

More, Faster, and Better? Effects of Rewards on Incentivizing the Creation of User-Generated Content ^{*}

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Abstract

We quantify the effects of monetary and non-monetary rewards on the quantity, timeliness, and quality of user-generated content (UGC). Users can receive both types of rewards from the platform and/or other users. Understanding the effectiveness of different types of rewards provides platforms with guidance on how to encourage desired user content generation. Our data come from an online board game platform and consist of information on three types of UGC: writing initial forum posts, replying to peers' questions, and writing game reviews. Our results show that monetary rewards from other users, such as tips, lead to more frequent but shorter and more casual content, while non-monetary rewards from peers, such as likes, lead to longer and richer content. Interestingly, monetary rewards from the platform have a similar impact on UGC creation as non-monetary rewards from other users. Furthermore, non-monetary rewards from the platform that use goal milestones, such as badges, speed up UGC production when a user is close to reaching the next badge, but lead to a decrease in UGC creation after the milestone has been reached.

Keywords: User-Generated Content, Monetary Rewards, Non-Monetary Rewards

JEL Classification: D83, L82, M31

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1 Introduction

User-generated content (UGC) plays a crucial role for social media platforms: it attracts new users to a platform and keeps existing users engaged. The more and the more engaged users a platform has, the more ads it can show and increase its revenue. Therefore, platforms are keenly interested in quickly increasing high-quality UGC production and have implemented a variety of rewards to encourage users to create UGC. For example, YouTube and Goodreads utilize “thumbs up” or “likes,” Twitch and Tiktok allow users to tip a content creator, and StackExchange and Wikipedia use badges to reward users who create a lot of content. Several of these and other social media platforms also use multiple reward types.

This variety of rewards used by different platforms brings up several questions: are monetary and non-monetary rewards equally effective? Do some rewards encourage more high-quality or more timely UGC production than others? Do the effects of a reward vary across different types of UGC? Should the platform play an active or passive role in encouraging UGC creation? While previous research has quantified the effects of different types of rewards separately (see, e.g., Gallus 2017; Burtch et al. 2022), to answer these questions, the causal effects of the different types of rewards need to be jointly measured and compared.

One of the challenges of quantifying the effects of rewards lies in their endogeneity: users do not randomly receive rewards, but for previously produced UGC. Therefore, previous literature has mostly relied on experimental variation to measure the effects of rewards (Burtch et al. 2018, 2022). However, because of monetary and complexity concerns, the drawback of the experimental approach is that the effects of a single type of rewards were studied (Kuang et al. 2019). This makes a comparison of the effects of multiple rewards challenging. In this paper, we take advantage of our unique data which allows us to include a very large number of fixed effects to address endogeneity concerns.¹ More specifically, we include a fixed effects for every previous UGC post for which the user received at least one reward in addition to individual-day fixed effects. This approach allows us to measure and

¹Technically, we difference the fixed effects out.

compare the causal effects of the four most common types of rewards in incentivizing UGC creation. The four rewards differ in their prize (monetary and non-monetary) and source (awarded by platform and by other users). Platforms are not only interested in making a lot of UGC available, but also in that UGC being timely and of high quality. Therefore, we quantify the effects of the four rewards not only on the quantity of produced UGC, but also on its timeliness and quality and.

Our data come from an online board game platform called BoardGameGeek.com (BGG). For a random sample of users, we observe the UGC they created over a time period of ten years and all rewards they received for the UGC. More specifically, our data contain three types of UGC: initial thread posts on the discussion forum, reply posts on the discussion forum, and game reviews. The platform rewards users with badges and monetary compensation in its virtual currency for creating UGC. Other users can also reward the focal user for UGC with likes and tips. To summarize, users can receive monetary and non-monetary rewards from both the platform and other users.

We quantify the causal effects of the number of rewards of each type the user received during the prior three days on the creation of UGC using linear regressions and account for endogeneity concerns using a rich set of fixed effects. We examine three aspects of the created UGC: its quantity, its timeliness, and its quality. UGC quantity refers to the number of posts of a certain type, e.g., reviews or replies, and timeliness refers to the time interval between a thread initiation and a reply or a game publication and its review. We measure twelve aspects of text quality and combine them into four underlying factors ranging from text length over readability to politeness.

Our results show that any reward from other users, such as tips or likes, lead to more frequent but shorter, longer and richer content. However, monetary rewards from the platform decreases the amount of UGC creation with the content being shorter and more casual. Furthermore, non-monetary rewards from the platform that use goal milestones, such as badges, speed up UGC production when a user is close to reaching the next badge, but

lead to a decrease in UGC creation after the milestone has been reached. Regarding the relative magnitudes of the effects of rewards, we find that non-monetary rewards from users generally have the largest effect on quantity and quality of all content. In addition, non-monetary rewards from the platform are more effective in impacting quantity and quality of thread posts than monetary rewards from the platform, but less effective in impacting reviews. Similarly, monetary rewards from users have more effect on threads than monetary rewards from platform do, while the opposite is true for reviews.

The contribution of this paper is two-fold. First, we add to managers' and academics' understanding of the effectiveness of different types of rewards. More specifically, we quantify the effects of different types of rewards within the empirical context of a platform that employs all four of them and are therefore able to compare their magnitudes. This comparison provides a holistic overview and guidance to managers on how to design reward systems to achieve desired UGC goals. And second, we contribute to the literature on text quality by measuring twelve quality aspects of each post and combining them into four underlying factors. Our approach provides a deeper and more comprehensive understanding of text quality than evaluated by previous research.

The remainder of this paper is organized as follows: In the next section, we review the relevant literature. In Section 3, we introduce and describe our data. We present our model in Section 4 and discuss the results in Section 5. In the following section, we review the robustness checks and conclude in Section 7.

2 Relevant Literature

In this section, we review the relevant streams of literature on user-generated content, online rewards, and special interest communities and delineate our research vis-à-vis findings from previous research.

UGC has been shown to affect a variety of consumers' decisions (e.g., Godes and Mayzlin

2004; Chevalier and Mayzlin 2006; Li and Hitt 2008; Chen, Wang, and Xie 2011; Moe and Trusov 2011; Ameri, Honka, and Xie 2019), and to be a source of entertainment driving platform engagement (Chevalier and Mayzlin 2006; Leung 2009; Yang, Ren, and Adomavicius 2019). As a result, several papers have studied factors that impact and encourage the creation of UGC such as social norms (Burtch et al. 2018), financial incentives (Burtch et al. 2018; Khern-am nuai, Kannan, and Ghasemkhani 2018), rewards (Gallus 2017; Burtch et al. 2022), performance feedback (Huang et al. 2019), community commitment (Bateman, Gray, and Butler 2011), and audience size (Zhang and Zhu 2011). For instance, Zhang and Zhu (2011) show a positive causal relationship between audience size and individual-level contributions in the context of Chinese Wikipedia. Burtch et al. (2018) examine the effect of descriptive social norms and money to stimulate the production of online reviews. They show that money increases the number of reviews, while social norms increase review length. In this paper, we study how rewards affect the creation of UGC.

Platforms use different types of rewards to encourage more UGC creation in their online communities (Hukal et al. 2020). For instance, Burtch et al. (2018) examine the effects of monetary reward from the platform to stimulate the production of online reviews. They show that money increases the volume of the reviews, while social norms increase reviews' length. Gallus (2017) shows that non-monetary rewards, such as symbolic medals, from a platform have a positive motivational effect on contributors' retention to the platform. Hanson, Jiang, and Dahl (2019) compare the effects of multiple non-monetary rewards given by the platform such as points, labels, and badges on the quantity of UGC produced in an online community. They show that labels and badges have a larger impact on UGC creation because they help clarify the role of contributors in the community. Burtch et al. (2022) examine the effects of monetary rewards given by other users on UGC production. Through a randomized field experiment on Reddit, they find that such rewards encourage users, especially new users, to write longer and more posts. In this paper, we simultaneously examine the effects of four types of rewards on the quantity, timeliness, and quality of UGC.

The four types of rewards differ in their nature (monetary and non-monetary) and source (other users versus the platform). Thus, we provide a more comprehensive analysis of the effects of different types of rewards than examined by previous literature.

Lastly, our paper is related to the literature on special interest communities where interactions are based on shared enthusiasm for a specific consumption activity (Kozinets 1999). Special interest communities help people feel more connected and internet users increasingly prefer special interest online communities over general social media, such as Facebook or Instagram.² Recent studies have examined user behavior in special interest communities in different contexts. For example, Hendricks and Sorensen (2009) study users' adoption of new music online, and show that new album releases on the platform lead to a substantial and permanent increase in the sales of old albums of the same artist. Zhang and Godes (2018) study Goodreads, and show that, with sufficient experience, having more ties leads to better decisions. Nevskaya and Albuquerque (2019) study the role of rewards on users' consumption of a game in a massive online video game platform. They find that improving reward schedules and imposing time limits leads to shorter usage sessions and longer game subscriptions. Ameri, Honka, and Xie (2022) study how strangers become friends within an evolving online social network in an online anime-watching platform, and how this evolving network impacts users' content generation and vice versa. We contribute to this stream of literature by examining users' content generation and the factors affecting it in a board game related online community.

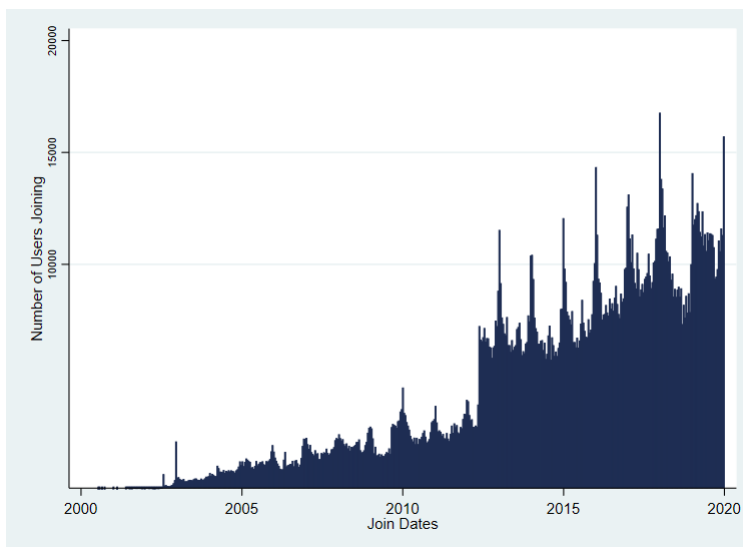
3 Data

Our data come from Boardgamegeek.com. This website is a consumption-related online community revolving around board games. It was established in 2000 and has become the largest online database for board games as well as the largest online community for board game fans with over 2.7M users worldwide. Figure 1 shows the number of users joining BGG

²<https://blog.gwi.com/chart-of-the-week/online-communities/>

over time.

Figure 1: Number of Users Joining BGG Over Time



An important aspect of BGG is that essentially all of its content is created by users. Users provide detailed information about new and existing games via reviews and also engage in a variety of conversations with other users in the discussion forum section of the website.³

BGG utilizes a platform-specific virtual currency called GeekGold (GG) to reward users for their contributions. Users can earn 1 - 5 GG as compensation for writing a review or starting a new discussion thread.⁴ Users can only earn GG through contributions and cannot directly buy GG from the platform.⁵ Users can also earn GG in form of tips from other users for the content they create. Users can tip any amount they want. Aside from tipping, users can use their GG to buy virtual cosmetic items for their profile page or to buy board games from peers.

Users also receive badges for writing a certain number of threads or reviews. Each type

³Users can also contribute other forms of UGC such as ratings, files, and images. These forms of UGC are much less common on BGG and we therefore focus on threads, reviews, and replies.

⁴All reviews go through a process in which other volunteer users vote to approve a review and recommend an amount of 1 - 5 GG to award to the content creator. We observed this process and the approval of a review is a formality that takes less than one day. The average amount recommended by other users determines the compensation amount the content creator receives for her contribution.

⁵The platform rewards users who donate money to BGG by giving them GG. Some users may also buy GG from other users privately. However, both donations and GG purchases are not common.

of content has its own milestones and badges. The badge system is set up in a way that a user has to produce increasingly more content to reach the next milestone. For example, a user has to write 5 reviews to earn the first badge, 45 additional reviews to earn the second badge, etc. A list of the badges and their corresponding milestones is available in Appendix A. Lastly, users can also react to the content produced by others by giving “likes.” Figure 2 shows a thread in which the content creator received likes and tips from other users.

Figure 2: Example of a Post for Which the Creator Received Tips and Likes

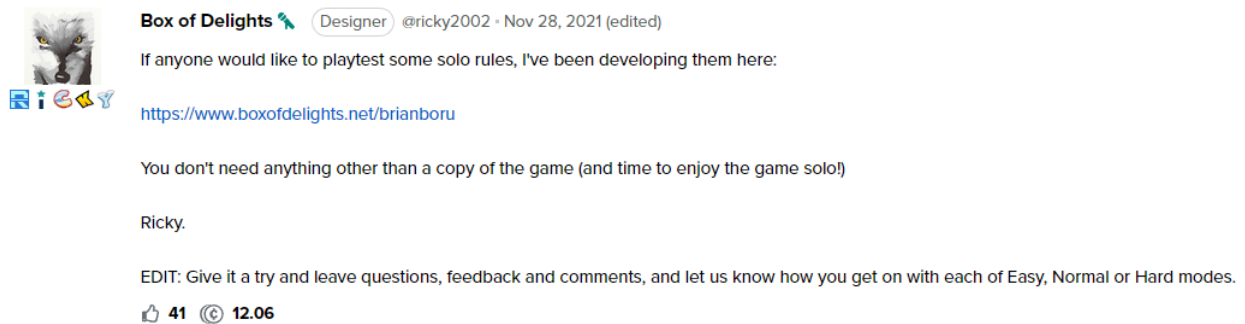


Table 1 summarizes the available rewards for threads, reviews, and replies. Non-monetary rewards (likes) and monetary rewards (tips) from other users can be given for all UGC types. Non-monetary reward (badges) and monetary reward (compensation) from the platform are only awarded for threads and reviews.

Table 1: Available Rewards

UGC Types	MONETARY		NON-MONETARY	
	Platform	Users	Platform	Users
	Compensation	Tip	Badge	Like
Threads	1-5	0.001+	20 Levels	1+
Reviews	1-5	0.001+	6 Levels	1+
Replies	-	0.001+	-	1+

3.1 Data Collection and Cleaning

We collected all activities of a random sample of 100,000 users from their join date until August 19th, 2020. The data for each user include details of all the content the user created and the rewards she received for each piece of content.

We took the following steps to construct our final estimation sample. First, to ensure a minimum level of activity, we focus on users with more than 50 contributions during their entire membership. To exclude platform administrators, who create a lot of content, we exclude users with more than 2,000 contributions per year. Excluding very inactive and very active users left us with 47,881 users. Second, we drop users who did not create any UGC of any type after Jan 1st, 2020. We condition on at least one UGC contribution after Jan 1st, 2020, to only keep users who are still active platform members. Otherwise, if a user did not create any UGC, we cannot distinguish between the user leaving the website and the user still being an active member but deciding not to create any content.⁶ Our final sample contains 16,801 users with 42,819,634 daily observations of their activities of each UGC type and the rewards they received for created content from January 2010 to December 2020, our study period of 10 years.

3.2 Variable Construction

Here, we discuss the construction of the dependent variables. Our measure of UGC quantity is straightforward: it is the number of posts of a certain type (e.g., initial thread post or review) a user made on a day. The timeliness of a post captures the degree to which a post is related to current events and interests of the community. *Timeliness* is calculated differently for each UGC type. For reviews, it is the number of days between a review and the release date of the corresponding board game.⁷ For the timeliness of thread posts, we use the difference between the date of the last post previously written by the focal post in

⁶We do not observe user log-ins or browsing activity.

⁷We exclude reviews of board games that were released before 2000 since the exact release date was unavailable.

the same subcategory and date of the focal post. And lastly, to measure the timeliness of replies, we calculate the difference between the date of the reply by the focal user and the date of the initial thread post.

Previous studies have used different measures to assess UGC quality of reviews (e.g., Goes, Lin, and Au Yeung 2014; Hong et al. 2017) and posts on discussion platforms (e.g., Weimer, Gurevych, and Mühlhäuser 2007; Shah and Pomerantz 2010). We employ eight measures capturing structure, content, and style dimensions of text quality. These eight measures are commonly used in the literature and applicable to our context (e.g., Stvilia et al. 2005; Hasan Dalip et al. 2009; Shah and Pomerantz 2010). Structural features are captured by the number of words, the number of sentences in a post, the number of words per sentence, and reading time (Blumenstock 2008; Demberg and Keller 2008; Hasan Dalip et al. 2009; Anderka, Stein, and Lipka 2012). Reading time is operationalized as the time an average person needs to read a text, typically about 14.69 ms per character (Demberg and Keller 2008).

The Flesch Easing Read Index (FERI) (Kincaid et al. 1975) and the Gunning Fog Index (GFI) (Gunning and Others 1952) are the two content-related measures we employ. They reflect the complexity of the text. In addition, we also quantify the informativeness of the text as a third content-related measure (Sun, Han, and Feng 2019). FERI is a readability/complexity score, typically between 0-100, that indicates the difficulty of understanding a passage in English (Kincaid et al. 1975), with higher scores corresponding to easier texts. The GFI measures the readability of a text by estimating the number of years of formal education a person needs to understand a text when reading it for the first time (Gunning and Others 1952). For instance, a GFI of 12 indicates that a text requires a person to be a high school senior (around 18 years old) to understand it. To measure informativeness, we calculate the factual density of the text, i.e., the ratio of the number of facts in the text to the number of words (Lex et al. 2012; Horn et al. 2013). We use ReVerb Open Information Extraction framework to extract facts or informational relations from the text (Fader,

Soderland, and Etzioni 2011).

We capture the style of the text using a measure of politeness (Yeomans, Kantor, and Tingley 2018). Politeness refers to the degree to which impolite or slang words are used in a text and is calculated as the difference between the number of positive and negative words relative to the total number of words (Yeomans, Kantor, and Tingley 2018).

While these measures are used to capture different aspects of a text, some of them are reflecting similar underlying constructs and are highly correlated with each other. As a result, we conduct a factor analysis to combine these measures into orthogonal factors. The results from the factor analysis suggest using four factors. Table 2 shows the factor loadings of the eight quality measures on each of the factors. The number of words, the number of sentences, and reading time are grouped into one factor, which we call *Length*, reflecting the extensiveness of the text (Hong et al. 2017). The number of words per sentence, GFI and FERI are also grouped together. We refer to this factor as *Complexity* since it captures the difficulty with which a reader can understand a written text. The number of words per sentence is related to complexity since longer sentences are more complex and harder to understand. Also, note that the FREI and GFI loadings on the readability factor have different signs because easier texts correspond to higher FREI scores but lower GFI scores. Informativeness constitutes a factor by itself as does politeness.

