance customers' purchase intentions. However, managers must recognize that perceived quality is tightly linked to actual product quality. Therefore, companies should continuously improve product quality to build consumer trust - only then can FGC and UGC reach their full potential. On the contrary, if perceived quality differs from actual quality, customers will be detrimental to the company, making FGC and UGC ineffective.

6.1 Limitation and future research

Despite great efforts in implementation, this study still has limitations, such as:

With the research objective of both testing and exploring, the survey subjects used are students, which is appropriate; however, the generalizability of the results to other subjects needs to be considered. The research product is one with difficult-to-observe quality, which is suitable for the research objective, but by focusing only on the food product group, will the results be similar for other products?

Therefore, to better understand the role of FGC and UGC, the scope of the research needs to be expanded in terms of survey subjects and research products.

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APPENDIX

Appendix A

Reliability and exploratory factor analysis

Observable variables	Loading Factors > .5					Corrected Item-Total Correlation > .3
	1	2	3	4	5	
UGC1. UGC's information about the product is complete, clear, and specific			.661			.659
UGC2. UGC's information is reliable			.861			.778
UGC3. UGC's information is very useful			.744			.695
UGC4. UGC's information gives me confidence in the product and brand			.751			.752
UGC5. UGC's Information is highly consistent			.731			.696
PI1. After searching and browsing FGC, UGC, I have a great possibility to consider buying recommended products				.522		.729
PI2. I am willing to buy products				.787		.788

recommended in the FGC and UGC						
PI3. I'll recommend to others the products recommended in the FGC and UGC				.931		.843
PI4. If I buy, I will continue to buy products recommended in UGC, FGC				.743		.810
FGC1. FGC's information about the product is complete, clear, and specific	.849					.781
FGC2. FGC's information is reliable	.958					.814
FGC3. FGC's information is very useful	.861					.802
FGC4. FGC's information gives me confidence in the product and brand	.832					.796
FGC5. FGC's Information is highly consistent	.683					.677
FGC6. FGC's Information was easy to understand	.538					.615
PS1. I didn't know about X, before buying it					.606	.481
PS2. I need more information about X					.525	.402
PS3. It takes me more time to use X					.661	.515
PS4. I buy X, the probability of me wasting is very high.					.713	.577
PQ1. X is a seemingly good product		.687				.777
PQ2. I hope X is of high quality		.752				.825
PQ3. X meets high production process standards		.706				.830
PQ4. X has reliable quality		.933				.815
PQ5. I believe in X's quality		.914				.806
Number of observable variables	6	5	5	4	4	∑=24
Eigenvalue > 1	9.521	3.203	1.912	1.483	1.064	
Cronbach's α >.7	.906	.928	.881	.908	.706	
Cumulative % > 50%	38.365	50.342	56.513	61.091	64.262	
KMO >.7						.874
N						120

Source: EFA analysis results of the author

Appendix B

Sample description

	Quantity	Rate (%)
Gender (n=600)		
Male	396	66.000
Female	204	34.000
Faculty (n=600)		
Faculty of administration	283	47.167
Faculty of economics	71	11.833
Faculty of accounting	80	13.333
Faculty of finance	20	3.333
Faculty of law	11	1.833
Faculty of logistics	69	11.500
Other	66	11.000
Class (n=600)		
Bachelor	488	81.333
Postgraduate	112	18.667
Age (n=600)		
18-25	488	81.333
26-35	90	15.000
36-45	22	3.667

Source: author's analysis

Appendix C

Standardized Regression Weights

			Estimates
FGC6	<---	FGC	.783
FGC5	<---	FGC	.663
FGC4	<---	FGC	.755

			Estimates
FGC3	<---	FGC	.824
FGC2	<---	FGC	.824
FGC1	<---	FGC	.748
UGC5	<---	UGC	.658
UGC4	<---	UGC	.716
UGC3	<---	UGC	.769
UGC2	<---	UGC	.772
UGC1	<---	UGC	.711
PQ1	<---	PQ	.739
PQ2	<---	PQ	.807
PQ3	<---	PQ	.830
PQ4	<---	PQ	.768
PQ5	<---	PQ	.739
PS4	<---	PS	.822
PS3	<---	PS	.847
PS2	<---	PS	.792
PS1	<---	PS	.742
PI1	<---	PI	.727
PI2	<---	PI	.814
PI3	<---	PI	.861
P14	<---	PI	.785

Source: author's analysis

Appendix D. Harman's one-factor test

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.986	41.610	41.610	9.986	41.610	41.610
2	2.034	8.476	50.085			
3	1.627	6.780	56.866			
4	1.402	5.842	62.708			
5	1.366	5.691	68.399			
6	.675	2.812	71.211			
7	.643	2.678	73.889			
8	.597	2.486	76.375			
9	.525	2.187	78.562			
10	.511	2.128	80.690			
11	.470	1.957	82.647			
12	.442	1.841	84.489			
13	.410	1.710	86.198			
14	.378	1.576	87.775			
15	.373	1.552	89.327			
16	.362	1.507	90.834			
17	.333	1.388	92.222			
18	.322	1.343	93.565			
19	.315	1.311	94.876			
20	.272	1.133	96.009			
21	.261	1.088	97.097			
22	.252	1.049	98.146			
23	.236	.983	99.129			
24	.209	.871	100.000			

Extraction Method: Principal Component Analysis.

	Estimates	

Source: author's analysis

Authors' Contribution

All authors contributed equally to the development of this article.

Data availability

All datasets relevant to this study's findings are fully available within the article.

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