The Impact of Gamification on
Word-of-Mouth Effectiveness: Evidence from Foursquare

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Abstract

Companies are encouraging and incentivizing contributors of online word-of-mouth (WOM) through gamification elements such as badges, mayorships, points, and such. We study how gamification elements, which capture and signal contributors' accumulated expertise, affect consumers' perception of contributors' knowledge, and therefore the perceived effectiveness of their contributed WOM. We focus on two specific gamification elements on Foursquare: badges, which signal breadth of knowledge, and mayorships, which signal depth of knowledge. Using experiments conducted on Amazon Mechanical Turk, we find: (1) badges and mayorships that appear alongside contributors' online WOM, provide a unique way to signal WOM contributors' knowledge and therefore have an impact on the perceived effectiveness of such WOM; (2) the impact of badges on perceived WOM effectiveness is higher than that of mayorships. Our findings have important implications for the ongoing research on the impact of gamification and also suggest ways for firms to benefit from gamification.

1. Introduction

A nascent field, gamification, has emerged as a new trend and drawn a lot of attention from leaders in business, education and even government policy makers these days [26,30,36,38]. Defined as using game-design elements in non-gaming contexts [16,38], gamification has shown its great potential in learning, skill acquisition, attitude and behavior change. When it comes to business domain, it has been found that (1) gamification can be applied in enterprise to engage employees and increase the job performance [28,34]; (2) with the advent of web 2.0, gamification has evolved as a promising technique to increase customer engagement over the web [5]. Game-like elements, such as badges and mayorships, provide consumers a fun and playful way to keep track of their shopping activity and shopping experience, enjoying the sense of accomplishment and also create a friendly competition among friends.

The gamification elements also add a new and unique dimension to word-of-mouth (WOM). People have to visit various venues to collect badges or defeat other customers to be crowned as mayor for a specific venue. Thus, gamification elements keep track of consumers' real shopping history data and provide a unique way to authenticate their WOM for some business venues that they have been to. Previous literature on WOM focuses on what the reviewer has said, gamification presents what the reviewer has done or where he/she has visited. Thus, gamification adds a new dimension to WOM and this new dimension is what we will explore in this research. Prior research has provided support for the belief that sources with higher credibility are more persuasive than those with lower credibility [27]. Gamification provides us an opportunity to increase the credibility of the source. Therefore, the objective of this paper is to examine the impact of gamification on WOM. Our *first research question* is that: Will gamification increase the WOM effectiveness? To be more specific, will consumers feel that a comment is more effective when it is provided with reviewer's earned gamification elements together?

There are two types of market influencers: market maven and market expert. Market maven has broad knowledge about many kinds of products, places to shop and other facets of markets [1,18,19,35]. On the other hand, a market expert has deep knowledge and expertise in one or several particular product categories [13,19]. Furthermore, familiarity and expertise are two major components of consumer knowledge [3]. Based on the definitions of market maven and market expert, we can see that a market maven's consumer knowledge is more about familiarity, while a market expert has more expertise. However, little is known about who has a

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stronger influencing power between these two market influencers.

Now, with the help of gamification, we can measure and compare the impacts of market maven and expert. Badges are collected by visiting various types of business venues, or several venues within the same product domain. Mayorships are earned by defeating all the other people in the past 60 days for a specific venue on number of visits. The characteristics of the badges and mayorships and the underlying mechanisms indicate that: (1) badges demonstrate an individual has broad knowledge about market, therefore can be treated as a symbol for market maven; (2) Mayorships demonstrate that an individual has deep knowledge about one or several specific venues, and therefore can be viewed as a symbol for market expert. Therefore, market maven and market expert's influencing power can be measured by examining the impacts of badges and mayorships. The *second research question* we would like to explore is: What is the comparative value of depth versus breadth of knowledge in spreading word-of-mouth? This research question helps investigate the relative value of market experts (who have depth of knowledge) as compared to market mavens (who have breadth of knowledge) in spreading word-of-mouth.