Table 2: Rotated Factor Analysis Loadings

Variable	Factors				Uniqueness
	Length	Complexity	Informativeness	Politeness	
Number of Words	0.97	0.14	0.02	-0.01	0.05
Number of Sentences	0.93	-0.08	0.01	0.02	0.12
Reading Time	0.93	0.13	-0.02	-0.01	0.12
GFI	0.10	0.85	0.12	0.04	0.26
FREI	-0.02	-0.80	0.23	0.03	0.31
Number of Words per Sentence	0.19	0.63	0.07	-0.06	0.56
Informativeness	0.00	-0.01	0.98	-0.01	0.03
Politeness	0.00	0.00	0.00	1.00	0.00

3.3 Data Description

By the end of our study period, on average, users had been a BGG member for 8.7 years. Table 3 shows summary statistics of annual activity levels. The average user initiates three threads and writes 46 replies per year. Writing a review is much less common with the average user writing one review during the whole 10-year study period. However, there is considerable variation in activity levels across users. For example, the average maximum number of reviews and initiated threads per year is 178 and 262, respectively.

Table 3: Annual UGC Creation Activity

	Mean	SD	Min	1 st Quart.	Median	3 rd Quart.	Max	N
Threads	3.14	6.49	0.00	0.30	1.10	3.18	261.81	16,801
Reviews	0.09	1.64	0.00	0.00	0.00	0.00	178.26	16,801
Replies	46.09	132.55	0.00	2.04	7.70	30.50	1996.50	16,801

Table 4 shows the summary statistics of the four rewards for each type of UGC contribution. Users receive the highest total tip amounts for threads and most likes for reviews. Note that users only earn a badge for a certain number of contributions (and not for each contribution). Therefore, users do not receive badges frequently as opposed to the other types of rewards and the mean numbers of earned badges are small.

Table 4: Annual Earned Rewards by UGC Types

	Mean	SD	Min	1 st Quart.	Median	3 rd Quart.	Max	N
Threads								
Tips	1.36	10.09	0.00	0.00	0.00	0.17	413.60	16,801
Likes	6.33	20.55	0.00	0.18	1.30	4.90	851.70	16,801
Compensation	0.01	0.11	0.00	0.00	0.00	0.00	8.47	16,801
Badge	0.16	0.34	0.00	0.00	0.00	0.18	6.68	16,801
Reviews								
Tips	0.18	2.08	0.00	0.00	0.00	0.00	112.63	16,801
Likes	0.77	7.46	0.00	0.00	0.00	0.00	492.33	16,801
Compensation	0.30	3.64	0.00	0.00	0.00	0.00	335.63	16,801
Badge	0.01	0.08	0.00	0.00	0.00	0.00	8.49	16,801
Replies								
Tips	3.94	19.32	0.00	0.00	0.09	1.44	495.68	16,801
Likes	46.02	110.59	0.00	1.43	6.84	31.90	898.98	16,801

Table 5 shows descriptive statistics for the UGC quantity, timeliness, and quality measures. In our data, the median timeliness value for reviews is 546 days. The median initial thread post receives its first reply the same day. In our data, the median timeliness value for replies is 3 days. Reviews have the largest text length followed by threads and the highest politeness scores. Not surprisingly, replies have the highest scores for minimality. And lastly, threads rate the highest in terms of readability.

Table 5: Descriptive Statistics of Quantity, Timeliness, and Quality Measures by UGC Type

	Mean	Median	SD	Min	Max	N
Threads						
Quantity	0.01	0.00	0.12	0.00	35.00	42,819,634
Timeliness	49.92	2.00	213.79	0.00	6,149.00	339,040
Length	0.73	0.04	2.71	-0.81	112.70	335,944
Complexity	0.17	0.09	0.87	-18.66	32.65	335,944
Informativeness	-0.06	-0.04	0.69	-6.12	18.94	335,944
Politeness	-0.08	-0.11	0.44	-13.26	12.21	335,944
Reviews						
Quantity	0.00	0.00	0.03	0.00	27.00	42,819,634
Timeliness	851.78	398.86	1,094.12	0.00	7,219.00	13,028
Length	8.72	6.95	7.17	-0.74	79.50	7,475
Complexity	-0.53	-0.45	1.23	-9.27	16.57	7,475
Informativeness	-0.17	-0.12	0.54	-4.35	3.66	7,475
Politeness	0.07	0.09	0.21	-1.99	1.98	7,475
Replies						
Quantity	0.14	0.00	0.96	0.00	191.00	42,819,634
Timeliness	131.93	3.00	400.73	0.00	6,810.00	2,680,286
Length	0.07	-0.16	1.24	-1.13	112.70	2,976,560
Complexity	0.02	-0.05	0.83	-18.66	69.83	2,976,560
Informativeness	-0.00	0.04	0.86	-6.12	32.51	2,976,560
Politeness	0.05	-0.04	0.83	-25.92	24.83	2,976,560

4 Model

Our goal is to measure the causal effects of the four types of rewards on the quantity, timeliness, and quality of initial thread posts, reviews, and replies. We start by discussing several endogeneity concerns and then present the model specification we employ in the empirical analysis.

4.1 Endogeneity

There are several concerns related to the endogeneity of rewards. First, a user does not randomly receive peer rewards, i.e., tips and likes from other users. A user can only receive a peer reward if she made a post in the past. Furthermore, a user who wrote multiple posts in the past is more likely to receive a peer reward than a user who wrote one post. Additionally, some posts might generate many peer rewards, while others do not. We address these concerns in two ways: by controlling for the cumulative number of posts of each UGC type a user has written so far as well as by including post fixed effects, i.e., a fixed effect for each post a user made in the past that results in the user receiving a peer reward on the focal day.⁸ For example, if a user published post A on November 15, 2022, and received 3 GG in tips and 2 likes on November 17, 2022, and 1 GG in tips and 2 likes on November 20, 2022, the fixed effect for post A will equal 1 on both November 17 and November 20, 2022. Further, it is possible that a user receives rewards on one day that are generated by multiple posts.⁹

A second concern is the non-random timing of peer rewards: users commonly receive peer rewards within the first few days after publishing a post. Older posts rarely receive peer rewards. We address this concern by including individual-day fixed effects. These fixed effects control for differences in received peer rewards across days for each user. Thus, the identifying variation in the estimation of the effects of peer rewards is the within-day variation for each user.¹⁰

⁸More precisely, we include post fixed effects for 91% of the posts. The reasons for this are discussed in Footnote 9.

⁹Because a user may receive rewards for multiple posts in one day, we cannot use a categorical variable to incorporate the fixed effects. Another option might be to include a dummy variable for every post written by each user. However, this would require us to include 3,683,407 dummies, which is not possible due to computing limitations. Instead, we use several categorical variables to indicate the post fixed effects that need to be estimated for each observation. In our main analysis, we use 20 categorical variables, which include more 90% of the fixed effects and cover more than 99% of the observations for days a user received a reward, and another variable that indicates whether a user received a reward for a twentieth or more posts.

¹⁰We have more than 2.8 million individual-days in which a user wrote a post in one of the three UGC type categories, allowing us to identify the effects of rewards despite using granular individual-day fixed effects. We further test the robustness of our results using less granular individual-week fixed effects. The results are presented in Appendix C.

Third, a user does also not randomly receive platform rewards, i.e., compensation and badges. When writing a game review, the user knows that she will receive compensation from the platform.¹¹ First, although users receive compensation for all their review posts, receiving compensation for a thread post requires the user nominating their thread post for a high quality thread reward and the thread passing evaluation by a few other users and thus is not guaranteed. Thus, while users expect to receive compensation for their review post, the same is not true for thread posts. Second, for reviews, depending on how the review is evaluated by a few randomly selected users, the amount of the rewarded compensation can vary. Because we control for the unobserved quality of the reviews using post fixed effects, the variation in the amount of awarded compensation enables us to identify its effect. We Fourth, we control for the expectation of getting closer to receiving the next badge by controlling for the number of remainder posts a user needs to write in order to reach the next badge milestone.

And lastly, a user knows when she has written a certain number of reviews or initiated a certain number of threads to earn the next badge.¹² We follow Goes, Guo, and Lin (2016) in addressing this concern: we include variables that capture the progress towards the next badge in terms of the remaining number of posts needed to reach the next milestone. Since previous findings suggest a non-linear effort exertion for reaching hierarchical milestones (Lal and Srinivasan 1993; Goes, Guo, and Lin 2016), we also include the square of the progress variables. As described in Section 3, the badge system is set up in a way that reaching the next badge gets increasingly difficult, i.e., a user has to produce more and more content to earn the next badge. This implies that the number of remaining posts needed to reach the next milestone is not comparable across badges since the same number can imply different completion levels. Therefore, we estimate separate coefficients for each badge.

¹¹While formally, reviews have to go through GeekModding, a process in which other users read the posts, approve them, and suggest a compensation reward amount, in practice all reviews following basic platform guidelines get approved. The user receives a compensation reward within the allowable range that equals the average compensation amount suggested by users who read her post in GeekModding. GeekModding is fast: reviews get approved and published within a day.

¹²The number of initiated threads and written reviews is displayed on each user's personal page.

4.2 Empirical Specification

We use the following set-up to infer the effects of rewards for each of the quantity, timeliness, and quality measures: For each user $i = 1, \dots, N$, we observe the user’s behavior on calendar day $t = 1, \dots, T$ related to post $p = 1, \dots, P$. Let p_{ijt} denote post p user i made on day t of UGC type $j \in \{\text{thread posts, reviews, replies}\}$. We operationalize the quantity of UGC, Y_{ijt} , as the number of posts of type j user i created on day t . Recall that we use a different operationalization of the timeliness variable for each type of UGC as discussed in Section 3.2. Lastly, for the quality of UGC, Y_{ijt} reflects one of the four quality dimensions of UGC posts of type j user i wrote on day t .

We separately estimate the models for the seven dependent variables using log-log linear regressions with the following specification:

$$\begin{aligned}
 Y_{ijt} = & \beta_{1j}Tips_{ijt} + \beta_{2j}Likes_{ijt} + \beta_{3j}Compensation_{ijt} + \beta_{4j}Badge_{ijt} \\
 & + \beta_{5j}Tips_{i,-jt} + \beta_{6j}Likes_{i,-jt} + \beta_{7j}Compensation_{i,-jt} + \beta_{8j}Badge_{i,-jt} \quad (1) \\
 & + \beta_{9j}C_{ijt} + \beta_{10j}B_{ijt} + \lambda_{p_{ij}} + \alpha_{it} + \epsilon_{ijt}.
 \end{aligned}$$

We operationalize the four reward types as follows: $Tips_{ijt}$ is the amount of tips (in GG) user i received from other users for UGC type j in the three days prior to day t , i.e., days $t - 3$ to $t - 1$. We exclude the tips user i received on day t because we cannot determine whether the reward was received before the new content was produced that day and, as a result, whether receiving the reward impacted user i ’s behavior. We include tips from up to three days prior to day t to account for potential lingering effects of receiving rewards as well as for the possibility that user i may not have seen the reward immediately.¹³ The rewards $Likes_{ijt}$, $Compensation_{ijt}$, and $Badges_{ijt}$ are defined similarly: $Likes_{ijt}$ is the number of likes, $Compensation_{ijt}$ is amount of compensation rewards, and $Badges_{ijt}$ is the number of badges user i received for UGC type j in the three days prior to day t . $Tips_{i,-jt}$ is the

¹³We test the robustness of our results regarding the three-day time window by re-estimating our models using one-day and six-day time windows. The results are robust and presented in Appendix C.

amount of tips (in GG) user i received from other users for UGC types *other than* j in the three days prior to t . $Likes_{i,-jt}$, $Compensation_{i,-jt}$, and $Badges_{i,-jt}$ are the number of likes, the amount of compensation rewards, and the number of badges user i received for UGC types other than j in the three days prior to day t .

C_{ijt} contains other variables whose effects we control for. First, to control for unobserved factors that may prevent a user from contributing to a specific type of UGC until day t , e.g., inexperience, we include a dummy variable that indicates if user i has ever produced any content of type j before day t . Second, if a user has produced UGC of type j in the past, we control for the number of days since the last post of type j to account for users engaging in conversations lasting several days. Third, we control for the cumulative number of posts of type j user i has published before day t . For the quality regressions only, we also include three dummy variables that indicate whether user i published a post on day t . Note that we estimate UGC-type specific coefficients for all control variables.

B_{ijt} contains the variables that capture the progress of user i towards the next badge on day t in terms of the remaining number of posts needed to reach the next milestone and the square of this variable. Note that we estimate separate coefficients for each badge. Post fixed effects $\lambda_{p_{ij}}$ address the concern that a user can only receive a reward if she previously published a post as discussed in the previous section as well as the unobserved quality of the rewarded post. α_{it} are user-day fixed effects. They serve several purposes: they address the endogeneity concern related to the timing of rewards discussed in the previous section, and they capture the inherently heterogeneous tendency of users to create UGC as well as any day-specific unobserved heterogeneity related to users. Incorporating user-day fixed effects also allows us to control for incidences when a user did not visit the platform and, as a result, did not post anything. And lastly, ϵ_{ijt} is the error term and is assumed to follow a normal distribution.

5 Results

Next, we present our results and discuss the implications. Note that we estimate the effects of the four reward types on each type of UGC using interaction terms in our regression model. However, for easier interpretation and comparison, we show the calculated main effects here and report the original interaction effect estimates in Appendix B.

5.1 Main Effects

The results for UGC quantity are presented in column (i) in Table 6. Recall that we use a log-log linear regression model. Thus, the estimated coefficients can be interpreted as elasticities. For all three types of UGC and all four types of rewards, the effects of a reward received for the *focal* UGC type and the same reward received for *other* UGC types are directionally consistent and significant. For example, the effects of tips for reviews (0.0486) and tips for other types of UGC (0.0459) on the quantity of reviews a user writes are both positive.

We observe several interesting results for peer rewards. First, both monetary and non-monetary peer rewards have significant positive effects on the quantity of UGC the user creates for all three types of UGC. To put it differently, peer rewards of any kind make a user write more UGC. Second, the effects of tips received for the focal UGC type are larger than the effects of tips received for other UGC types. However, the pattern holds for likes received for replies, but not threads or reviews. Third, across the three types of UGC, both tips and likes have the largest effects on the quantity of replies a user writes. The effects of tips and likes on the quantity of threads and reviews are smaller and of similar magnitudes.

Next, we discuss the effects of the platform rewards. Recall that a user can only receive them for threads and reviews, but not for replies. For all three types of UGC, receiving a reward from the platform, either monetary (compensation) or non-monetary (badge), for the focal or another type of UGC *decreases* the quantity of UGC the user creates. The negative

Table 6: Results for UGC Quantity and Timeliness

	(i) Quantity	(ii) Timeliness
Threads		
<i>Users</i>		
Tips Received for Threads	0.0622*** (0.0009)	0.2365*** (0.0026)
Tips Received for Other UGC	0.0606*** (0.0009)	0.2540*** (0.0026)
Likes Received for Threads	0.0392*** (0.0002)	0.0346*** (0.0006)
Likes Received for Other UGC	0.0831*** (0.0002)	0.0234*** (0.0006)
<i>Platform</i>		
Compensation Received for Threads	-0.0145*** (0.0026)	-0.1245*** (0.0079)
Compensation Received for Other UGC	-0.0370*** (0.0006)	-0.0379*** (0.0017)
Badge Received for Threads	-0.0951*** (0.0007)	-0.1176*** (0.0022)
Badge Received for Other UGC	-0.0118*** (0.0001)	-0.0468*** (0.0004)
Reviews		
<i>Users</i>		
Tips Received for Reviews	0.0690*** (0.0013)	0.1687*** (0.0037)
Tips Received for Other UGC	0.0587*** (0.0009)	0.2527*** (0.0026)
Likes Received for Reviews	0.0619*** (0.0005)	0.1427*** (0.0016)
Likes Received for Other UGC	0.0719*** (0.0002)	0.0167*** (0.0006)
<i>Platform</i>		
Compensation Received for Reviews	-0.0386*** (0.0037)	-0.3220*** (0.0114)
Compensation Received for Other UGC	-0.0705*** (0.0008)	-0.0767*** (0.0024)
Badge Received for Reviews	-0.0245*** (0.0042)	-0.0834*** (0.0125)
Badge Received for Other UGC	-0.0123*** (0.0001)	-0.0512*** (0.0005)
Replies		
<i>Users</i>		
Tips Received for Replies	0.1073*** (0.0010)	0.3404*** (0.0029)
Tips Received for Other UGC	0.0733*** (0.0009)	0.2891*** (0.0026)
Likes Received for Replies	0.1983*** (0.0003)	0.2219*** (0.0008)
Likes Received for Other UGC	0.0969*** (0.0002)	0.0268*** (0.0007)
Controls	Yes	Yes
Individual-Day Fixed Effects	Yes	Yes
Post Fixed Effects	Yes	Yes
Number of Observations	128,458,902	128,458,902
R ²	0.13	0.20

Standard errors in parentheses.

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

effects of compensation from the platform are larger (in absolute terms) for reviews than threads. Furthermore, contrary to the pattern for tips, the effects of compensation received for the focal UGC type are smaller than the effects of compensation received for other UGC types.

Receiving a badge also has immediate significant negative effects on the creation of thread posts and reviews. In other words, in the three days after receiving a badge for having written a certain number of thread posts or reviews, the user is *less* likely to write another thread post or review. Such behavior has been documented in the hierarchical incentives literature in the context of content generation (e.g., Goes, Guo, and Lin 2016) and salesforce (e.g., Lal and Srinivasan 1993; Oyer 1998). However, the effects of badges are more complex. Receiving a badge leads to an immediate decrease in the quantity of content the user creates, and the user becomes *more* likely to produce more content as the amount of content the user has created gets close to the next milestone. Our result suggests that a user starts producing more content when 6% and 14% of the required number of posts to reach the next badge milestone for threads and reviews, respectively, is left. This finding is in line with previous results related to sales force effort before and after reaching a quota. The significant positive coefficient of the squared term for the progress towards the next badge (in terms of percentage) suggests this pattern as well.

To summarize, any reward from peers, either monetary or non-monetary, for any type of UGC, leads to an immediate increase in content production. In contrast, receiving a reward from the platform leads to an immediate decrease in the quantities of both threads and reviews. However, the overall effects of badges follow a U-shaped pattern: after the immediate decrease in the quantity of produced content following the receipt of a badge, the amount of content a user produces gradually increases after a while.

The results for UGC timeliness are displayed in column (ii) in Table 6. Remember that, for threads, timeliness is the difference between the date of the last post that was written before the focal post in the same subcategory, and date of the focal post; for reviews, it is

the number of days between a review and the release date of the corresponding board game; for replies, it is the difference between the date of the reply and the date of the initial thread post. Given the operationalization of the timeliness variable, a negative coefficient estimate means that the time difference is smaller, i.e., that the reward increases the timeliness or speed of UGC production. For all three types of UGC, the effects of both tips and likes for the focal UGC type and other UGC types are positive, i.e., any reward from peers lead to users writing reviews for older games, users taking more time to initiate a new thread or to respond to an existing thread.

Next, we discuss the effects of platform rewards. The effects of platform rewards received for any UGC type, either focal or other types of UGC are negative and significant. In other words, any compensation from the platform leads to quicker reviews of new games and decreases the time until the next thread post.

The results for UGC quality are displayed in Table 7. For all three types of UGC and all four types of rewards, the effects of a reward received for the focal UGC type and the same type of reward received for other UGC types are directionally consistent and significant. For example, the effects of tips for threads (0.0245) and tips for other types of UGC (0.0079) on text length of reviews are both positive.

We observe several interesting results for peer rewards. First, receiving both tips and likes has a significant positive effect on all four quality dimensions of a post. In other words, any reward from peers leads to longer, politer, more complex, but more informative posts. Second, the effects of tips received for the *focal* UGC type are larger than the effects of tips received for *other* UGC types. For likes, the pattern also holds for replies, but not for threads and reviews. Second, across the three types of UGC, both tips and likes have the largest effects on the quality of replies.¹⁴ The effects of tips and likes on the quality of threads and reviews are smaller.

Next, we discuss the effects of the platform rewards. Recall that a user can only receive

¹⁴The only exception is the effect of tips received for reviews on UGC length being greater than the effect of tips received for replies.

Table 7: Results for UGC Quality

	(i) Length	(ii) Complexity	(iii) Informativeness	(iv) Politeness
Threads				
<i>Users</i>				
Tips Received for Threads	0.0099*** (0.0005)	0.0587*** (0.0020)	0.0384*** (0.0013)	0.0660*** (0.0022)
Tips Received for Other UGC	0.0086*** (0.0005)	0.0409*** (0.0020)	0.0265*** (0.0013)	0.0465*** (0.0022)
Likes Received for Threads	0.0005*** (0.0001)	0.0239*** (0.0004)	0.0161*** (0.0003)	0.0264*** (0.0005)
Likes Received for Other UGC	0.0270*** (0.0001)	0.0934*** (0.0005)	0.0620*** (0.0003)	0.1039*** (0.0005)
<i>Platform</i>				
Compensation Received for Threads	-0.0112*** (0.0015)	-0.0035 (0.0060)	-0.0036 (0.0040)	-0.0038 (0.0066)
Compensation Received for Other UGC	-0.0115*** (0.0003)	-0.0496*** (0.0013)	-0.0331*** (0.0009)	-0.0550*** (0.0015)
Badge Received for Threads	-0.0262*** (0.0004)	-0.1202*** (0.0017)	-0.0795*** (0.0011)	-0.1329*** (0.0018)
Badge Received for Other UGC	-0.0035*** (0.0001)	-0.0175*** (0.0003)	-0.0112*** (0.0002)	-0.0195*** (0.0003)
Reviews				
<i>Users</i>				
Tips Received for Reviews	0.0245*** (0.0007)	0.0679*** (0.0028)	0.0447*** (0.0019)	0.0771*** (0.0032)
Tips Received for Other UGC	0.0079*** (0.0005)	0.0386*** (0.0020)	0.0249*** (0.0013)	0.0439*** (0.0022)
Likes Received for Reviews	0.0046*** (0.0003)	0.0743*** (0.0012)	0.0492*** (0.0008)	0.0818*** (0.0013)
Likes Received for Other UGC	0.0229*** (0.0001)	0.0781*** (0.0005)	0.0518*** (0.0003)	0.0869*** (0.0005)
<i>Platform</i>				
Compensation Received for Reviews	0.0317*** (0.0022)	-0.0374*** (0.0086)	-0.0244*** (0.0057)	-0.0395*** (0.0095)
Compensation Received for Other UGC	-0.0209*** (0.0004)	-0.0914*** (0.0018)	-0.0607*** (0.0013)	-0.1012*** (0.0021)
Badge Received for Reviews	-0.0045 (0.0024)	-0.0303*** (0.0095)	-0.0188** (0.0063)	-0.0327*** (0.0105)
Badge Received for Other UGC	-0.0033*** (0.0001)	-0.0176*** (0.0004)	-0.0111*** (0.0003)	-0.0196*** (0.0004)
Replies				
<i>Users</i>				
Tips Received for Replies	0.0182*** (0.0006)	0.0815*** (0.0022)	0.0530*** (0.0015)	0.0914*** (0.0025)
Tips Received for Other UGC	0.0145*** (0.0005)	0.0678*** (0.0020)	0.0446*** (0.0013)	0.0766*** (0.0022)
Likes Received for Replies	0.0604*** (0.0001)	0.2466*** (0.0006)	0.1631*** (0.0004)	0.2736*** (0.0006)
Likes Received for Other UGC	0.0361*** (0.0001)	0.1346*** (0.0005)	0.0897*** (0.0003)	0.1498*** (0.0005)
Controls	Yes	Yes	Yes	Yes
Individual-Day Fixed Effects	Yes	Yes	Yes	Yes
Post Fixed Effects	Yes	Yes	Yes	Yes
Number of Observations	128,458,902	128,458,902	128,458,902	128,458,902
R ²	0.52	0.48	0.46	0.47

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, * $p < 0.01$, *** $p < 0.001$

them for threads and reviews, but not for replies. For all three types of UGC, receiving a reward from the platform, either monetary (compensation) or non-monetary (badge), for the focal or another type of UGC has a negative effect (when significant) on the four dimensions of quality of UGC the user creates. Any reward from the platform leads to shorter, simpler, and more casual posts. The only exception is the significant positive effect of receiving compensation for reviews on the length of future reviews. Furthermore, the effect is larger (in absolute values) for reviews. In addition, aside from the effect of compensation on length of reviews, the effects of compensation received for focal UGC are smaller than the effect of receiving compensation for other types of UGC. This pattern is the opposite for receiving badges. We also find a similar U-shape pattern for the impact of receiving a badge on quality dimensions. The posts start to get shorter and simpler when 16% and 14% of posts needed for the next badge for threads and reviews are left, respectively.

To summarize, our results show that receiving any rewards from peers lead to longer, politier, more complicated and more informative posts. However, a reward from the platform has the opposite effect

5.2 Effect Magnitudes

Here, we discuss the effect magnitudes. Note that, because we use a log-log regression specification, the estimated coefficients equal elasticities and can be directly used to compare effect magnitudes. To compare the effect of receiving a badge, we consider both the main effect and effect of the distance to the next badge right after receiving a badge for each badge milestone. We then use the weighted average across different milestones.

Table 8 shows the effect size for receiving a reward for any type of UGC on quantity and timeliness of the three UGC types. There are several takeaways from the table. First, receiving any reward from peers, i.e., tips or likes, has a larger effect on UGC quantity than receiving rewards from platform (in absolute terms). Receiving monetary rewards has more impact on timeliness than receiving non-monetary reward from the same source, with

monetary rewards from peers showing the largest effect.

Table 8: Results for UGC Quantity and Timeliness (Total Effects)

	(i) Quantity	(ii) Timeliness
Threads		
<i>Users</i>		
Tips	0.1228*** (0.0013)	0.4905*** (0.0037)
Likes	0.1223*** (0.0003)	0.0580*** (0.0008)
<i>Platform</i>		
Compensation	-0.0515*** (0.0027)	-0.1624*** (0.0081)
Badge	-0.0557*** (0.0100)	-0.1391*** (0.0300)
Reviews		
<i>Users</i>		
Tips	0.1277*** (0.0016)	0.4214*** (0.0045)
Likes	0.1338*** (0.0005)	0.1594*** (0.0017)
<i>Platform</i>		
Compensation	-0.1091*** (0.0038)	-0.3987*** (0.0116)
Badge	-0.0061*** (0.0006)	-0.0272*** (0.0016)
Replies		
<i>Users</i>		
Tips	0.1806*** (0.0013)	0.6295*** (0.0039)
Likes	0.2952*** (0.0004)	0.2487*** (0.0011)
Controls	Yes	Yes
[0.5em] Individual-Day Fixed Effects	Yes	Yes
Post Fixed Effects	Yes	Yes
Number of Observations	128,458,902	128,458,902
R ²	0.13	0.20

Standard errors in parentheses.

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The effects of receiving a rewards for any UGC type on quality measures are summarized in Table 9. We observe a few noteworthy patterns. Quality of threads and replies is more affected by non-monetary rewards than monetary rewards from the same source. In addition, monetary reward from users have the larger impact on threads but smaller impact on reviews,

than monetary rewards from platform. Similarly, non-monetary rewards from the platform are more effective in impacting thread posts than monetary rewards from the platform, but less effective in impacting reviews.

Table 9: Results for UGC Quality (Total Effects)

	(i) Length	(ii) Complexity	(iii) Informativeness	(iv) Politeness
Threads				
<i>Users</i>				
Tips	0.0185*** (0.0007)	0.0996*** (0.0028)	0.0649*** (0.0018)	0.1125*** (0.0031)
Likes	0.0275*** (0.0001)	0.1173*** (0.0006)	0.0781*** (0.0004)	0.1303*** (0.0007)
<i>Platform</i>				
Compensation	-0.0227*** (0.0015)	-0.0531*** (0.0061)	-0.0367*** (0.0041)	-0.0588*** (0.0068)
Badge	-0.0456*** (0.0057)	-0.0861*** (0.0226)	-0.0768*** (0.0151)	-0.0693** (0.0251)
Reviews				
<i>Users</i>				
Tips	0.0324*** (0.0009)	0.1065*** (0.0034)	0.0696*** (0.0023)	0.1210*** (0.0039)
Likes	0.0275*** (0.0003)	0.1524*** (0.0013)	0.1010*** (0.0009)	0.1687*** (0.0014)
<i>Platform</i>				
Compensation	0.0108*** (0.0022)	-0.1288*** (0.0088)	-0.0851*** (0.0058)	-0.1407*** (0.0097)
Badge	0.0119*** (0.0003)	0.0145*** (0.0012)	0.0164*** (0.00085)	-0.008*** (0.0014)
Replies				
<i>Users</i>				
Tips	0.0327*** (0.0008)	0.1493*** (0.0030)	0.0976*** (0.0020)	0.1680*** (0.0033)
Likes	0.0965*** (0.0001)	0.3812*** (0.0008)	0.2528*** (0.0005)	0.4234*** (0.0008)
Controls	Yes	Yes	Yes	Yes
[0.5em] Individual-Day Fixed Effects	Yes	Yes	Yes	Yes
Post Fixed Effects	Yes	Yes	Yes	Yes
Number of Observations	128,458,902	128,458,902	128,458,902	128,458,902
R ²	0.52	0.48	0.46	0.47

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, * $p < 0.01$, *** $p < 0.001$

To further quantify the effect of each reward received for any UGC type, we calculate the impact of receiving additional tip of 1 GG, one more like, or compensation with 1 GG

in value. For a user with an average content generation behavior, producing average quality content, we predict how receiving more than average reward changes the amount and quality of UGC. For this purpose, we once predict the user’s content generation behavior for each UGC type after receiving an average amount of reward and once after receiving the average reward plus the additional amount. We consider different scenarios where the additional reward is in form of tip, like, or GG, and the reward is received for a thread post, review, or reply and calculate the average change in each UGC type after receiving more reward for one of the three UGC types.

For quantity of content, we consider an average user that produces 3.1 thread posts, 0.1 reviews, and 46.1 replies in a year, receiving a tip of 1 GG in addition to the average amount of tip received in first day of posting a,¹⁵ leads to 6 more thread posts and 11 more replies to other users’ posts in a year. 1 Additional like to the average number of likes received for posts in the first day¹⁶ results in 12 more replies, but no additional threads or reviews.

For changes in quality of posts, we consider how receiving an additional reward impacts the next post the user writes. On average, users write thread posts with length of 7 sentences and 189 words, reviews with 49 sentences and 1,421 words, and replies with 3 sentences and 65 words. An average thread posts has 16 informative pieces and 7 more polite words than impolite words. An average review has 132 informative parts and 64 more polite words. Finally, an average reply has 6 informative parts and 3 more polite words. To put it differently, each thread post contains 86 informative parts and 36 more polite words (compared to impolite words) in every 1000 words. These numbers are 93 and 45 for both reviews and replies.

The qualitative change in thread posts as a result of receiving 1 more GG in tip translates to 9 more words with the writing becoming more complicated such that it requires an additional 2 months of education for understanding. The change in replies is larger, 1 more

¹⁵The average amount of tip received in first day is 2.98 GG for thread posts, 1.19 GG for reviews, and 3.85 for replies.

¹⁶The average number of likes received for posts in the first day is 2.37 likes for thread posts, 4.12 likes for reviews, and 2.58 for replies.

sentences and 25 more words, and needing 3 months additional education. In terms the post content, in every 1000 words, 5 more informative pieces are included in threads and 8 in replies, with 1 more polite words used in each. Additional tip to reviews mainly impacted the content such that 6 more informative parts and 1 more polite word were added to the review.

The additional like made the thread posts longer by 11 words or 1 sentence, and replies by 42 words or 2 sentences. The writing in both threads and replies becomes slightly more complex, requiring 3 more months of education for understanding. In every 1000 words, all three UGC types had 1 more polite word, threads and replies had 8 more informative parts while reviews had 4.

Receiving 1 additional GG as compensation. leads to shorter thread posts with 13 fewer words and 1 fewer sentence. The amount of information in threads also decreased by 4 informative statements in every 1000 words. On the other hand, reviews remain similar in length, but became simpler requiring 3 fewer months of education, had 1 fewer polite word and 8 fewer informative pieces in every 1000 words.

6 Robustness Checks

We evaluate the robustness of our results by re-estimating our model with a 1-day and 6-day time window. Recall that we use a 3-day time window in our main specification. The results are presented in Appendix C and are qualitatively robust.

Next, we evaluate the robustness of our results by re-estimating our model with the number of tips and GG rewards a user receives in a day. Recall that we use the amount (in GG) of tips and GG rewards the user receives in a day in our main specification. The results are displayed in Appendix C and are qualitatively robust.

We further test the robustness of our results using less granular individual-week fixed effects. In our main model model we use individual-day fixed effects. The results are presented

in Appendix C. and are qualitatively robust.

7 Conclusion

How to encourage more high-quality UGC production is a crucial question for the survival and success of many social media platforms. In this paper, we shed light on the effectiveness of four types of rewards in increasing the quantity of UGC and its quality. Our results show that any reward from other users leads to more frequent, longer and richer content while rewards from the platform have the opposite effect. Furthermore, non-monetary rewards from the platform that use goal milestones, such as badges, speed up UGC production when a user is close to reaching the next badge, but lead to a decrease in UGC production after the milestone has been reached.

Our research is not without limitations. First, we focus on UGC in text form and do not examine other forms of UGC, e.g., videos. This limitation is driven by BGG not using visual content. It is left for future research to examine whether our findings carry over for other forms of UGC. Second, we measure short-term effects of rewards, i.e., how receiving a reward affects user behavior in the following three days. While we test the robustness of our results with a longer time window of six days and find that the effects of rewards decrease, we leave studying longer-term effects for future research. Third, we measure twelve dimensions of text quality and use them to construct four variables representing four dimensions of quality. However, there are other text aspects that can also reflect quality, for example, relevance of the images and links used in the text. Future research can further examine the impact of rewards on this aspect of content quality.

Forth, we do not examine the effects of rewards from the platform for replies. This is because the platform does not provide any monetary or non-monetary rewards for replies. As a result, we are unable to analyze the potential impact of such rewards on the quantity and quality of replies. It would be interesting for future research to explore the effects of

rewards from the platform on replies, and to compare these effects to those of peer rewards. And lastly, the quantity and quality of the content on the platform can also impact the platform's appeal to new visitors and their inclination towards becoming a member. We do not model platform growth. We leave it for future research to study how different types of incentives impact member acquisition and characteristics of these new members.

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Appendix A: Data Details

A.1 Badges

Users receive badges for initiating a certain number of threads on the discussion forum and for writing a certain number of reviews. Each type of content has its own chain of milestones and badges. A list of these badges and their corresponding thresholds is shown in Figure A-1.

Figure A-1: Badge Levels for Different UGC Types



























- **Poster Level Badges (for each domain: BGG, RPGG, VGG)**
 -  - Level 01 BGG Poster (100-249 posts)
 -  - Level 02 BGG Poster (250-499 posts)
 -  - Level 03 BGG Poster (500-749 posts)
 -  - Level 04 BGG Poster (750-999 posts)
 -  - Level 05 BGG Poster (1000-1499 posts)
 -  - Level 06 BGG Poster (1500-1999 posts)
 -  - Level 07 BGG Poster (2000-2499 posts)
 -  - Level 08 BGG Poster (2500-2999 posts)
 -  - Level 09 BGG Poster (3000-3499 posts)
 -  - Level 10 BGG Poster (3500-3999 posts)
 -  - Level 11 BGG Poster (4000-4499 posts)
 -  - Level 12 BGG Poster (4500-4999 posts)
 -  - Level 13 BGG Poster (5000-5499 posts)
 -  - Level 14 BGG Poster (5500-5999 posts)
 -  - Level 15 BGG Poster (6000-6499 posts)
 -  - Level 16 BGG Poster (6500-6999 posts)
 -  - Level 17 BGG Poster (7000-7999 posts)
 -  - Level 18 BGG Poster (8000-8999 posts)
 -  - Level 19 BGG Poster (9000-9999 posts)
 -  - Level 20 BGG Poster (10000+ posts)
- **Game Reviews**
 -  Copper - 5 Reviews
 -  Silver - 50 Reviews
 -  Gold - 100 Reviews
 -  Platinum - 250 Reviews
 -  Herculean - 500 Reviews
 -  Ultimate - 1000 Reviews

Table A-1 shows summary statistics for the number of earned badges by the users in our sample within a year. BGG, on average, awarded 76 badges for writing reviews and 2,666 badges for writing threads to the 16,801 users.

Table A-1: Number of Badges Earned by Users in Our Sample Within a Year

	Mean	SD	Min	Median	Max	N
Threads	2,666.33	1,150.46	1,659.00	2,455.00	5,647.00	9
Reviews	76.40	12.66	58.00	75.00	97.00	10

A.2 Likes

Table A-2 shows the average number of likes users receive per post for each UGC type. Users, on average, receive about four likes for each reply or thread and 11 likes for writing reviews.

Table A-2: Number of Likes Received Per Post

	Mean	SD	Min	Median	Max	N
Threads	4.16	8.53	1.00	2.00	876	206,108
Reviews	11.72	15.79	1.00	7.00	339	8,019
Replies	3.80	5.85	1.00	2.00	406	3,408,180

A.3 GG from Users and BGG

Table A-3 reports the GG received per post as tips from peers and from the platform. Users, on average, receive two tips for each review. On average, users receive 4.74 GG for threads, 2.89 GG for reviews, and 2.07 GG for replies. On average, users receive tips twice with a total of 4.74 GG for writing threads. Users, on average, receive one tip of one GG per year. Additionally, users, on average, earn 2.5 GG for threads and 2.2 GG for reviews. Note that users do not receive GG from BGG for writing replies.