Although an increasing number of games have been offered as services to consumers, to our best knowledge, this is one of the first academic articles that explore this phenomenon. Most of the research so far has focused on how these gamification techniques can promote engagement between members. To date, we are not aware of any prior study evaluating the impact of gamification on WOM or differentiating the influential power between market maven and market expert.

It is critical to examine the overall impact of gamification on WOM as well as the specific effects of individual gamification elements, such as badges and mayorships, for both theoretical and practical reasons. From theoretical perspective, prior literature has repeatedly demonstrated that attributes of a message source have direct impact on message recipients' attitudes which further affect the way they respond to the message [7,8,9,31]. Gamification elements, such as badges and mayorships, can be used to demonstrate different attributes of a message source. Therefore, the relationship between gamification and WOM has yet to be discovered. From a managerial point of view, gamification elements have become quite popular on e-commerce websites and mobile apps (Amazon, Foursquare, Nike+, Yelp, etc). Website visitors and app users have access to detailed reviewers' information including their names, interests, hometown, badges, friends network, etc. Given the extent and salience of social information on product reviewers, it seems worthwhile to explore whether such gamification elements influence the message receivers who are potential buyers.

In this research, we predict that by incorporating gamification into WOM, it will increase the WOM effectiveness. Furthermore, we expect that badges and mayorships represent two market influencers (maven and expert) and individuals value WOM comments from experts more than WOM from mavens. We design and implement two experiments using Foursquare as our gamification element source. Participations in our studies are recruited from Amazon Mechanical Turk. We first examine the main effect of badges and mayorships and demonstrate that gamification can increase the WOM effectiveness (Study 1). We then manipulate the type and number of gamification elements and seek to test (1) whether badges and mayorships are viewed as symbols for market maven and market expert; (2) WOM from market expert is perceived to be more effective compared to WOM from market maven, therefore, people prefer depth of knowledge more than breadth of knowledge (Study 2).

Our work is designed to extend prior research on WOM and gamification in the following important ways. First, with the help of gamification, we contribute to the current WOM literature by incorporating what individuals have done into the analysis of what they have said. Second, we contribute to gamification research by demonstrating how the category, type and number of gamification elements might affect WOM effectiveness. Third, we highlight how badges and mayorships can help us differentiate the impacts of market maven and expert, and examine whose WOM has a stronger influential power.

The rest of the paper is structured as follows. In next section, we describe the related theory and develop our hypotheses. Study 1 and Study 2 describe the details for each experiment and how we manipulate the gamification elements. General discussion about our findings and managerial implications are provided in the last section.

2. Theory and hypotheses

2.1. Word-of-mouth

Papers Previous literature in marketing, information systems, and computer science have tried to understand the impact of consumer-generated WOM on demand from different perspectives, such as volume, valence, context, channel and geographic location, etc.

Volume and Valence. A strong link has been built between product reviews and product sales in prior research [11,12,15,17,20,21,23,32]. Godes and Mayzlin

find a strong relationship between the dispersion of WOM about TV shows across online communities and the popularity of these TV shows [23]. Dellarocas et al. and Chevalier and Mayzlin have demonstrated that there is a strong association between numeric ratings (review valence) and book sales [12,15]. Forman et al. and Duan et al. find that review volume also affects product sales [17,20]. A lot of research has proven that WOM has a strong impact on sales, however, in terms of whether it is coming from positive reviews or negative ones, the findings are mixed [2,10]. Aggarwal et al. show that the impact of negative eWOM is stronger than the positive ones in the venture capital financing industry [2]. This stream of research has focused on the valence and the volume of reviews and missed another important component of review, which is the review textual content.