0.00⁺

Table A-3: Compensation and Tip Received Per Post

	Mean	SD	Min	Median	Max	N
Tips Per Post						
<i>Threads</i>						
Quantity	2.36	3.86	1.00	1.00	121.00	26,402
Amount	5.94	43.59	0.00 ⁺	1.00	2,536.38	26,402
<i>Reviews</i>						
Quantity	3.00	3.94	1.00	2.00	78.00	6,448
Amount	3.42	7.98	0.01	1.05	152.08	6,448
<i>Replies</i>						
Quantity	1.37	1.15	1.00	1.00	57.00	278,382
Amount	2.55	53.54	0.00 ⁺	0.25	4,970	278,382
GG from BGG Per Post						
<i>Threads</i>						
Amount	2.21	0.66	1.00	2.09	5.00	732
<i>Reviews</i>						
Amount	2.21	0.70	1.00	2.10	5.00	15,790

Note: 0.00⁺ is a very small number greater than 0.

A.4 Construction of Quality Measures

Table A-4 provides an overview of the text quality measures and the formulas used to construct them.

Table A-4: Text Quality Measures and Their Definitions

Quality Dimension	Quality Sub Type	Formula
Length	Number of Words	
	Number of Sentences	
	Reading Time	14.69 ms Per Character
Complexity	Gunnig Fox Index	$0.4 \left[\left(\frac{\text{Words}}{\text{Sentences}} \right) + 100 \left(\frac{\text{Complex Words}}{\text{Total Words}} \right) \right]$
	FREI	$206.835 - 1.015 \left(\frac{\text{Total Words}}{\text{Total Sentences}} \right) + 84.6 \left(\frac{\text{Total Syllables}}{\text{Total Words}} \right)$
	Number of Words In Sentence	
Informativeness	Facts Per Length of Text in Words	
Politeness		$\frac{\text{Positive Words} - \text{Negative Words}}{\text{Total Words}}$

Appendix B: Results with Interaction Effects

Table B-1: Estimation Results for UGC Quantity and Timeliness with Interaction Effects

	(i) Quantity	(ii) Timeliness
Reviews	0.0037*** (0.0001)	0.0049*** (0.0004)
Replies	0.0313*** (0.0001)	0.0520*** (0.0003)
Tips	0.0622*** (0.0009)	0.2365*** (0.0026)
Reviews \times Tips	0.0068*** (0.0009)	-0.0678*** (0.0027)
Replies \times Tips	0.0451*** (0.0004)	0.1039*** (0.0013)
Likes	0.0392*** (0.0002)	0.0346*** (0.0006)
Reviews \times Likes	0.0227*** (0.0005)	0.1081*** (0.0015)
Replies \times Likes	0.1591*** (0.0002)	0.1873*** (0.0005)
Compensation	-0.0145*** (0.0026)	-0.1245*** (0.0079)
Reviews \times Compensation	-0.0241*** (0.0027)	-0.1975*** (0.0082)
Badge	-0.0951*** (0.0007)	-0.1176*** (0.0022)
Reviews \times Badge	0.0706*** (0.0041)	0.0342** (0.0123)
Received Tips for Other UGC Than Threads	0.0606*** (0.0009)	0.2540*** (0.0026)
Received Tips for Other UGC Than Reviews	-0.0019*** (0.0001)	-0.0013*** (0.0003)
Received Tips for Other UGC Than Replies	0.0127*** (0.0001)	0.0351*** (0.0003)
Received Likes for Other UGC Than Threads	0.0831*** (0.0002)	0.0234*** (0.0006)
Received Likes for Other UGC Than Reviews	-0.0112*** (0.0000)	-0.0067*** (0.0001)
Received Likes for Other UGC Than Replies	0.0138*** (0.0001)	0.0034*** (0.0003)
Received Compensation for Other UGC Than Threads	-0.0370*** (0.0006)	-0.0379*** (0.0017)
Received Compensation for Other UGC Than Reviews	-0.0335*** (0.0006)	-0.0388*** (0.0017)
Received Badge for Other UGC Than Threads	-0.0118*** (0.0001)	-0.0468*** (0.0004)
Received Badge for Other UGC Than Reviews	-0.0005*** (0.0001)	-0.0044*** (0.0003)

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table B-2: Estimation Results for UGC Quantity and Timeliness with Interaction Effects (Cont. 1)

	(i) Quantity	(ii) Timeliness
Same Thread Activity Dummy	-0.0020*** (0.0001)	-0.0035*** (0.0003)
Same Review Activity Dummy	0.0134*** (0.0002)	0.0251*** (0.0005)
Same Reply Activity Dummy	-0.0351*** (0.0001)	-0.0563*** (0.0004)
Days Since Last Thread Posted	-0.0021*** (0.0000)	-0.0024*** (0.0000)
Days Since Last Review Posted	-0.0002*** (0.0000)	0.0000 (0.0001)
Days Since Last Reply Posted	-0.0045*** (0.0000)	-0.0074*** (0.0000)
Number of Written Threads so Far	0.0056*** (0.0000)	0.0107*** (0.0001)
Number of Written Reviews so Far	-0.0065*** (0.0001)	-0.0029*** (0.0003)
Number of Written Replies so Far	0.0063*** (0.0000)	0.0103*** (0.0001)
If Posted Threads Dummy		1.1251*** (0.0008)
If Posted Reviews Dummy		5.0352*** (0.0044)
If Posted Replies Dummy		1.6629*** (0.0004)
Region 1 \times Posts To Next Thread Badge	-0.0048*** (0.0002)	0.0030*** (0.0005)
Region 1 \times Posts To Next Thread Badge Squared	0.0008*** (0.0000)	-0.0010*** (0.0001)
Region 2 \times Posts To Next Thread Badge	-0.0009*** (0.0002)	0.0056*** (0.0007)
Region 2 \times Posts To Next Thread Badge Squared	-0.0001*** (0.0000)	-0.0011*** (0.0001)
Region 3 \times Posts To Next Thread Badge	0.0034*** (0.0005)	-0.0035** (0.0014)
Region 3 \times Posts To Next Thread Badge Squared	-0.0008*** (0.0001)	0.0007** (0.0003)
Region 4 \times Posts To Next Thread Badge	0.0234*** (0.0010)	0.0293*** (0.0029)
Region 4 \times Posts To Next Thread Badge Squared	-0.0045*** (0.0002)	-0.0061*** (0.0006)
Region 5 \times Posts To Next Thread Badge	-0.0179*** (0.0023)	-0.0470*** (0.0069)
Region 5 \times Posts To Next Thread Badge Squared	0.0043*** (0.0005)	0.0100*** (0.0014)

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table B-3: Estimation Results for UGC Quantity and Timeliness with Interaction Effects (Cont. 2)

	(i) Quantity	(ii) Timeliness
Region 6 × Posts To Next Thread Badge	0.0134*** (0.0018)	0.0083 (0.0054)
Region 6 × Posts To Next Thread Badge Squared	-0.0016*** (0.0003)	-0.0004 (0.0010)
Region 7 × Posts To Next Thread Badge	-0.1750*** (0.0369)	0.1340 (0.1104)
Region 7 × Posts To Next Thread Badge Squared	0.0300*** (0.0062)	-0.0217 (0.0186)
Region 9 × Posts To Next Thread Badge	0.0068* (0.0033)	-0.0323*** (0.0100)
Region 9 × Posts To Next Thread Badge Squared	0.0003 (0.0007)	0.0059** (0.0022)
Region 10 × Posts To Next Thread Badge	-0.1186*** (0.0242)	-0.0706 (0.0724)
Region 1 × Posts To Next Review Badge	-0.0160*** (0.0004)	-0.0211*** (0.0012)
Region 1 × Posts To Next Review Badge Squared	0.0066*** (0.0003)	0.0062*** (0.0008)
Region 2 × Posts To Next Review Badge	0.0102*** (0.0005)	0.0011 (0.0014)
Region 2 × Posts To Next Review Badge Squared	-0.0032*** (0.0001)	-0.0012*** (0.0004)
Region 3 × Posts To Next Review Badge	0.0203*** (0.0011)	-0.0354*** (0.0033)
Region 3 × Posts To Next Review Badge Squared	-0.0050*** (0.0003)	0.0077*** (0.0009)
Region 4 × Posts To Next Review Badge	0.0253*** (0.0013)	-0.0512*** (0.0039)
Region 4 × Posts To Next Review Badge Squared	-0.0048*** (0.0003)	0.0116*** (0.0008)
Region 5 × Posts To Next Review Badge	-0.0095** (0.0035)	-0.0850*** (0.0105)
Region 5 × Posts To Next Review Badge Squared	0.0031*** (0.0007)	0.0144*** (0.0020)
Region 6 × Posts To Next Review Badge	1.0111*** (0.2738)	2.9336*** (0.8205)
Region 6 × Posts To Next Review Badge Squared	-0.1658*** (0.0444)	-0.4848*** (0.1332)
Constant	-0.0001*** (0.0000)	0.0000*** (0.0000)
Individual-Day Fixed Effects	Yes	Yes
Post Fixed Effects	Yes	Yes
Number of Observations	128,458,902	128,458,902
R ²	0.13	0.20

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table B-4: Estimation Results for UGC Quality with Interaction Effects

	(i) Length	(ii) Complexity	(iii) Informativeness	(iv) Politeness
Reviews	0.0025*** (0.0001)	0.0106*** (0.0003)	0.0072*** (0.0002)	0.0118*** (0.0004)
Replies	0.0144*** (0.0001)	0.0618*** (0.0002)	0.0411*** (0.0001)	0.0685*** (0.0002)
Tips	0.0099*** (0.0005)	0.0587*** (0.0020)	0.0384*** (0.0013)	0.0660*** (0.0022)
Reviews × Tips	0.0146*** (0.0005)	0.0092*** (0.0020)	0.0063*** (0.0014)	0.0111*** (0.0023)
Replies × Tips	0.0083*** (0.0003)	0.0228*** (0.0010)	0.0146*** (0.0007)	0.0254*** (0.0011)
Likes	0.0005*** (0.0001)	0.0239*** (0.0004)	0.0161*** (0.0003)	0.0264*** (0.0005)
Reviews × Likes	0.0041*** (0.0003)	0.0504*** (0.0011)	0.0331*** (0.0007)	0.0554*** (0.0012)
Replies × Likes	0.0599*** (0.0001)	0.2227*** (0.0004)	0.1470*** (0.0003)	0.2472*** (0.0004)
Compensation	-0.0112*** (0.0015)	-0.0035 (0.0060)	-0.0036 (0.0040)	-0.0038 (0.0066)
Reviews × Compensation	0.0429*** (0.0016)	-0.0339*** (0.0062)	-0.0208*** (0.0041)	-0.0357*** (0.0068)
Badge	-0.0262*** (0.0004)	-0.1202*** (0.0017)	-0.0795*** (0.0011)	-0.1329*** (0.0018)
Reviews × Badge	0.0217*** (0.0024)	0.0899*** (0.0093)	0.0607*** (0.0062)	0.1002*** (0.0103)
Received Tips for Other UGC Than Threads	0.0086*** (0.0005)	0.0409*** (0.0020)	0.0265*** (0.0013)	0.0465*** (0.0022)
Received Tips for Other UGC Than Reviews	-0.0007*** (0.0001)	-0.0023*** (0.0002)	-0.0016*** (0.0001)	-0.0026*** (0.0002)
Received Tips for Other UGC Than Replies	0.0059*** (0.0001)	0.0269*** (0.0003)	0.0181*** (0.0002)	0.0301*** (0.0003)
Received Likes for Other UGC Than Threads	0.0270*** (0.0001)	0.0934*** (0.0005)	0.0620*** (0.0003)	0.1039*** (0.0005)
Received Likes for Other UGC Than Reviews	-0.0041*** (0.0000)	-0.0153*** (0.0001)	-0.0102*** (0.0001)	-0.0170*** (0.0001)
Received Likes for Other UGC Than Replies	0.0091*** (0.0001)	0.0412*** (0.0002)	0.0277*** (0.0001)	0.0459*** (0.0002)
Received Compensation for Other UGC Than Threads	-0.0115*** (0.0003)	-0.0496*** (0.0013)	-0.0331*** (0.0009)	-0.0550*** (0.0015)
Received Compensation for Other UGC Than Reviews	-0.0094*** (0.0003)	-0.0418*** (0.0013)	-0.0276*** (0.0009)	-0.0462*** (0.0014)
Received Badge for Other UGC Than Threads	-0.0035*** (0.0001)	-0.0175*** (0.0003)	-0.0112*** (0.0002)	-0.0195*** (0.0003)
Received Badge for Other UGC Than Reviews	0.0002* (0.0001)	-0.0001 (0.0003)	0.0001 (0.0002)	-0.0001 (0.0003)

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table B-5: Estimation Results for UGC Quality with Interaction Effects (Cont. 1)

	(i)	(ii)	(iii)	(iv)
	Length	Complexity	Informativeness	Politeness
Same Thread Activity Dummy	-0.0007*** (0.0001)	-0.0041*** (0.0002)	-0.0027*** (0.0002)	-0.0045*** (0.0003)
Same Review Activity Dummy	0.0038*** (0.0001)	0.0207*** (0.0004)	0.0134*** (0.0003)	0.0228*** (0.0005)
Same Reply Activity Dummy	-0.0137*** (0.0001)	-0.0629*** (0.0003)	-0.0416*** (0.0002)	-0.0697*** (0.0003)
Days Since Last Thread Posted	-0.0010*** (0.0000)	-0.0044*** (0.0000)	-0.0029*** (0.0000)	-0.0049*** (0.0000)
Days Since Last Review Posted	-0.0002*** (0.0000)	-0.0010*** (0.0000)	-0.0007*** (0.0000)	-0.0011*** (0.0000)
Days Since Last Reply Posted	-0.0021*** (0.0000)	-0.0089*** (0.0000)	-0.0059*** (0.0000)	-0.0099*** (0.0000)
Number of Written Threads so Far	0.0018*** (0.0000)	0.0093*** (0.0001)	0.0061*** (0.0001)	0.0103*** (0.0001)
Number of Written Reviews so Far	-0.0020*** (0.0001)	-0.0098*** (0.0003)	-0.0065*** (0.0002)	-0.0108*** (0.0003)
Number of Written Replies so Far	0.0030*** (0.0000)	0.0131*** (0.0001)	0.0087*** (0.0001)	0.0145*** (0.0001)
If Posted Threads Dummy	0.9450*** (0.0002)	2.6948*** (0.0006)	1.7445*** (0.0004)	2.9513*** (0.0007)
If Posted Reviews Dummy	2.1594*** (0.0008)	2.7639*** (0.0033)	1.8099*** (0.0022)	3.0889*** (0.0037)
If Posted Replies Dummy	0.6579*** (0.0001)	2.5088*** (0.0003)	1.6191*** (0.0002)	2.7629*** (0.0003)
Region 1 \times Posts To Next Thread Badge	-0.0027*** (0.0001)	-0.0127*** (0.0004)	-0.0088*** (0.0002)	-0.0141*** (0.0004)
Region 1 \times Posts To Next Thread Badge Squared	0.0005*** (0.0000)	0.0024*** (0.0001)	0.0016*** (0.0001)	0.0026*** (0.0001)
Region 2 \times Posts To Next Thread Badge	-0.0018*** (0.0001)	-0.0081*** (0.0005)	-0.0057*** (0.0004)	-0.0090*** (0.0006)
Region 2 \times Posts To Next Thread Badge Squared	0.0002*** (0.0000)	0.0009*** (0.0001)	0.0006*** (0.0001)	0.0009*** (0.0001)
Region 3 \times Posts To Next Thread Badge	-0.0012*** (0.0003)	-0.0039*** (0.0010)	-0.0034*** (0.0007)	-0.0042*** (0.0011)
Region 3 \times Posts To Next Thread Badge Squared	0.0001*** (0.0000)	0.0001 (0.0002)	0.0002* (0.0001)	0.0001 (0.0002)
Region 4 \times Posts To Next Thread Badge	0.0073*** (0.0006)	0.0256*** (0.0022)	0.0164*** (0.0015)	0.0283*** (0.0024)
Region 4 \times Posts To Next Thread Badge Squared	-0.0015*** (0.0001)	-0.0052*** (0.0004)	-0.0034*** (0.0003)	-0.0057*** (0.0005)
Region 5 \times Posts To Next Thread Badge	-0.0144*** (0.0013)	-0.0553*** (0.0052)	-0.0397*** (0.0035)	-0.0623*** (0.0058)
Region 5 \times Posts To Next Thread Badge Squared	0.0028*** (0.0003)	0.0109*** (0.0010)	0.0077*** (0.0007)	0.0123*** (0.0011)

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table B-6: Estimation Results for UGC Quality with Interaction Effects (Cont. 2)

	(i) Length	(ii) Complexity	(iii) Informativeness	(iv) Politeness
Region 6 × Posts To Next Thread Badge	0.0028** (0.0010)	0.0176*** (0.0041)	0.0120*** (0.0027)	0.0194*** (0.0046)
Region 6 × Posts To Next Thread Badge Squared	-0.0005** (0.0002)	-0.0028*** (0.0007)	-0.0020*** (0.0005)	-0.0031*** (0.0008)
Region 7 × Posts To Next Thread Badge	-0.0056 (0.0211)	-0.0665 (0.0834)	-0.0409 (0.0556)	-0.0735 (0.0926)
Region 7 × Posts To Next Thread Badge Squared	0.0010 (0.0035)	0.0117 (0.0140)	0.0072 (0.0093)	0.0129 (0.0155)
Region 9 × Posts To Next Thread Badge	0.0110*** (0.0019)	0.0126 (0.0075)	0.0078 (0.0050)	0.0144 (0.0084)
Region 9 × Posts To Next Thread Badge Squared	-0.0014*** (0.0004)	-0.0017 (0.0017)	-0.0011 (0.0011)	-0.0020 (0.0018)
Region 10 × Posts To Next Thread Badge	-0.0530*** (0.0138)	-0.2220*** (0.0547)	-0.1458*** (0.0364)	-0.2464*** (0.0607)
Region 1 × Posts To Next Review Badge	-0.0063*** (0.0002)	-0.0215*** (0.0009)	-0.0152*** (0.0006)	-0.0239*** (0.0010)
Region 1 × Posts To Next Review Badge Squared	0.0027*** (0.0001)	0.0080*** (0.0006)	0.0059*** (0.0004)	0.0089*** (0.0006)
Region 2 × Posts To Next Review Badge	0.0011*** (0.0003)	0.0057*** (0.0011)	0.0032*** (0.0007)	0.0063*** (0.0012)
Region 2 × Posts To Next Review Badge Squared	-0.0006*** (0.0001)	-0.0026*** (0.0003)	-0.0016*** (0.0002)	-0.0029*** (0.0003)
Region 3 × Posts To Next Review Badge	0.0036*** (0.0006)	0.0063** (0.0025)	0.0039** (0.0016)	0.0069** (0.0027)
Region 3 × Posts To Next Review Badge Squared	-0.0010*** (0.0002)	-0.0014* (0.0007)	-0.0010* (0.0005)	-0.0016* (0.0008)
Region 4 × Posts To Next Review Badge	0.0058*** (0.0007)	0.0313*** (0.0029)	0.0201*** (0.0020)	0.0345*** (0.0033)
Region 4 × Posts To Next Review Badge Squared	-0.0014*** (0.0002)	-0.0079*** (0.0006)	-0.0051*** (0.0004)	-0.0087*** (0.0007)
Region 5 × Posts To Next Review Badge	-0.0123*** (0.0020)	0.0113 (0.0079)	0.0049 (0.0053)	0.0115 (0.0088)
Region 5 × Posts To Next Review Badge Squared	0.0026*** (0.0004)	-0.0022 (0.0015)	-0.0010 (0.0010)	-0.0022 (0.0017)
Region 6 × Posts To Next Review Badge	0.3124* (0.1569)	1.5688** (0.6196)	0.9727** (0.4130)	1.6081** (0.6877)
Region 6 × Posts To Next Review Badge Squared	-0.0519* (0.0255)	-0.2563** (0.1005)	-0.1592** (0.0670)	-0.2629** (0.1116)
Constant	0.0000*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0002*** (0.0000)
Individual-Day Fixed Effects	Yes	Yes	Yes	Yes
Post Fixed Effects	Yes	Yes	Yes	Yes
Number of Observations	128,458,902	128,458,902	128,458,902	128,458,902
R ²	0.52	0.48	0.46	0.47

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix C: Robustness Checks

Table C-1: Results for UGC Quantity and Timeliness with 1-Day Time Window

	(i) Quantity	(ii) Timeliness
Reviews	0.0106*** (0.0001)	0.0103*** (0.0004)
Replies	0.0629*** (0.0001)	0.0846*** (0.0003)
Tips	-0.0113*** (0.0020)	0.2000*** (0.0061)
Reviews \times Tips	-0.0054*** (0.0016)	0.0037 (0.0048)
Replies \times Tips	0.0576*** (0.0008)	0.1547*** (0.0024)
Likes	0.0454*** (0.0004)	-0.0360*** (0.0012)
Reviews \times Likes	0.0000 (0.0010)	0.0183*** (0.0029)
Replies \times Likes	0.2898*** (0.0004)	0.4384*** (0.0011)
Compensation	0.0060 (0.0049)	-0.1851*** (0.0145)
Reviews \times Compensation	-0.0511*** (0.0050)	0.3705*** (0.0149)
Badge	-0.1614*** (0.0013)	-0.1905*** (0.0038)
Reviews \times Badge	0.0551*** (0.0072)	0.0996*** (0.0213)
Received Tips for Other UGC Than Threads	-0.0173*** (0.0021)	0.2157*** (0.0061)
Received Tips for Other UGC Than Reviews	-0.0028*** (0.0001)	0.0011** (0.0004)
Received Tips for Other UGC Than Replies	0.0231*** (0.0002)	0.0653*** (0.0005)
Received Likes for Other UGC Than Threads	0.0711*** (0.0004)	-0.0219*** (0.0013)
Received Likes for Other UGC Than Reviews	-0.0145*** (0.0001)	-0.0048*** (0.0002)
Received Likes for Other UGC Than Replies	0.0544*** (0.0001)	0.0298*** (0.0004)
Received Compensation for Other UGC Than Threads	-0.0228*** (0.0002)	-0.0926*** (0.0006)
Received Compensation for Other UGC Than Reviews	-0.0050*** (0.0002)	-0.0065*** (0.0006)
Received Badge for Other UGC Than Threads	-0.0696*** (0.0010)	-0.1049*** (0.0030)
Received Badge for Other UGC Than Reviews	-0.0465*** (0.0010)	-0.0367*** (0.0030)

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ 44

Table C-2: Results for UGC Quantity and Timeliness with 1-Day Time Window (Cont. 1)

	(i) Quantity	(ii) Timeliness
Same Thread Activity Dummy	-0.0046*** (0.0001)	-0.0067*** (0.0003)
Same Review Activity Dummy	0.0201*** (0.0002)	0.0346*** (0.0006)
Same Reply Activity Dummy	-0.0504*** (0.0001)	-0.0804*** (0.0004)
Days Since Last Thread Posted	-0.0023*** (0.0000)	-0.0030*** (0.0000)
Days Since Last Review Posted	-0.0010*** (0.0000)	-0.0005*** (0.0001)
Days Since Last Reply Posted	-0.0091*** (0.0000)	-0.0120*** (0.0000)
Number of Written Threads so Far	0.0077*** (0.0000)	0.0151*** (0.0001)
Number of Written Reviews so Far	-0.0103*** (0.0001)	-0.0058*** (0.0003)
Number of Written Replies so Far	0.0103*** (0.0000)	0.0153*** (0.0001)
If Posted Threads Dummy		1.0989*** (0.0008)
If Posted Reviews Dummy		5.0932*** (0.0044)
If Posted Replies Dummy		1.7056*** (0.0004)
Region 1 \times Posts To Next Thread Badge	-0.0109*** (0.0002)	-0.0043*** (0.0005)
Region 1 \times Posts To Next Thread Badge Squared	0.0021*** (0.0000)	0.0005*** (0.0001)
Region 2 \times Posts To Next Thread Badge	-0.0076*** (0.0002)	-0.0073*** (0.0007)
Region 2 \times Posts To Next Thread Badge Squared	0.0009*** (0.0000)	0.0011*** (0.0001)
Region 3 \times Posts To Next Thread Badge	-0.0066*** (0.0004)	-0.0224*** (0.0013)
Region 3 \times Posts To Next Thread Badge Squared	0.0006*** (0.0001)	0.0035*** (0.0003)
Region 4 \times Posts To Next Thread Badge	0.0172*** (0.0009)	0.0104*** (0.0028)
Region 4 \times Posts To Next Thread Badge Squared	-0.0039*** (0.0002)	-0.0041*** (0.0005)
Region 5 \times Posts To Next Thread Badge	-0.0444*** (0.0022)	-0.0726*** (0.0064)
Region 5 \times Posts To Next Thread Badge Squared	0.0084*** (0.0004)	0.0127*** (0.0013)

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C-3: Results for UGC Quantity and Timeliness with 1-Day Time Window (Cont. 2)

	(i) Quantity	(ii) Timeliness
Region 6 × Posts To Next Thread Badge	0.0178*** (0.0018)	0.0264*** (0.0053)
Region 6 × Posts To Next Thread Badge Squared	-0.0032*** (0.0003)	-0.0037*** (0.0010)
Region 7 × Posts To Next Thread Badge	-0.0913** (0.0345)	-0.0634 (0.1022)
Region 7 × Posts To Next Thread Badge Squared	0.0159** (0.0058)	0.0120 (0.0172)
Region 9 × Posts To Next Thread Badge	-0.0044 (0.0033)	-0.0741*** (0.0097)
Region 9 × Posts To Next Thread Badge Squared	0.0024*** (0.0007)	0.0104*** (0.0021)
Region 10 × Posts To Next Thread Badge	0.0542 (283.4464)	-0.0226 (840.7923)
Region 10 × Posts To Next Thread Badge Squared	-0.0212 (45.6097)	-0.0039 (135.2929)
Region 1 × Posts To Next Review Badge	-0.0197*** (0.0004)	-0.0235*** (0.0012)
Region 1 × Posts To Next Review Badge Squared	0.0075*** (0.0003)	0.0059*** (0.0008)
Region 2 × Posts To Next Review Badge	0.0073*** (0.0005)	0.0043*** (0.0014)
Region 2 × Posts To Next Review Badge Squared	-0.0026*** (0.0001)	-0.0023*** (0.0004)
Region 3 × Posts To Next Review Badge	0.0216*** (0.0011)	-0.0365*** (0.0032)
Region 3 × Posts To Next Review Badge Squared	-0.0054*** (0.0003)	0.0085*** (0.0009)
Region 4 × Posts To Next Review Badge	0.0209*** (0.0013)	-0.0662*** (0.0038)
Region 4 × Posts To Next Review Badge Squared	-0.0038*** (0.0003)	0.0159*** (0.0008)
Region 5 × Posts To Next Review Badge	-0.0219*** (0.0033)	-0.0727*** (0.0097)
Region 5 × Posts To Next Review Badge Squared	0.0051*** (0.0006)	0.0119*** (0.0019)
Region 6 × Posts To Next Review Badge	0.6630** (0.2436)	3.4191*** (0.7226)
Region 6 × Posts To Next Review Badge Squared	-0.1102** (0.0395)	-0.5594*** (0.1173)
Constant	0.0001*** (0.0000)	0.0002*** (0.0000)
Individual-Day Fixed Effects	Yes	Yes
Post Fixed Effects	Yes	Yes
Number of Observations	128,458,902	128,458,902
R ²	IID	IID

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C-4: Results for UGC Quality with 1-Day Time Window

	(i) Length	(ii) Complexity	(iii) Informativeness	(iv) Politeness
Reviews	0.0051*** (0.0001)	0.0221*** (0.0003)	0.0149*** (0.0002)	0.0246*** (0.0004)
Replies	0.0264*** (0.0001)	0.1118*** (0.0002)	0.0745*** (0.0001)	0.1241*** (0.0002)
Tips	-0.0110*** (0.0012)	-0.0526*** (0.0046)	-0.0343*** (0.0030)	-0.0572*** (0.0051)
Reviews × Tips	-0.0031*** (0.0009)	0.0083** (0.0036)	0.0050* (0.0024)	0.0089* (0.0040)
Replies × Tips	0.0055*** (0.0005)	0.0278*** (0.0018)	0.0179*** (0.0012)	0.0313*** (0.0020)
Likes	0.0022*** (0.0002)	-0.0098*** (0.0009)	-0.0070*** (0.0006)	-0.0106*** (0.0010)
Reviews × Likes	0.0016*** (0.0005)	0.0316*** (0.0022)	0.0214*** (0.0014)	0.0350*** (0.0024)
Replies × Likes	0.0827*** (0.0002)	0.3697*** (0.0008)	0.2447*** (0.0005)	0.4101*** (0.0009)
Compensation	0.0962*** (0.0028)	-0.0651*** (0.0109)	-0.0454*** (0.0073)	-0.0658*** (0.0121)
Reviews × Compensation	-0.1404*** (0.0028)	-0.0621*** (0.0112)	-0.0414*** (0.0075)	-0.0763*** (0.0125)
Badge	-0.0426*** (0.0007)	-0.1996*** (0.0029)	-0.1326*** (0.0019)	-0.2213*** (0.0032)
Reviews × Badge	-0.0016 (0.0041)	0.0701*** (0.0160)	0.0446*** (0.0107)	0.0763*** (0.0178)
Received Tips for Other UGC Than Threads	-0.0195*** (0.0012)	-0.0641*** (0.0046)	-0.0420*** (0.0031)	-0.0700*** (0.0051)
Received Tips for Other UGC Than Reviews	-0.0012*** (0.0001)	-0.0048*** (0.0003)	-0.0031*** (0.0002)	-0.0053*** (0.0004)
Received Tips for Other UGC Than Replies	0.0094*** (0.0001)	0.0456*** (0.0004)	0.0306*** (0.0002)	0.0510*** (0.0004)
Received Likes for Other UGC Than Threads	0.0118*** (0.0002)	0.0328*** (0.0010)	0.0218*** (0.0006)	0.0370*** (0.0011)
Received Likes for Other UGC Than Reviews	-0.0057*** (0.0000)	-0.0212*** (0.0001)	-0.0142*** (0.0001)	-0.0236*** (0.0001)
Received Likes for Other UGC Than Replies	0.0239*** (0.0001)	0.1062*** (0.0003)	0.0714*** (0.0002)	0.1184*** (0.0003)
Received Compensation for Other UGC Than Threads	-0.0048*** (0.0001)	-0.0412*** (0.0005)	-0.0267*** (0.0003)	-0.0455*** (0.0005)
Received Compensation for Other UGC Than Reviews	-0.0024*** (0.0001)	-0.0018*** (0.0004)	-0.0010*** (0.0003)	-0.0021*** (0.0005)
Received Badge for Other UGC Than Threads	-0.0219*** (0.0006)	-0.1049*** (0.0023)	-0.0698*** (0.0015)	-0.1167*** (0.0025)
Received Badge for Other UGC Than Reviews	-0.0130*** (0.0006)	-0.0528*** (0.0022)	-0.0351*** (0.0015)	-0.0585*** (0.0025)

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C-5: Results for UGC Quality with 1-Day Time Window (Cont. 1)

	(i) Length	(ii) Complexity	(iii) Informativeness	(iv) Politeness
Same Thread Activity Dummy	-0.0015*** (0.0001)	-0.0084*** (0.0002)	-0.0055*** (0.0002)	-0.0092*** (0.0003)
Same Review Activity Dummy	0.0057*** (0.0001)	0.0299*** (0.0004)	0.0195*** (0.0003)	0.0331*** (0.0005)
Same Reply Activity Dummy	-0.0185*** (0.0001)	-0.0857*** (0.0003)	-0.0566*** (0.0002)	-0.0949*** (0.0003)
Days Since Last Thread Posted	-0.0009*** (0.0000)	-0.0047*** (0.0000)	-0.0031*** (0.0000)	-0.0052*** (0.0000)
Days Since Last Review Posted	-0.0006*** (0.0000)	-0.0024*** (0.0000)	-0.0016*** (0.0000)	-0.0026*** (0.0000)
Days Since Last Reply Posted	-0.0038*** (0.0000)	-0.0161*** (0.0000)	-0.0107*** (0.0000)	-0.0179*** (0.0000)
Number of Written Threads so Far	0.0022*** (0.0000)	0.0125*** (0.0001)	0.0082*** (0.0001)	0.0138*** (0.0001)
Number of Written Reviews so Far	-0.0033*** (0.0001)	-0.0156*** (0.0003)	-0.0104*** (0.0002)	-0.0172*** (0.0003)
Number of Written Replies so Far	0.0045*** (0.0000)	0.0190*** (0.0001)	0.0126*** (0.0001)	0.0211*** (0.0001)
If Posted Threads Dummy	0.9362*** (0.0002)	2.6379*** (0.0006)	1.7059*** (0.0004)	2.8882*** (0.0007)
If Posted Reviews Dummy	2.1271*** (0.0008)	2.7058*** (0.0033)	1.7704*** (0.0022)	3.0228*** (0.0037)
If Posted Replies Dummy	0.6807*** (0.0001)	2.5990*** (0.0003)	1.6792*** (0.0002)	2.8622*** (0.0003)
Region 1 \times Posts To Next Thread Badge	-0.0043*** (0.0001)	-0.0235*** (0.0004)	-0.0161*** (0.0002)	-0.0260*** (0.0004)
Region 1 \times Posts To Next Thread Badge Squared	0.0008*** (0.0000)	0.0047*** (0.0001)	0.0032*** (0.0001)	0.0051*** (0.0001)
Region 2 \times Posts To Next Thread Badge	-0.0039*** (0.0001)	-0.0199*** (0.0005)	-0.0136*** (0.0004)	-0.0220*** (0.0006)
Region 2 \times Posts To Next Thread Badge Squared	0.0005*** (0.0000)	0.0027*** (0.0001)	0.0018*** (0.0001)	0.0029*** (0.0001)
Region 3 \times Posts To Next Thread Badge	-0.0048*** (0.0003)	-0.0198*** (0.0010)	-0.0144*** (0.0007)	-0.0219*** (0.0011)
Region 3 \times Posts To Next Thread Badge Squared	0.0006*** (0.0000)	0.0023*** (0.0002)	0.0017*** (0.0001)	0.0025*** (0.0002)
Region 4 \times Posts To Next Thread Badge	0.0036*** (0.0005)	0.0117*** (0.0021)	0.0065*** (0.0014)	0.0125*** (0.0023)
Region 4 \times Posts To Next Thread Badge Squared	-0.0010*** (0.0001)	-0.0036*** (0.0004)	-0.0022*** (0.0003)	-0.0039*** (0.0005)
Region 5 \times Posts To Next Thread Badge	-0.0182*** (0.0012)	-0.0874*** (0.0048)	-0.0618*** (0.0032)	-0.0977*** (0.0053)
Region 5 \times Posts To Next Thread Badge Squared	0.0032*** (0.0002)	0.0154*** (0.0010)	0.0108*** (0.0006)	0.0172*** (0.0011)

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C-6: Results for UGC Quality with 1-Day Time Window (Cont. 2)

	(i) Length	(ii) Complexity	(iii) Informativeness	(iv) Politeness
Region 6 × Posts To Next Thread Badge	0.0080*** (0.0010)	0.0385*** (0.0040)	0.0262*** (0.0027)	0.0428*** (0.0044)
Region 6 × Posts To Next Thread Badge Squared	-0.0017*** (0.0002)	-0.0077*** (0.0007)	-0.0053*** (0.0005)	-0.0086*** (0.0008)
Region 7 × Posts To Next Thread Badge	0.0888*** (0.0195)	0.2795*** (0.0769)	0.1854*** (0.0512)	0.3096*** (0.0853)
Region 7 × Posts To Next Thread Badge Squared	-0.0149*** (0.0033)	-0.0471*** (0.0129)	-0.0312*** (0.0086)	-0.0522*** (0.0143)
Region 9 × Posts To Next Thread Badge	0.0070*** (0.0018)	-0.0077 (0.0073)	-0.0064 (0.0049)	-0.0084 (0.0081)
Region 9 × Posts To Next Thread Badge Squared	-0.0001 (0.0004)	0.0015 (0.0016)	0.0012 (0.0011)	0.0017 (0.0018)
Region 10 × Posts To Next Thread Badge	0.0397 (160.0435)	-0.0526 (632.2989)	0.0000 (421.5457)	0.0935 (701.8510)
Region 10 × Posts To Next Thread Badge Squared	-0.0149 (25.7528)	-0.0269 (101.7440)	-0.0231 (67.8314)	-0.0542 (112.9357)
Region 1 × Posts To Next Review Badge	-0.0082*** (0.0002)	-0.0252*** (0.0009)	-0.0178*** (0.0006)	-0.0280*** (0.0010)
Region 1 × Posts To Next Review Badge Squared	0.0034*** (0.0001)	0.0085*** (0.0006)	0.0064*** (0.0004)	0.0094*** (0.0006)
Region 2 × Posts To Next Review Badge	-0.0028*** (0.0003)	-0.0023* (0.0011)	-0.0022*** (0.0007)	-0.0029** (0.0012)
Region 2 × Posts To Next Review Badge Squared	0.0003*** (0.0001)	-0.0008** (0.0003)	-0.0004* (0.0002)	-0.0008** (0.0003)
Region 3 × Posts To Next Review Badge	0.0011 (0.0006)	0.0018 (0.0024)	0.0008 (0.0016)	0.0018 (0.0027)
Region 3 × Posts To Next Review Badge Squared	-0.0005** (0.0002)	-0.0004 (0.0007)	-0.0003 (0.0004)	-0.0004 (0.0007)
Region 4 × Posts To Next Review Badge	-0.0002 (0.0007)	0.0182*** (0.0028)	0.0109*** (0.0019)	0.0198*** (0.0032)
Region 4 × Posts To Next Review Badge Squared	-0.0005** (0.0002)	-0.0057*** (0.0006)	-0.0036*** (0.0004)	-0.0063*** (0.0007)
Region 5 × Posts To Next Review Badge	-0.0340*** (0.0018)	-0.0166** (0.0073)	-0.0156*** (0.0049)	-0.0208** (0.0081)
Region 5 × Posts To Next Review Badge Squared	0.0061*** (0.0004)	0.0023 (0.0014)	0.0023** (0.0009)	0.0029 (0.0016)
Region 6 × Posts To Next Review Badge	-0.0172 (0.1376)	0.7534 (0.5434)	0.6022 (0.3623)	0.6152 (0.6032)
Region 6 × Posts To Next Review Badge Squared	-0.0001 (0.0223)	-0.1249 (0.0882)	-0.0996 (0.0588)	-0.1030 (0.0979)
Constant	0.0000*** (0.0000)	0.0002*** (0.0000)	0.0001*** (0.0000)	0.0002*** (0.0000)
Individual-Day Fixed Effects	Yes	Yes	Yes	Yes
Post Fixed Effects	Yes	Yes	Yes	Yes
Number of Observations	128,458,902	128,458,902	128,458,902	128,458,902
R ²	IID	IID	IID	IID