Self-Disclosed Identity Information. Most of the prior research on WOM has been focused on the link between review volume/valence and actual sales, and little attention has been paid to the effect of personal information that reviewers disclose about themselves in their review comments. To date, the only two exceptional prior studies that we are aware of are Forman et al. [20] and Ghose and Ipeirotis [21]. Forman et al. [20] demonstrate the influence of disclosed reviewers' information on peer recognition of reviews and provide evidence that identity-descriptive information has a positive impact on the review ratings and the disclosure of identity information is associated with increases in subsequent online product sales. In this research, we move forward and explore other aspects of self-disclosed personal information. The personal information that we are interested in this research is game-like elements, such as badges and mayorships, which reviewers can earn based on their shopping activity and experience.

2.2. Gamification

Gamification is defined as the incorporation of game mechanics into non-gaming context in order to increase user engagement and loyalty [26,38,40]. We can see that there are two components in this definition: (1) game mechanics and (2) non-game context. In order to understand the characteristics and impacts of games, researchers have drawn theories from different areas of psychology, such as social, cognitive, behavior, and health and physiological psychology [6]. Prior research on gamification has focused on both behavior outcomes and psychological outcomes, for example, motivation, attitude and enjoyment [26].

Research has shown how gamification can be used in enterprises. For instance, gamification can be implemented in enterprise information systems to increase the level of employee engagement, improve business process and job performance [28,29,34]. After being implemented successfully, gamification can give enterprises an edge by helping them engage employees and customers, and meet business needs. Given these benefits, it is not surprising to see that the move to enterprise gamification is accelerating.

Besides enterprise gamification application, Hamari [24] empirically investigate the relationship between gamification and successful marketing strategy and increased profitability through higher customer engagement. Contrary to what others have done to show the effect of gamification, Thom et al. [37] explore how the removal of gamification (points and badges) affects user activity within an enterprise social networking services. The results support the idea that removing the gamification scheme reduces the overall user participation [37].

It has also been studied from a service marketing perspective given that the goals for the majority of gamification implementations are towards marketing [30]. Foursquare and Nike+ are two examples of mobile services whose success are often attributed to their gamification elements. By inserting game dynamics into web or mobile interactions, gamification has demonstrated its promising potential to make interactions fun and enjoyable and thus enhance customer engagement [5].

The most commonly used game mechanics include: points (redeemable or social), levels, leader boards, rewards, and badges [25]. Raftopoulos et al. [39] have found that three key game mechanics have been widely used in previous research, including achievements such as badges and trophies (52%), points (43%) and currency and rewards (35%). Given that achievement (accomplishment, competence) is the most common game mechanic that is being applied in real world, in this study, we focus on two types of game elements that indicate achievement, badges and mayorships. On Foursquare, badges are earned by checking in at different types of venues, or different venues in same type. Once a badge is earned, it remains in the user's profile forever and the user will not lose it. If a person check into a venue more than any other customer in the past 60 days, he/she will be crowned as Mayor of that venue. It is very hard to be crowned as Mayor in a place that is swarming. Because it is very competitive, once a user being crowned, he or she has to keep checking in the place to maintain the mayorships status, otherwise he or she may lose the title.

Furthermore, since a user has to physically present at a place to check in on his/her mobile device, they cannot falsify their movement histories in order to earn badges or mayorships. Therefore, these gamification elements provide a unique way to show what a person

has done and his/her experience or expertise. A person with lots of restaurant-related badges is more likely to be a food expert, while another one with several national-parks badges may be an outdoor person who loves nature beauty. Gamification elements can also be used as a way to authenticate a person's review comment. We are more likely to trust a person's comments on a coffee shop if he/she has coffee badges compared to another person without such information.

In this research, we focus on the impact of gamification elements on WOM. For instance, a bento box badge indicates a person's experiences with Japanese restaurants. When a person with this badge gives a comment about a Japanese restaurant, people should value his comment more than another person without the bento box badges. Furthermore, a person with more badges and mayorships has been to more places compared to another person with less badges and mayorships. Thus, in this research, we argue that providing gamification elements along with WOM will increase the perceived WOM effectiveness. The more the gamification elements, the higher people value the WOM. Therefore, we hypotheses that:

HYPOTHESIS 1 (H1). Product/Service reviews provided with gamification elements that disclose reviewers' purchase/activity history will be rated as more effective than anonymous reviews.

HYPOTHESIS 2 (H2). Product/Service reviews with a higher number of gamification elements will be rated as more effective than reviews with a lower number of gamification elements.

Various numbers and types of gamification elements can be obtained by visiting different venues, such as restaurants, museums, outdoor parks, etc. Thus, it is not clear which type of gamification carries more weight when a customer evaluates a review comment. It is possible that customers rate a comment more effective when this reviewer has more related experience compared to unrelated experience. For instance, a customer may feel that a food expert, who has collected a lot of food-related badges, gives more useful comments about a restaurant compared to an outdoor person who has collected a lot of national park badges. Therefore, we have following hypothesis:

HYPOTHESIS 3 (H3). Product/Service reviews with domain-related gamification elements will be rated as more effective than reviews with domain-unrelated gamification elements.

2.3. Market maven and market expert

Market maven refers to an individual who has broad knowledge about different kinds of products, where to shop and also other facets of markets [1,18,19]. Feick and Price [19] develop a Likert-type scale to measure customers' market maven tendencies and confirm that market mavens exist and they have influential power on other consumers' purchase decisions. Market mavens enjoy shopping and pay more attention to advertising. They are also willing to provide market information by initiating conversations about products [1]. Price et al. [35] focus on why market helpers provide assistance and Barnes and Pressey [4] examine the differences and determinants of market maven behavior across real-life, web and virtual world marketing channels.

Contrary to market maven, market expert, is defined as consumers who have deep consumption experiences within a product category [13,19]. Instead of having a broad knowledge, a market expert has very detailed knowledge about a specific product or within a preferred cluster of products, and they have a better understanding of the subtleties within a product category.

Familiarity and expertise are two components of consumer knowledge [3,31]. Familiarity refers to the number of product-related experiences that have been acquired by consumers, which captures the breadth of knowledge. Expertise is defined as the ability to complete a specific product-related job successfully, and it shows the depth of the knowledge. As we discussed in last section, in the context of gamification, we extend this perspective and propose (1) badges indicate that a person is a market maven, who has the breadth of knowledge; (2) mayorships indicate that a person is a market expert, who has the depth of knowledge. Therefore, we hypothesize that:

HYPOTHESIS 4 (H4). A reviewer with badges will be viewed more like a market maven. A reviewer with mayorships will be viewed more like a market expert.

People develop emotional and symbolic bonds with their social and physical environment. When consumers are attached to a specific place, they tend to take a role as guide to advocate for this place. Compared to traditional WOM, ambassadorship is more selective but also more persistent because of the close bond they built with the place [14]. Mayorship, as a gamification element, is a fun and cool way to represent this ambassadorship idea in a game environment. When a person defeats all other consumers and crowned as mayor of a commercial place, he/she is attached to this place and become an ultimate loyal customer. The nature of mayorships guarantees that mayor has visited the place more than any other customer. Thus, the review comments left by mayor should be rated more valuable compared to other consumers and we hypothesize that:

HYPOTHESIS 5 (H5). Product/Service reviews left by a market expert (a reviewer with mayorships) will be rated as more effective than reviews left by a market maven (a reviewer with badges).

3. Pretest: the representativeness of review comments

We conduct this pretest to make sure that the two review comments used in Study 1 and Study 2 are appropriate for a coffee shop and a restaurant. The two review comments are:

Review 1 (coffee shop) - "Just been renovated, great seating arrangements ranging from desk, single work areas to couches for lounging."

Review 2 (restaurant) - "Monday through Thursday – reverse happy hour is the best! Drafts, house wines for $3."