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C-7: Results for UGC Quantity and Timeliness with 6-Day Time Window

	(i) Quantity	(ii) Timeliness
Reviews	0.0047*** (0.0001)	0.0055*** (0.0005)
Replies	0.0318*** (0.0001)	0.0494*** (0.0003)
Tips	0.0297*** (0.0006)	0.1903*** (0.0018)
Reviews \times Tips	0.0089*** (0.0008)	-0.0027 (0.0023)
Replies \times Tips	0.0372*** (0.0004)	0.0985*** (0.0011)
Likes	0.0335*** (0.0002)	-0.0159*** (0.0005)
Reviews \times Likes	-0.0107*** (0.0005)	0.0251*** (0.0014)
Replies \times Likes	0.1606*** (0.0002)	0.2364*** (0.0005)
Compensation	-0.0029 (0.0022)	-0.0575*** (0.0066)
Reviews \times Compensation	-0.0166*** (0.0023)	0.0813*** (0.0069)
Badge	-0.0795*** (0.0006)	-0.1061*** (0.0017)
Reviews \times Badge	0.0722*** (0.0035)	0.0636*** (0.0105)
Received Tips for Other UGC Than Threads	0.0363*** (0.0006)	0.2112*** (0.0018)
Received Tips for Other UGC Than Reviews	-0.0014*** (0.0001)	-0.0005** (0.0002)
Received Tips for Other UGC Than Replies	0.0081*** (0.0001)	0.0336*** (0.0003)
Received Likes for Other UGC Than Threads	0.0487*** (0.0002)	-0.0107*** (0.0005)
Received Likes for Other UGC Than Reviews	-0.0086*** (0.0000)	-0.0048*** (0.0001)
Received Likes for Other UGC Than Replies	0.0093*** (0.0001)	0.0001 (0.0002)
Received Compensation for Other UGC Than Threads	-0.0081*** (0.0001)	-0.0385*** (0.0003)
Received Compensation for Other UGC Than Reviews	0.0000 (0.0001)	-0.0047*** (0.0003)
Received Badge for Other UGC Than Threads	-0.0352*** (0.0004)	-0.0455*** (0.0013)
Received Badge for Other UGC Than Reviews	-0.0288*** (0.0004)	-0.0305*** (0.0013)

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C-8: Results for UGC Quantity and Timeliness with 6-Day Time Window (Cont. 1)

	(i) Quantity	(ii) Timeliness
Same Thread Activity Dummy	-0.0018*** (0.0001)	-0.0035*** (0.0003)
Same Review Activity Dummy	0.0117*** (0.0002)	0.0226*** (0.0006)
Same Reply Activity Dummy	-0.0298*** (0.0001)	-0.0497*** (0.0004)
Days Since Last Thread Posted	-0.0025*** (0.0000)	-0.0030*** (0.0000)
Days Since Last Review Posted	-0.0004*** (0.0000)	-0.0001 (0.0001)
Days Since Last Reply Posted	-0.0046*** (0.0000)	-0.0071*** (0.0000)
Number of Written Threads so Far	0.0046*** (0.0000)	0.0103*** (0.0001)
Number of Written Reviews so Far	-0.0047*** (0.0001)	0.0005 (0.0004)
Number of Written Replies so Far	0.0047*** (0.0000)	0.0077*** (0.0001)
If Posted Threads Dummy		1.0861*** (0.0008)
If Posted Reviews Dummy		5.0811*** (0.0044)
If Posted Replies Dummy		1.5806*** (0.0004)
Region 1 \times Posts To Next Thread Badge	-0.0033*** (0.0002)	0.0039*** (0.0005)
Region 1 \times Posts To Next Thread Badge Squared	0.0005*** (0.0000)	-0.0012*** (0.0001)
Region 2 \times Posts To Next Thread Badge	0.0027*** (0.0003)	0.0090*** (0.0008)
Region 2 \times Posts To Next Thread Badge Squared	-0.0008*** (0.0001)	-0.0017*** (0.0002)
Region 3 \times Posts To Next Thread Badge	0.0080*** (0.0005)	0.0019 (0.0015)
Region 3 \times Posts To Next Thread Badge Squared	-0.0014*** (0.0001)	-0.0002 (0.0003)
Region 4 \times Posts To Next Thread Badge	0.0233*** (0.0011)	0.0314*** (0.0032)
Region 4 \times Posts To Next Thread Badge Squared	-0.0042*** (0.0002)	-0.0064*** (0.0006)
Region 5 \times Posts To Next Thread Badge	-0.0038 (0.0026)	-0.0244*** (0.0078)
Region 5 \times Posts To Next Thread Badge Squared	0.0018*** (0.0005)	0.0056*** (0.0016)

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C-9: Results for UGC Quantity and Timeliness with 6-Day Time Window (Cont. 2)

	(i) Quantity	(ii) Timeliness
Region 6 × Posts To Next Thread Badge	0.0134*** (0.0020)	-0.0054 (0.0060)
Region 6 × Posts To Next Thread Badge Squared	-0.0010** (0.0004)	0.0022* (0.0011)
Region 7 × Posts To Next Thread Badge	-0.1006** (0.0413)	0.6053*** (0.1244)
Region 7 × Posts To Next Thread Badge Squared	0.0172** (0.0069)	-0.1015*** (0.0209)
Region 9 × Posts To Next Thread Badge	0.0102** (0.0036)	-0.0429*** (0.0109)
Region 9 × Posts To Next Thread Badge Squared	-0.0003 (0.0008)	0.0050* (0.0024)
Region 10 × Posts To Next Thread Badge	-0.0883** (0.0338)	-0.0600 (0.1019)
Region 1 × Posts To Next Review Badge	-0.0131*** (0.0004)	-0.0192*** (0.0012)
Region 1 × Posts To Next Review Badge Squared	0.0051*** (0.0003)	0.0054*** (0.0008)
Region 2 × Posts To Next Review Badge	0.0124*** (0.0005)	0.0083*** (0.0015)
Region 2 × Posts To Next Review Badge Squared	-0.0037*** (0.0001)	-0.0030*** (0.0004)
Region 3 × Posts To Next Review Badge	0.0231*** (0.0012)	-0.0264*** (0.0035)
Region 3 × Posts To Next Review Badge Squared	-0.0056*** (0.0003)	0.0062*** (0.0010)
Region 4 × Posts To Next Review Badge	0.0276*** (0.0014)	-0.0560*** (0.0042)
Region 4 × Posts To Next Review Badge Squared	-0.0050*** (0.0003)	0.0141*** (0.0009)
Region 5 × Posts To Next Review Badge	-0.0039 (0.0039)	0.0173 (0.0117)
Region 5 × Posts To Next Review Badge Squared	0.0026*** (0.0008)	-0.0043 (0.0023)
Region 6 × Posts To Next Review Badge	0.7961** (0.3281)	4.4181*** (0.9888)
Region 6 × Posts To Next Review Badge Squared	-0.1295** (0.0532)	-0.7167*** (0.1605)
Constant	0.0006*** (0.0000)	0.0008*** (0.0000)
Individual-Day Fixed Effects	Yes	Yes
Post Fixed Effects	Yes	Yes
Number of Observations	128,458,902	128,458,902
R ²	0.17	0.20

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C-10: Results for UGC Quality with 6-Day Time Window

	(i) Length	(ii) Complexity	(iii) Informativeness	(iv) Politeness
Reviews	0.0029*** (0.0001)	0.0128*** (0.0003)	0.0086*** (0.0002)	0.0142*** (0.0004)
Replies	0.0155*** (0.0001)	0.0642*** (0.0002)	0.0428*** (0.0002)	0.0712*** (0.0003)
Tips	-0.0021*** (0.0003)	-0.0004 (0.0013)	-0.0012 (0.0009)	0.0003 (0.0015)
Reviews × Tips	0.0064*** (0.0004)	0.0219*** (0.0017)	0.0144*** (0.0012)	0.0246*** (0.0019)
Replies × Tips	0.0029*** (0.0002)	0.0077*** (0.0008)	0.0046*** (0.0006)	0.0088*** (0.0009)
Likes	0.0083*** (0.0001)	0.0246*** (0.0003)	0.0163*** (0.0002)	0.0275*** (0.0004)
Reviews × Likes	-0.0053*** (0.0003)	-0.0043*** (0.0011)	-0.0025*** (0.0007)	-0.0050*** (0.0012)
Replies × Likes	0.0525*** (0.0001)	0.2345*** (0.0004)	0.1554*** (0.0003)	0.2599*** (0.0004)
Compensation	0.0095*** (0.0013)	-0.0197*** (0.0050)	-0.0133*** (0.0033)	-0.0215*** (0.0055)
Reviews × Compensation	-0.0286*** (0.0013)	-0.0235*** (0.0052)	-0.0160*** (0.0034)	-0.0270*** (0.0057)
Badge	-0.0201*** (0.0003)	-0.0949*** (0.0013)	-0.0625*** (0.0008)	-0.1049*** (0.0014)
Reviews × Badge	0.0240*** (0.0020)	0.1003*** (0.0079)	0.0678*** (0.0052)	0.1116*** (0.0087)
Received Tips for Other UGC Than Threads	-0.0014*** (0.0003)	0.0024 (0.0014)	0.0005 (0.0009)	0.0035** (0.0015)
Received Tips for Other UGC Than Reviews	-0.0004*** (0.0000)	-0.0013*** (0.0002)	-0.0009*** (0.0001)	-0.0015*** (0.0002)
Received Tips for Other UGC Than Replies	0.0043*** (0.0001)	0.0207*** (0.0002)	0.0139*** (0.0001)	0.0232*** (0.0002)
Received Likes for Other UGC Than Threads	0.0139*** (0.0001)	0.0481*** (0.0004)	0.0322*** (0.0002)	0.0537*** (0.0004)
Received Likes for Other UGC Than Reviews	-0.0033*** (0.0000)	-0.0125*** (0.0001)	-0.0084*** (0.0001)	-0.0139*** (0.0001)
Received Likes for Other UGC Than Replies	0.0069*** (0.0000)	0.0317*** (0.0002)	0.0214*** (0.0001)	0.0353*** (0.0002)
Received Compensation for Other UGC Than Threads	-0.0015*** (0.0001)	-0.0121*** (0.0002)	-0.0076*** (0.0002)	-0.0134*** (0.0003)
Received Compensation for Other UGC Than Reviews	-0.0001 (0.0001)	0.0011*** (0.0002)	0.0009*** (0.0001)	0.0012*** (0.0002)
Received Badge for Other UGC Than Threads	-0.0101*** (0.0002)	-0.0463*** (0.0010)	-0.0306*** (0.0007)	-0.0514*** (0.0011)
Received Badge for Other UGC Than Reviews	-0.0075*** (0.0002)	-0.0321*** (0.0009)	-0.0213*** (0.0006)	-0.0356*** (0.0010)

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C-11: Results for UGC Quality with 6-Day Time Window (Cont. 1)

	(i) Length	(ii) Complexity	(iii) Informativeness	(iv) Politeness
Same Thread Activity Dummy	-0.0004*** (0.0001)	-0.0035*** (0.0002)	-0.0023*** (0.0002)	-0.0038*** (0.0003)
Same Review Activity Dummy	0.0031*** (0.0001)	0.0176*** (0.0004)	0.0114*** (0.0003)	0.0195*** (0.0005)
Same Reply Activity Dummy	-0.0119*** (0.0001)	-0.0558*** (0.0003)	-0.0368*** (0.0002)	-0.0618*** (0.0003)
Days Since Last Thread Posted	-0.0011*** (0.0000)	-0.0052*** (0.0000)	-0.0035*** (0.0000)	-0.0058*** (0.0000)
Days Since Last Review Posted	-0.0003*** (0.0000)	-0.0014*** (0.0000)	-0.0009*** (0.0000)	-0.0015*** (0.0000)
Days Since Last Reply Posted	-0.0023*** (0.0000)	-0.0093*** (0.0000)	-0.0062*** (0.0000)	-0.0103*** (0.0000)
Number of Written Threads so Far	0.0012*** (0.0000)	0.0077*** (0.0001)	0.0050*** (0.0001)	0.0085*** (0.0001)
Number of Written Reviews so Far	-0.0013*** (0.0001)	-0.0067*** (0.0003)	-0.0045*** (0.0002)	-0.0074*** (0.0003)
Number of Written Replies so Far	0.0026*** (0.0000)	0.0109*** (0.0001)	0.0072*** (0.0001)	0.0121*** (0.0001)
If Posted Threads Dummy	0.9407*** (0.0002)	2.6509*** (0.0006)	1.7150*** (0.0004)	2.9029*** (0.0007)
If Posted Reviews Dummy	2.1311*** (0.0008)	2.7239*** (0.0033)	1.7823*** (0.0022)	3.0429*** (0.0036)
If Posted Replies Dummy	0.6422*** (0.0001)	2.4333*** (0.0003)	1.5700*** (0.0002)	2.6791*** (0.0003)
Region 1 \times Posts To Next Thread Badge	-0.0013*** (0.0001)	-0.0093*** (0.0004)	-0.0065*** (0.0002)	-0.0102*** (0.0004)
Region 1 \times Posts To Next Thread Badge Squared	0.0002*** (0.0000)	0.0016*** (0.0001)	0.0011*** (0.0001)	0.0017*** (0.0001)
Region 2 \times Posts To Next Thread Badge	0.0002* (0.0001)	0.0000 (0.0006)	-0.0003 (0.0004)	0.0000 (0.0006)
Region 2 \times Posts To Next Thread Badge Squared	-0.0002*** (0.0000)	-0.0006*** (0.0001)	-0.0004*** (0.0001)	-0.0007*** (0.0001)
Region 3 \times Posts To Next Thread Badge	-0.0001 (0.0003)	0.0038*** (0.0011)	0.0015* (0.0007)	0.0042*** (0.0012)
Region 3 \times Posts To Next Thread Badge Squared	0.0000 (0.0001)	-0.0009*** (0.0002)	-0.0004*** (0.0001)	-0.0010*** (0.0002)
Region 4 \times Posts To Next Thread Badge	0.0075*** (0.0006)	0.0318*** (0.0024)	0.0199*** (0.0016)	0.0350*** (0.0027)
Region 4 \times Posts To Next Thread Badge Squared	-0.0014*** (0.0001)	-0.0058*** (0.0005)	-0.0037*** (0.0003)	-0.0064*** (0.0005)
Region 5 \times Posts To Next Thread Badge	0.0011 (0.0015)	-0.0063 (0.0059)	-0.0074 (0.0039)	-0.0068 (0.0065)
Region 5 \times Posts To Next Thread Badge Squared	0.0000 (0.0003)	0.0026* (0.0012)	0.0022** (0.0008)	0.0028* (0.0013)

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C-12: Results for UGC Quality with 6-Day Time Window (Cont. 2)

	(i) Length	(ii) Complexity	(iii) Informativeness	(iv) Politeness
Region 6 \times Posts To Next Thread Badge	0.0006 (0.0011)	0.0103** (0.0045)	0.0072** (0.0030)	0.0111** (0.0049)
Region 6 \times Posts To Next Thread Badge Squared	0.0002 (0.0002)	0.0000 (0.0008)	-0.0002 (0.0005)	0.0001 (0.0009)
Region 7 \times Posts To Next Thread Badge	0.0809*** (0.0237)	0.1833* (0.0932)	0.1084 (0.0621)	0.2109* (0.1034)
Region 7 \times Posts To Next Thread Badge Squared	-0.0136*** (0.0040)	-0.0308* (0.0157)	-0.0182 (0.0104)	-0.0355* (0.0174)
Region 9 \times Posts To Next Thread Badge	0.0167*** (0.0021)	0.0223** (0.0082)	0.0144** (0.0054)	0.0251** (0.0091)
Region 9 \times Posts To Next Thread Badge Squared	-0.0020*** (0.0005)	-0.0035 (0.0018)	-0.0023 (0.0012)	-0.0039 (0.0020)
Region 10 \times Posts To Next Thread Badge	-0.0500** (0.0194)	-0.2331*** (0.0763)	-0.1523** (0.0509)	-0.2577*** (0.0847)
Region 1 \times Posts To Next Review Badge	-0.0057*** (0.0002)	-0.0160*** (0.0009)	-0.0116*** (0.0006)	-0.0178*** (0.0010)
Region 1 \times Posts To Next Review Badge Squared	0.0024*** (0.0002)	0.0050*** (0.0006)	0.0039*** (0.0004)	0.0055*** (0.0007)
Region 2 \times Posts To Next Review Badge	0.0005 (0.0003)	0.0088*** (0.0011)	0.0052*** (0.0008)	0.0096*** (0.0013)
Region 2 \times Posts To Next Review Badge Squared	-0.0004*** (0.0001)	-0.0033*** (0.0003)	-0.0020*** (0.0002)	-0.0036*** (0.0003)
Region 3 \times Posts To Next Review Badge	0.0032*** (0.0007)	0.0098*** (0.0026)	0.0059*** (0.0017)	0.0106*** (0.0029)
Region 3 \times Posts To Next Review Badge Squared	-0.0010*** (0.0002)	-0.0021*** (0.0007)	-0.0013** (0.0005)	-0.0023** (0.0008)
Region 4 \times Posts To Next Review Badge	0.0042*** (0.0008)	0.0332*** (0.0032)	0.0209*** (0.0021)	0.0366*** (0.0035)
Region 4 \times Posts To Next Review Badge Squared	-0.0012*** (0.0002)	-0.0083*** (0.0007)	-0.0054*** (0.0004)	-0.0092*** (0.0007)
Region 5 \times Posts To Next Review Badge	-0.0312*** (0.0022)	0.0245** (0.0088)	0.0141** (0.0058)	0.0245** (0.0097)
Region 5 \times Posts To Next Review Badge Squared	0.0061*** (0.0004)	-0.0041** (0.0017)	-0.0024* (0.0011)	-0.0040* (0.0019)
Region 6 \times Posts To Next Review Badge	-0.7136*** (0.1883)	1.2049 (0.7406)	0.9628 (0.4938)	1.0367 (0.8220)
Region 6 \times Posts To Next Review Badge Squared	0.1138*** (0.0306)	-0.1939 (0.1202)	-0.1553 (0.0801)	-0.1668 (0.1334)
Constant	0.0002*** (0.0000)	0.0009*** (0.0000)	0.0006*** (0.0000)	0.0010*** (0.0000)
Individual-Day Fixed Effects	Yes	Yes	Yes	Yes
Post Fixed Effects	Yes	Yes	Yes	Yes
Number of Observations	128,458,902	128,458,902	128,458,902	128,458,902
R ²	0.53	0.49	0.47	0.48