A questionnaire is designed to gather the required data for this pretest. Fifty-five subjects on Amazon Mechanical Turk participated in this pretest for $0.4 compensation and they all completed the survey (38% female, 53% between 25-34 years old). After reading the review comments, participants were asked to answer two questions which are designed to measure the representativeness of the review comments: (1) Is this a typical review for a coffee shop/restaurant? (1=Extremely Atypical, 5=Neutral, 9=Extremely Typical). (2) Is this a realistic review for a coffee shop/restaurant? (1=Extremely Unrealistic, 5=Neutral, 9=Extremely Realistic). Table 1 summarizes the results for our pretest on the representativeness of the two review comments.

Table 1. Pretest results

	Review 1		Review 2	
	Typical	Realistic	Typical	Realistic
Mean	5.55	6.62	6.33	6.53
Median	6	7	7	7
St.Dev	1.62	1.69	1.93	1.83
Crobach's Alpha	0.83		0.89	
ICC-Consistency	0.83(F=5.75)		0.89(F=8.22)	
ICC-Abs. Agree	0.67		0.75	

The results from this pretest demonstrate that the two review comments are typical and realistic review comments for a coffee shop and a restaurant. This pretest helps us to eliminate any possible doubts on the review comments and it is proper to use them in our Study 1 and Study 2 to investigate the impact of gamification on WOM effectiveness and how this impact differ for different number and type of gamification elements.

4. Study 1: the impact of gamification on WOM effectiveness

A questionnaire is designed to gather the required data for this research. In Study 1, we start with a basic question: does providing a reviewer's gamification elements increase the reviewer's WOM effectiveness? Gamification elements are earned based on a person's shopping/visiting history. Therefore, gamification elements provide consumers an attractive way to document their shopping/visiting histories. Beyond that, it can also authenticate our review comments and make it more credible because we have to visit these places in person and get first-hand experience. In this study, we examine the effectiveness of review comments in a restaurant setting. First, we examine whether providing the gamification elements will increase the rating of effectiveness of WOM. Second, we examine whether the impact of badges is different from the impact of mayorships.

4.1. Methods

Two hundred and forty-two subjects on Amazon Mechanical Turk participated in the study for $0.5 compensation. Fourteen participants did not complete the survey. Thus, all analyses refer to two hundred and twenty-eight people (37% female, 45% between 25-34 years old). Participations were randomly assigned to three conditions in which they filled out online questionnaires containing some review comments about a Starbucks, reviewer's badges or mayorships (if applicable), and they were asked to assess the effectiveness of a review comment made for a Starbucks, given that they were looking for a coffee shop. In the control group, we only presented the review comment left by a reviewer without providing any information about the gamification elements he/she has earned. In the treatment groups, both the review comment and the badges (or mayorships) that the reviewer has earned are present to subjects. The review comment they read in all conditions was as follows:

"Just been renovated, great seating arrangements ranging from desk, single work areas to couches for lounging."

After reading the review comment and taking a look at the gamification elements this reviewer has earned (if provided), participants were asked to answer three questions which are used to measure the effectiveness of the review comment: (1) Do you feel this review is useful? (1 = very useless, 4 = neutral, 7 = very useful). (2) How likely are you going to recommend this Starbucks to your friend? (1 = very unlikely, 4 = undecided, 7 = very likely). (3) After reading this review, I intend to go to this Starbucks in the near future. (1 = strongly disagree, 4 = neither agree nor disagree, 7 = strongly agree). We keep the review comments consistent across three groups and the only thing we manipulate is whether to provide the gamification element and which one to provide. Figure 1 presents the gamification elements used in Study 1.

Figure 1. Gamification used in study 1

The three questions mentioned above measured different aspects of the review's perceived effectiveness. On seven-point scales, participants assessed the review comment's usefulness, their recommendation likelihood, and self-acting likelihood. Combining these three measures, we create a composite measure called Effectiveness ($\alpha = 0.82$) which served as our main dependent variable.