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C-13: Results for UGC Quantity and Timeliness Using Individual-Week FEs with 3-Day Time Window

	(i) Quantity	(ii) Timeliness
Reviews	-0.0061*** (0.0001)	0.0001*** (0.0000)
Replies	0.0278*** (0.0001)	0.0014*** (0.0000)
Tips	0.0110*** (0.0004)	-0.0023*** (0.0005)
Reviews × Tips	-0.0120*** (0.0008)	-0.0004 (0.0006)
Replies × Tips	0.0360*** (0.0004)	-0.0005** (0.0002)
Likes	-0.0541*** (0.0001)	-0.0015*** (0.0001)
Reviews × Likes	0.0646*** (0.0005)	0.0053*** (0.0003)
Replies × Likes	0.1092*** (0.0002)	0.0039*** (0.0001)
Compensation	0.0236*** (0.0025)	-0.0194*** (0.0003)
Reviews × Compensation	-0.0766*** (0.0026)	0.0361*** (0.0005)
Badge	0.0018*** (0.0006)	0.0010** (0.0004)
Reviews × Badge	-0.0114*** (0.0038)	-0.0075*** (0.0021)
Received Tips for Other UGC Than Threads	0.0013*** (0.0001)	-0.0024*** (0.0005)
Received Tips for Other UGC Than Reviews	-0.0023*** (0.0001)	-0.0012*** (0.0000)
Received Tips for Other UGC Than Replies	0.0158*** (0.0001)	-0.0012*** (0.0001)
Received Likes for Other UGC Than Threads	-0.0036*** (0.0000)	0.0038*** (0.0001)
Received Likes for Other UGC Than Reviews	-0.0082*** (0.0000)	-0.0003*** (0.0000)
Received Likes for Other UGC Than Replies	0.0355*** (0.0001)	-0.0007*** (0.0000)
Received Compensation for Other UGC Than Threads	0.0072*** (0.0001)	0.0033*** (0.0001)
Received Compensation for Other UGC Than Reviews	-0.0021*** (0.0001)	-0.0042*** (0.0001)
Received Badge for Other UGC Than Threads	0.0042*** (0.0005)	0.0021*** (0.0003)
Received Badge for Other UGC Than Reviews	-0.0069*** (0.0006)	-0.0019*** (0.0003)

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C-14: Results for UGC Quantity and Timeliness Using Individual-Week FEs with 3-Day Time Window (Cont. 1)

	(i) Quantity	(ii) Timeliness
Same Thread Activity Dummy	0.0034*** (0.0001)	-0.0005*** (0.0000)
Same Review Activity Dummy	0.0073*** (0.0002)	0.0004*** (0.0001)
Same Reply Activity Dummy	-0.0286*** (0.0001)	-0.0003*** (0.0000)
Days Since Last Thread Posted	-0.0003*** (0.0000)	-0.0002*** (0.0000)
Days Since Last Review Posted	0.0010*** (0.0000)	0.0000*** (0.0000)
Days Since Last Reply Posted	-0.0043*** (0.0000)	-0.0002*** (0.0000)
Number of Written Threads so Far	0.0050*** (0.0000)	0.0005*** (0.0000)
Number of Written Reviews so Far	-0.0068*** (0.0001)	-0.0001*** (0.0000)
Number of Written Replies so Far	0.0067*** (0.0000)	-0.0006*** (0.0000)
If Posted Threads Dummy		0.3995*** (0.0001)
If Posted Reviews Dummy		0.4463*** (0.0005)
If Posted Replies Dummy		0.0010*** (0.0000)
Region 1 \times Posts To Next Thread Badge	-0.0101*** (0.0002)	0.0011*** (0.0001)
Region 1 \times Posts To Next Thread Badge Squared	0.0019*** (0.0000)	-0.0002*** (0.0000)
Region 2 \times Posts To Next Thread Badge	-0.0115*** (0.0002)	0.0026*** (0.0001)
Region 2 \times Posts To Next Thread Badge Squared	0.0018*** (0.0000)	-0.0004*** (0.0000)
Region 3 \times Posts To Next Thread Badge	-0.0112*** (0.0004)	0.0057*** (0.0001)
Region 3 \times Posts To Next Thread Badge Squared	0.0015*** (0.0001)	-0.0009*** (0.0000)
Region 4 \times Posts To Next Thread Badge	0.0008 (0.0010)	-0.0004 (0.0003)
Region 4 \times Posts To Next Thread Badge Squared	-0.0012*** (0.0002)	0.0004*** (0.0001)
Region 5 \times Posts To Next Thread Badge	-0.0260*** (0.0022)	0.0062*** (0.0007)
Region 5 \times Posts To Next Thread Badge Squared	0.0047*** (0.0004)	-0.0009*** (0.0001)

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C-15: Results for UGC Quantity and Timeliness Using Individual-Week FEs with 3-Day Time Window (Cont. 2)

	(i) Quantity	(ii) Timeliness
Region 6 × Posts To Next Thread Badge	-0.0362*** (0.0017)	-0.0023*** (0.0006)
Region 6 × Posts To Next Thread Badge Squared	0.0060*** (0.0003)	0.0009*** (0.0001)
Region 7 × Posts To Next Thread Badge	-0.6101*** (0.0348)	-0.0639*** (0.0120)
Region 7 × Posts To Next Thread Badge Squared	0.1015*** (0.0058)	0.0108*** (0.0020)
Region 9 × Posts To Next Thread Badge	0.0003 (0.0032)	0.0119*** (0.0011)
Region 9 × Posts To Next Thread Badge Squared	0.0008 (0.0007)	-0.0022*** (0.0002)
Region 10 × Posts To Next Thread Badge	-0.1206*** (0.0266)	0.0150* (0.0071)
Region 1 × Posts To Next Review Badge	-0.0196*** (0.0004)	0.0002* (0.0001)
Region 1 × Posts To Next Review Badge Squared	0.0085*** (0.0003)	-0.0001 (0.0001)
Region 2 × Posts To Next Review Badge	-0.0049*** (0.0005)	-0.0001 (0.0002)
Region 2 × Posts To Next Review Badge Squared	0.0006*** (0.0001)	0.0000*** (0.0000)
Region 3 × Posts To Next Review Badge	0.0006 (0.0011)	0.0006 (0.0004)
Region 3 × Posts To Next Review Badge Squared	-0.0010*** (0.0003)	0.0000 (0.0001)
Region 4 × Posts To Next Review Badge	0.0117*** (0.0013)	0.0016*** (0.0004)
Region 4 × Posts To Next Review Badge Squared	-0.0032*** (0.0003)	-0.0003*** (0.0001)
Region 5 × Posts To Next Review Badge	-0.0131*** (0.0034)	0.0113*** (0.0011)
Region 5 × Posts To Next Review Badge Squared	0.0023*** (0.0006)	-0.0019*** (0.0002)
Region 6 × Posts To Next Review Badge	-1.0804*** (0.2363)	-0.3756*** (0.0818)
Region 6 × Posts To Next Review Badge Squared	0.1738*** (0.0384)	0.0614*** (0.0133)
Constant	-0.0003*** (0.0000)	-0.0001*** (0.0000)
Individual-Day Fixed Effects	Yes	Yes
Post Fixed Effects	Yes	Yes
Number of Observations	128,458,902	128,458,902
R ²	0.05	0.14

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C-16: Results for UGC Quality Using Individual-Week FEs with 3-Day Time Window

	(i)	(ii)	(iii)	(iv)
	Length	Complexity	Informativeness	Politeness
Reviews	-0.0020*** (0.0001)	-0.0089*** (0.0003)	-0.0058*** (0.0002)	-0.0098*** (0.0004)
Replies	0.0128*** (0.0001)	0.0567*** (0.0002)	0.0377*** (0.0002)	0.0628*** (0.0003)
Tips	0.0023*** (0.0002)	0.0286*** (0.0008)	0.0189*** (0.0006)	0.0315*** (0.0009)
Reviews × Tips	-0.0028*** (0.0005)	-0.0154*** (0.0020)	-0.0098*** (0.0013)	-0.0174*** (0.0022)
Replies × Tips	0.0103*** (0.0003)	0.0361*** (0.0010)	0.0237*** (0.0007)	0.0401*** (0.0011)
Likes	-0.0282*** (0.0001)	-0.0679*** (0.0003)	-0.0444*** (0.0002)	-0.0758*** (0.0004)
Reviews × Likes	0.0329*** (0.0003)	0.0900*** (0.0011)	0.0592*** (0.0007)	0.1001*** (0.0012)
Replies × Likes	0.0421*** (0.0001)	0.1333*** (0.0004)	0.0872*** (0.0002)	0.1483*** (0.0004)
Compensation	-0.0099*** (0.0015)	0.0946*** (0.0058)	0.0616*** (0.0039)	0.1044*** (0.0065)
Reviews × Compensation	0.0177*** (0.0015)	-0.0818*** (0.0060)	-0.0527*** (0.0040)	-0.0894*** (0.0067)
Badge	0.0008* (0.0004)	0.0007 (0.0014)	0.0006 (0.0009)	0.0007 (0.0016)
Reviews × Badge	-0.0028 (0.0022)	-0.0113 (0.0087)	-0.0081 (0.0058)	-0.0128 (0.0097)
Received Tips for Other UGC Than Threads	0.0003*** (0.0000)	0.0016*** (0.0002)	0.0010*** (0.0001)	0.0017*** (0.0002)
Received Tips for Other UGC Than Reviews	-0.0007*** (0.0001)	-0.0033*** (0.0002)	-0.0022*** (0.0002)	-0.0036*** (0.0003)
Received Tips for Other UGC Than Replies	0.0068*** (0.0001)	0.0303*** (0.0003)	0.0203*** (0.0002)	0.0338*** (0.0003)
Received Likes for Other UGC Than Threads	-0.0013*** (0.0000)	-0.0077*** (0.0001)	-0.0051*** (0.0001)	-0.0085*** (0.0001)
Received Likes for Other UGC Than Reviews	-0.0030*** (0.0000)	-0.0102*** (0.0001)	-0.0068*** (0.0001)	-0.0113*** (0.0001)
Received Likes for Other UGC Than Replies	0.0164*** (0.0000)	0.0710*** (0.0002)	0.0474*** (0.0001)	0.0790*** (0.0002)
Received Compensation for Other UGC Than Threads	0.0019*** (0.0001)	0.0105*** (0.0002)	0.0070*** (0.0002)	0.0116*** (0.0003)
Received Compensation for Other UGC Than Reviews	0.0002* (0.0001)	-0.0022*** (0.0003)	-0.0013*** (0.0002)	-0.0024*** (0.0003)
Received Badge for Other UGC Than Threads	0.0013*** (0.0003)	0.0073*** (0.0011)	0.0046*** (0.0007)	0.0080*** (0.0012)
Received Badge for Other UGC Than Reviews	-0.0023*** (0.0004)	-0.0118*** (0.0014)	-0.0076*** (0.0009)	-0.0130*** (0.0015)

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C-17: Results for UGC Quality Using Individual-Week FEs with 3-Day Time Window (Cont. 1)

	(i) Length	(ii) Complexity	(iii) Informativeness	(iv) Politeness
Same Thread Activity Dummy	0.0014*** (0.0001)	0.0055*** (0.0002)	0.0036*** (0.0002)	0.0061*** (0.0003)
Same Review Activity Dummy	0.0018*** (0.0001)	0.0099*** (0.0005)	0.0064*** (0.0003)	0.0110*** (0.0005)
Same Reply Activity Dummy	-0.0105*** (0.0001)	-0.0480*** (0.0003)	-0.0316*** (0.0002)	-0.0530*** (0.0003)
Days Since Last Thread Posted	-0.0001*** (0.0000)	-0.0004*** (0.0000)	-0.0003*** (0.0000)	-0.0005*** (0.0000)
Days Since Last Review Posted	0.0003*** (0.0000)	0.0014*** (0.0000)	0.0009*** (0.0000)	0.0015*** (0.0000)
Days Since Last Reply Posted	-0.0020*** (0.0000)	-0.0087*** (0.0000)	-0.0058*** (0.0000)	-0.0097*** (0.0000)
Number of Written Threads so Far	0.0015*** (0.0000)	0.0080*** (0.0001)	0.0053*** (0.0001)	0.0089*** (0.0001)
Number of Written Reviews so Far	-0.0023*** (0.0001)	-0.0101*** (0.0003)	-0.0067*** (0.0002)	-0.0111*** (0.0003)
Number of Written Replies so Far	0.0031*** (0.0000)	0.0136*** (0.0001)	0.0090*** (0.0001)	0.0151*** (0.0001)
If Posted Threads Dummy	0.9971*** (0.0002)	2.9206*** (0.0006)	1.8954*** (0.0004)	3.2038*** (0.0007)
If Posted Reviews Dummy	2.2503*** (0.0008)	2.9680*** (0.0032)	1.9476*** (0.0022)	3.3186*** (0.0036)
If Posted Replies Dummy	0.6655*** (0.0001)	2.5498*** (0.0003)	1.6456*** (0.0002)	2.8092*** (0.0003)
Region 1 \times Posts To Next Thread Badge	-0.0045*** (0.0001)	-0.0195*** (0.0004)	-0.0132*** (0.0002)	-0.0216*** (0.0004)
Region 1 \times Posts To Next Thread Badge Squared	0.0009*** (0.0000)	0.0038*** (0.0001)	0.0026*** (0.0001)	0.0043*** (0.0001)
Region 2 \times Posts To Next Thread Badge	-0.0055*** (0.0001)	-0.0223*** (0.0006)	-0.0150*** (0.0004)	-0.0247*** (0.0006)
Region 2 \times Posts To Next Thread Badge Squared	0.0009*** (0.0000)	0.0035*** (0.0001)	0.0023*** (0.0001)	0.0039*** (0.0001)
Region 3 \times Posts To Next Thread Badge	-0.0052*** (0.0003)	-0.0202*** (0.0010)	-0.0140*** (0.0007)	-0.0223*** (0.0012)
Region 3 \times Posts To Next Thread Badge Squared	0.0007*** (0.0001)	0.0026*** (0.0002)	0.0018*** (0.0001)	0.0028*** (0.0002)
Region 4 \times Posts To Next Thread Badge	-0.0016** (0.0006)	-0.0142*** (0.0022)	-0.0103*** (0.0015)	-0.0159*** (0.0025)
Region 4 \times Posts To Next Thread Badge Squared	-0.0001 (0.0001)	0.0012*** (0.0004)	0.0009*** (0.0003)	0.0013** (0.0005)
Region 5 \times Posts To Next Thread Badge	-0.0140*** (0.0013)	-0.0715*** (0.0051)	-0.0494*** (0.0034)	-0.0800*** (0.0056)
Region 5 \times Posts To Next Thread Badge Squared	0.0023*** (0.0003)	0.0119*** (0.0010)	0.0082*** (0.0007)	0.0134*** (0.0011)

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C-18: Results for UGC Quality Using Individual-Week FEs with 3-Day Time Window (Cont. 2)

	(i) Length	(ii) Complexity	(iii) Informativeness	(iv) Politeness
Region 6 × Posts To Next Thread Badge	-0.0091*** (0.0010)	-0.0335*** (0.0041)	-0.0201*** (0.0027)	-0.0368*** (0.0045)
Region 6 × Posts To Next Thread Badge Squared	0.0013*** (0.0002)	0.0050*** (0.0007)	0.0029*** (0.0005)	0.0055*** (0.0008)
Region 7 × Posts To Next Thread Badge	-0.2032*** (0.0206)	-0.8925*** (0.0810)	-0.5941*** (0.0540)	-0.9881*** (0.0899)
Region 7 × Posts To Next Thread Badge Squared	0.0337*** (0.0035)	0.1480*** (0.0136)	0.0985*** (0.0091)	0.1638*** (0.0151)
Region 9 × Posts To Next Thread Badge	0.0052** (0.0019)	-0.0014 (0.0073)	-0.0013 (0.0049)	-0.0014 (0.0082)
Region 9 × Posts To Next Thread Badge Squared	-0.0006 (0.0004)	0.0008 (0.0016)	0.0005 (0.0011)	0.0008 (0.0018)
Region 10 × Posts To Next Thread Badge	-0.0132 (0.0157)	-0.0053 (0.0619)	-0.0112 (0.0413)	-0.0079 (0.0688)
Region 1 × Posts To Next Review Badge	-0.0071*** (0.0002)	-0.0264*** (0.0009)	-0.0181*** (0.0006)	-0.0293*** (0.0010)
Region 1 × Posts To Next Review Badge Squared	0.0031*** (0.0002)	0.0108*** (0.0006)	0.0075*** (0.0004)	0.0119*** (0.0007)
Region 2 × Posts To Next Review Badge	-0.0038*** (0.0003)	-0.0121*** (0.0012)	-0.0086*** (0.0008)	-0.0135*** (0.0013)
Region 2 × Posts To Next Review Badge Squared	0.0007*** (0.0001)	0.0020*** (0.0003)	0.0014*** (0.0002)	0.0022*** (0.0003)
Region 3 × Posts To Next Review Badge	-0.0023*** (0.0007)	-0.0164*** (0.0026)	-0.0112*** (0.0017)	-0.0184*** (0.0029)
Region 3 × Posts To Next Review Badge Squared	0.0002 (0.0002)	0.0033*** (0.0007)	0.0022*** (0.0005)	0.0037*** (0.0008)
Region 4 × Posts To Next Review Badge	0.0024*** (0.0008)	0.0175*** (0.0031)	0.0114*** (0.0021)	0.0194*** (0.0035)
Region 4 × Posts To Next Review Badge Squared	-0.0011*** (0.0002)	-0.0058*** (0.0007)	-0.0038*** (0.0004)	-0.0064*** (0.0007)
Region 5 × Posts To Next Review Badge	-0.0178*** (0.0020)	-0.0070 (0.0079)	-0.0061 (0.0052)	-0.0092 (0.0087)
Region 5 × Posts To Next Review Badge Squared	0.0030*** (0.0004)	0.0002 (0.0015)	0.0004 (0.0010)	0.0005 (0.0017)
Region 6 × Posts To Next Review Badge	-1.1937*** (0.1397)	-0.2789 (0.5502)	-0.0964 (0.3667)	-0.4858 (0.6108)
Region 6 × Posts To Next Review Badge Squared	0.1926*** (0.0227)	0.0426 (0.0893)	0.0138 (0.0595)	0.0759 (0.0991)
Constant	-0.0001*** (0.0000)	-0.0003*** (0.0000)	-0.0002*** (0.0000)	-0.0003*** (0.0000)
Individual-Day Fixed Effects	Yes	Yes	Yes	Yes
Post Fixed Effects	Yes	Yes	Yes	Yes
Number of Observations	128,458,902	128,458,902	128,458,902	128,458,902
R ²	0.52	0.46	0.44	0.45

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C-19: Results for UGC Quantity and Timeliness Using Number of Rewards with 3-Day Time Window

	(i) Quantity	(ii) Timeliness
Reviews	0.0039*** (0.0001)	0.0052*** (0.0004)
Replies	0.0316*** (0.0001)	0.0530*** (0.0003)
Tips	0.1004*** (0.0009)	0.3208*** (0.0026)
Reviews × Tips	0.0051*** (0.0010)	-0.1201*** (0.0031)
Replies × Tips	0.1167*** (0.0005)	0.2299*** (0.0016)
Likes	0.0355*** (0.0002)	0.0278*** (0.0006)
Reviews × Likes	0.0225*** (0.0005)	0.1142*** (0.0015)
Replies × Likes	0.1478*** (0.0002)	0.1686*** (0.0005)
Compensation	-0.0211*** (0.0044)	-0.1878*** (0.0132)
Reviews × Compensation	-0.0332*** (0.0045)	-0.3023*** (0.0136)
Badge	-0.0949*** (0.0007)	-0.1170*** (0.0022)
Reviews × Badge	0.0715*** (0.0041)	0.0522*** (0.0123)
Received Tips for Other UGC Than Threads	0.1020*** (0.0008)	0.3694*** (0.0025)
Received Tips for Other UGC Than Reviews	-0.0035*** (0.0001)	-0.0001 (0.0003)
Received Tips for Other UGC Than Replies	0.0233*** (0.0001)	0.0458*** (0.0004)
Received Likes for Other UGC Than Threads	0.0776*** (0.0002)	0.0132*** (0.0006)
Received Likes for Other UGC Than Reviews	-0.0108*** (0.0000)	-0.0066*** (0.0001)
Received Likes for Other UGC Than Replies	0.0152*** (0.0001)	0.0041*** (0.0003)
Received Compensation for Other UGC Than Threads	-0.0056*** (0.0001)	-0.0466*** (0.0004)
Received Compensation for Other UGC Than Reviews	0.0003*** (0.0001)	-0.0043*** (0.0003)
Received Badge for Other UGC Than Threads	-0.0373*** (0.0006)	-0.0377*** (0.0017)
Received Badge for Other UGC Than Reviews	-0.0335*** (0.0006)	-0.0388*** (0.0017)

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C-20: Results for UGC Quantity and Timeliness Using Number of Rewards with 3-Day Time Window (Cont. 1)

	(i) Quantity	(ii) Timeliness
Same Thread Activity Dummy	-0.0019*** (0.0001)	-0.0032*** (0.0003)
Same Review Activity Dummy	0.0134*** (0.0002)	0.0248*** (0.0005)
Same Reply Activity Dummy	-0.0352*** (0.0001)	-0.0563*** (0.0004)
Days Since Last Thread Posted	-0.0021*** (0.0000)	-0.0024*** (0.0000)
Days Since Last Review Posted	-0.0002*** (0.0000)	-0.0001 (0.0001)
Days Since Last Reply Posted	-0.0045*** (0.0000)	-0.0075*** (0.0000)
Number of Written Threads so Far	0.0055*** (0.0000)	0.0107*** (0.0001)
Number of Written Reviews so Far	-0.0064*** (0.0001)	-0.0023*** (0.0003)
Number of Written Replies so Far	0.0063*** (0.0000)	0.0103*** (0.0001)
If Posted Threads Dummy		1.1247*** (0.0008)
If Posted Reviews Dummy		5.0327*** (0.0044)
If Posted Replies Dummy		1.6616*** (0.0004)
Region 1 \times Posts To Next Thread Badge	-0.0048*** (0.0002)	0.0031*** (0.0005)
Region 1 \times Posts To Next Thread Badge Squared	0.0008*** (0.0000)	-0.0010*** (0.0001)
Region 2 \times Posts To Next Thread Badge	-0.0008*** (0.0002)	0.0060*** (0.0007)
Region 2 \times Posts To Next Thread Badge Squared	-0.0002*** (0.0000)	-0.0012*** (0.0001)
Region 3 \times Posts To Next Thread Badge	0.0035*** (0.0005)	-0.0030* (0.0014)
Region 3 \times Posts To Next Thread Badge Squared	-0.0008*** (0.0001)	0.0006* (0.0003)
Region 4 \times Posts To Next Thread Badge	0.0234*** (0.0010)	0.0297*** (0.0029)
Region 4 \times Posts To Next Thread Badge Squared	-0.0045*** (0.0002)	-0.0062*** (0.0006)
Region 5 \times Posts To Next Thread Badge	-0.0190*** (0.0023)	-0.0498*** (0.0069)
Region 5 \times Posts To Next Thread Badge Squared	0.0045*** (0.0005)	0.0105*** (0.0014)

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C-21: Results for UGC Quantity and Timeliness Using Number of Rewards with 3-Day Time Window (Cont. 2)

	(i) Quantity	(ii) Timeliness
Region 6 × Posts To Next Thread Badge	0.0135*** (0.0018)	0.0087 (0.0054)
Region 6 × Posts To Next Thread Badge Squared	-0.0017*** (0.0003)	-0.0005 (0.0010)
Region 7 × Posts To Next Thread Badge	-0.1812*** (0.0368)	0.1131 (0.1104)
Region 7 × Posts To Next Thread Badge Squared	0.0310*** (0.0062)	-0.0181 (0.0185)
Region 9 × Posts To Next Thread Badge	0.0061 (0.0033)	-0.0347*** (0.0100)
Region 9 × Posts To Next Thread Badge Squared	0.0004 (0.0007)	0.0063** (0.0022)
Region 10 × Posts To Next Thread Badge	-0.1186*** (0.0241)	-0.0694 (0.0724)
Region 1 × Posts To Next Review Badge	-0.0158*** (0.0004)	-0.0216*** (0.0012)
Region 1 × Posts To Next Review Badge Squared	0.0064*** (0.0003)	0.0064*** (0.0008)
Region 2 × Posts To Next Review Badge	0.0106*** (0.0005)	0.0016 (0.0014)
Region 2 × Posts To Next Review Badge Squared	-0.0033*** (0.0001)	-0.0014*** (0.0004)
Region 3 × Posts To Next Review Badge	0.0207*** (0.0011)	-0.0361*** (0.0033)
Region 3 × Posts To Next Review Badge Squared	-0.0051*** (0.0003)	0.0080*** (0.0009)
Region 4 × Posts To Next Review Badge	0.0245*** (0.0013)	-0.0540*** (0.0039)
Region 4 × Posts To Next Review Badge Squared	-0.0046*** (0.0003)	0.0123*** (0.0008)
Region 5 × Posts To Next Review Badge	-0.0127*** (0.0035)	-0.0920*** (0.0105)
Region 5 × Posts To Next Review Badge Squared	0.0037*** (0.0007)	0.0157*** (0.0020)
Region 6 × Posts To Next Review Badge	1.2157*** (0.2735)	3.4240*** (0.8202)
Region 6 × Posts To Next Review Badge Squared	-0.1991*** (0.0444)	-0.5645*** (0.1331)
Constant	-0.0001*** (0.0000)	0.0000*** (0.0000)
Individual-Day Fixed Effects	Yes	Yes
Post Fixed Effects	Yes	Yes
Number of Observations	128,458,902	128,458,902
R ²	0.13	0.20

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C-22: Results for UGC Quality Using Number of Rewards with 3-Day Time Window

	(i)	(ii)	(iii)	(iv)
	Length	Complexity	Informativeness	Politeness
Reviews	0.0025*** (0.0001)	0.0107*** (0.0003)	0.0073*** (0.0002)	0.0119*** (0.0004)
Replies	0.0144*** (0.0001)	0.0619*** (0.0002)	0.0411*** (0.0001)	0.0686*** (0.0002)
Tips	0.0184*** (0.0005)	0.1035*** (0.0019)	0.0671*** (0.0013)	0.1167*** (0.0021)
Reviews × Tips	0.0224*** (0.0006)	0.0056** (0.0023)	0.0038** (0.0015)	0.0076** (0.0026)
Replies × Tips	0.0229*** (0.0003)	0.0797*** (0.0012)	0.0510*** (0.0008)	0.0883*** (0.0014)
Likes	-0.0004*** (0.0001)	0.0194*** (0.0004)	0.0132*** (0.0003)	0.0214*** (0.0005)
Reviews × Likes	0.0030*** (0.0003)	0.0503*** (0.0011)	0.0330*** (0.0007)	0.0552*** (0.0012)
Replies × Likes	0.0572*** (0.0001)	0.2119*** (0.0004)	0.1399*** (0.0003)	0.2352*** (0.0005)
Compensation	-0.0190*** (0.0025)	-0.0013 (0.0099)	-0.0032 (0.0066)	-0.0014 (0.0110)
Reviews × Compensation	0.0719*** (0.0026)	-0.0490*** (0.0103)	-0.0294*** (0.0068)	-0.0513*** (0.0114)
Badge	-0.0262*** (0.0004)	-0.1203*** (0.0017)	-0.0796*** (0.0011)	-0.1329*** (0.0018)
Reviews × Badge	0.0190*** (0.0024)	0.0907*** (0.0093)	0.0612*** (0.0062)	0.1009*** (0.0103)
Received Tips for Other UGC Than Threads	0.0156*** (0.0005)	0.0780*** (0.0019)	0.0496*** (0.0013)	0.0887*** (0.0021)
Received Tips for Other UGC Than Reviews	-0.0008*** (0.0001)	-0.0020*** (0.0003)	-0.0013*** (0.0002)	-0.0021*** (0.0003)
Received Tips for Other UGC Than Replies	0.0117*** (0.0001)	0.0518*** (0.0003)	0.0349*** (0.0002)	0.0580*** (0.0004)
Received Likes for Other UGC Than Threads	0.0255*** (0.0001)	0.0872*** (0.0005)	0.0580*** (0.0003)	0.0970*** (0.0005)
Received Likes for Other UGC Than Reviews	-0.0041*** (0.0000)	-0.0151*** (0.0001)	-0.0101*** (0.0001)	-0.0168*** (0.0001)
Received Likes for Other UGC Than Replies	0.0095*** (0.0001)	0.0426*** (0.0002)	0.0286*** (0.0001)	0.0475*** (0.0002)
Received Compensation for Other UGC Than Threads	-0.0004*** (0.0001)	-0.0061*** (0.0003)	-0.0035*** (0.0002)	-0.0068*** (0.0003)
Received Compensation for Other UGC Than Reviews	0.0004*** (0.0001)	0.0008*** (0.0002)	0.0007*** (0.0002)	0.0009*** (0.0003)
Received Badge for Other UGC Than Threads	-0.0117*** (0.0003)	-0.0502*** (0.0013)	-0.0335*** (0.0009)	-0.0557*** (0.0015)
Received Badge for Other UGC Than Reviews	-0.0094*** (0.0003)	-0.0418*** (0.0013)	-0.0276*** (0.0008)	-0.0462*** (0.0014)

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C-23: Results for UGC Quality Using Number of Rewards with 3-Day Time Window (Cont. 1)

	(i) Length	(ii) Complexity	(iii) Informativeness	(iv) Politeness
Same Thread Activity Dummy	-0.0007*** (0.0001)	-0.0040*** (0.0002)	-0.0026*** (0.0002)	-0.0043*** (0.0003)
Same Review Activity Dummy	0.0039*** (0.0001)	0.0207*** (0.0004)	0.0134*** (0.0003)	0.0228*** (0.0005)
Same Reply Activity Dummy	-0.0137*** (0.0001)	-0.0630*** (0.0003)	-0.0416*** (0.0002)	-0.0697*** (0.0003)
Days Since Last Thread Posted	-0.0010*** (0.0000)	-0.0044*** (0.0000)	-0.0029*** (0.0000)	-0.0049*** (0.0000)
Days Since Last Review Posted	-0.0002*** (0.0000)	-0.0010*** (0.0000)	-0.0007*** (0.0000)	-0.0011*** (0.0000)
Days Since Last Reply Posted	-0.0021*** (0.0000)	-0.0089*** (0.0000)	-0.0059*** (0.0000)	-0.0099*** (0.0000)
Number of Written Threads so Far	0.0018*** (0.0000)	0.0093*** (0.0001)	0.0061*** (0.0001)	0.0102*** (0.0001)
Number of Written Reviews so Far	-0.0020*** (0.0001)	-0.0098*** (0.0003)	-0.0065*** (0.0002)	-0.0108*** (0.0003)
Number of Written Replies so Far	0.0030*** (0.0000)	0.0131*** (0.0001)	0.0087*** (0.0001)	0.0145*** (0.0001)
If Posted Threads Dummy	0.9449*** (0.0002)	2.6945*** (0.0006)	1.7443*** (0.0004)	2.9510*** (0.0007)
If Posted Reviews Dummy	2.1596*** (0.0008)	2.7634*** (0.0033)	1.8096*** (0.0022)	3.0883*** (0.0037)
If Posted Replies Dummy	0.6577*** (0.0001)	2.5078*** (0.0003)	1.6184*** (0.0002)	2.7618*** (0.0003)
Region 1 \times Posts To Next Thread Badge	-0.0027*** (0.0001)	-0.0126*** (0.0004)	-0.0087*** (0.0002)	-0.0140*** (0.0004)
Region 1 \times Posts To Next Thread Badge Squared	0.0005*** (0.0000)	0.0023*** (0.0001)	0.0016*** (0.0001)	0.0026*** (0.0001)
Region 2 \times Posts To Next Thread Badge	-0.0017*** (0.0001)	-0.0079*** (0.0005)	-0.0055*** (0.0004)	-0.0087*** (0.0006)
Region 2 \times Posts To Next Thread Badge Squared	0.0002*** (0.0000)	0.0008*** (0.0001)	0.0006*** (0.0001)	0.0009*** (0.0001)
Region 3 \times Posts To Next Thread Badge	-0.0012*** (0.0003)	-0.0036*** (0.0010)	-0.0032*** (0.0007)	-0.0038*** (0.0011)
Region 3 \times Posts To Next Thread Badge Squared	0.0001*** (0.0000)	0.0001 (0.0002)	0.0002* (0.0001)	0.0000 (0.0002)
Region 4 \times Posts To Next Thread Badge	0.0074*** (0.0006)	0.0262*** (0.0022)	0.0168*** (0.0015)	0.0289*** (0.0024)
Region 4 \times Posts To Next Thread Badge Squared	-0.0015*** (0.0001)	-0.0053*** (0.0004)	-0.0035*** (0.0003)	-0.0058*** (0.0005)
Region 5 \times Posts To Next Thread Badge	-0.0146*** (0.0013)	-0.0560*** (0.0052)	-0.0401*** (0.0035)	-0.0631*** (0.0058)
Region 5 \times Posts To Next Thread Badge Squared	0.0029*** (0.0003)	0.0110*** (0.0010)	0.0078*** (0.0007)	0.0124*** (0.0011)

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C-24: Results for UGC Quality Using Number of Rewards with 3-Day Time Window (Cont. 3)

	(i) Length	(ii) Complexity	(iii) Informativeness	(iv) Politeness
Region 6 × Posts To Next Thread Badge	0.0028** (0.0010)	0.0179*** (0.0041)	0.0122*** (0.0027)	0.0197*** (0.0046)
Region 6 × Posts To Next Thread Badge Squared	-0.0005** (0.0002)	-0.0028*** (0.0007)	-0.0020*** (0.0005)	-0.0031*** (0.0008)
Region 7 × Posts To Next Thread Badge	-0.0064 (0.0211)	-0.0695 (0.0834)	-0.0427 (0.0556)	-0.0768 (0.0925)
Region 7 × Posts To Next Thread Badge Squared	0.0012 (0.0035)	0.0122 (0.0140)	0.0075 (0.0093)	0.0135 (0.0155)
Region 9 × Posts To Next Thread Badge	0.0110*** (0.0019)	0.0122 (0.0075)	0.0076 (0.0050)	0.0139 (0.0084)
Region 9 × Posts To Next Thread Badge Squared	-0.0014*** (0.0004)	-0.0016 (0.0017)	-0.0010 (0.0011)	-0.0019 (0.0018)
Region 10 × Posts To Next Thread Badge	-0.0532*** (0.0138)	-0.2222*** (0.0546)	-0.1459*** (0.0364)	-0.2466*** (0.0607)
Region 1 × Posts To Next Review Badge	-0.0062*** (0.0002)	-0.0213*** (0.0009)	-0.0150*** (0.0006)	-0.0236*** (0.0010)
Region 1 × Posts To Next Review Badge Squared	0.0026*** (0.0001)	0.0078*** (0.0006)	0.0058*** (0.0004)	0.0086*** (0.0006)
Region 2 × Posts To Next Review Badge	0.0012*** (0.0003)	0.0065*** (0.0011)	0.0037*** (0.0007)	0.0071*** (0.0012)
Region 2 × Posts To Next Review Badge Squared	-0.0006*** (0.0001)	-0.0028*** (0.0003)	-0.0017*** (0.0002)	-0.0031*** (0.0003)
Region 3 × Posts To Next Review Badge	0.0039*** (0.0006)	0.0075*** (0.0025)	0.0048*** (0.0016)	0.0083*** (0.0027)
Region 3 × Posts To Next Review Badge Squared	-0.0011*** (0.0002)	-0.0017** (0.0007)	-0.0012** (0.0005)	-0.0019** (0.0008)
Region 4 × Posts To Next Review Badge	0.0056*** (0.0007)	0.0308*** (0.0029)	0.0198*** (0.0020)	0.0340*** (0.0033)
Region 4 × Posts To Next Review Badge Squared	-0.0014*** (0.0002)	-0.0077*** (0.0006)	-0.0051*** (0.0004)	-0.0086*** (0.0007)
Region 5 × Posts To Next Review Badge	-0.0129*** (0.0020)	0.0079 (0.0079)	0.0027 (0.0053)	0.0077 (0.0088)
Region 5 × Posts To Next Review Badge Squared	0.0027*** (0.0004)	-0.0015 (0.0015)	-0.0006 (0.0010)	-0.0015 (0.0017)
Region 6 × Posts To Next Review Badge	0.3384* (0.1569)	1.7652** (0.6194)	1.1006** (0.4129)	1.8268** (0.6875)
Region 6 × Posts To Next Review Badge Squared	-0.0561* (0.0255)	-0.2882** (0.1005)	-0.1800** (0.0670)	-0.2985** (0.1116)
Constant	0.0000*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0002*** (0.0000)
Individual-Day Fixed Effects	Yes	Yes	Yes	Yes
Post Fixed Effects	Yes	Yes	Yes	Yes
Number of Observations	128,458,902	128,458,902	128,458,902	128,458,902
R ²	0.52	0.48	0.46	0.47

Standard errors in parentheses

The dependent and independent variables are in logarithmic form.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$