4.2. Results and discussion

We next examine whether participants' rating on the effectiveness of review comments is affected by gamification elements. We conduct an analysis of variance (ANOVA) with Effectiveness as the dependent variable and gamification (none, badge, mayorships) as a predictor. Results are presented in Table 2 and Table 3. Test results reveal that providing gamification elements has a significant positive impact on Effectiveness. Participants felt the review comment is more effective if badges (M = 5.258) or mayorships (M = 5.288) are provided compared to the case when such gamification information is missing (M = 4.815), $F_{crit}(2, 225) = 3.036$, p = 0.015. However, there were no significant differences between the effectiveness of Badges (M = 5.258) and Mayorships (M = 5.288).

Table 2. ANOVA test

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	10.49	2.00	5.25	4.31	0.02
Intercept	5970.32	1.00	5970.3	4904	0.00
Group	10.49	2.00	5.25	4.31	0.02
Error	273.88	225	1.22		
Total	6271.22	228			
Corrected Total	284.37	227			

Study 1 reveals that comments provided with reviewers' gamification elements would be perceived more effective than comments without such gamification information. Providing a reviewer's collected gamification elements along with his/her review comment is a way to show that this reviewer has enough experience to make a valuable comment.

Therefore, participants are more likely to rate the effectiveness of this comment higher than the comments without gamification elements. In terms of which gamification element works better, badges or mayorships, we did not find evidence to support that any one of them is significantly better than the other. However, it is important to note that our stimuli included 8 badges in the badge condition vs. 3 mayorships in the mayorships condition to reflect a real life situation (i.e., badges are easier to earn and users tend to have more of them, whereas mayorships are difficult to earn and maintain, and users tend to have less of them at any given time). Thus, our results might also suggest that more badges are needed to match the effect of mayorships or ownership of less mayorships might be as effective as more badges.

Further, gamification can have many dimensions. The number and type of gamification elements may also play a role here. Thus, in subsequent study, we differentiate gamification elements by three dimensions: category (badges versus mayorships), number (low versus high) and type (restaurant – related versus restaurant – unrelated) and explore their main effects and all possible interaction terms.

Table 3. ANOVA test – pairwise comparisons

(I)Group	(J) Group	Mean Difference (I-J)	Sig.
control	badge	-0.44	0.01
	mayor	-0.47	0.01
badge	control	0.44	0.01
	mayor	-0.03	0.87
mayor	control	0.47	0.01
	badge	0.03	0.87

5. Study 2: the number and type of gamification elements

In Study 2, we explicitly test our hypotheses that comments from users with restaurant – related gamification elements would be perceived more effective compared those with restaurant – unrelated gamification elements; and more gamification elements work better than less gamification elements. Furthermore, we investigate whether the effect of number (type) of gamification elements varies by gamification category (mayorships vs. badges).

5.1. Method

We paid 570 participants $0.5 to complete our online survey. Forty-five people did not complete the survey, thus all subsequent analyses refer to 525 people (36.3% women, 44% of participations are between 25-34 years old). Participations were shown a review comment made for a restaurant named "The Owl Bar", reviewer's

gamification elements (depending on condition), and given that they were looking for a place to eat, they were asked to assess the effectiveness of the review comment as follows:

"Monday through Thursday – reverse happy hour is the best! Drafts, house wines for $3."

After reading the review comment and taking a look at the gamification elements this reviewer has earned (depending on the condition group), participants were asked to answer the same three questions discussed in Study 1, which are used to measure the effectiveness of the review comment. Study 2 uses a 2 (category: badges versus mayorships) $\times$ 2 (type: restaurant – related versus restaurant – unrelated) $\times$ 2 (number: low versus high) between-subjects design. Participants were randomly assignment to one of the eight groups. We keep the review comment consistent in all eight groups and only manipulate the gamification elements' type and number. Each block in Figure 2 and Figure 3 represents the gamification element that is provided in each of the eight groups besides the review comment.

Figure 2. Gamification elements – badges

Figure 3. Gamification elements – mayorships

5.2. Results and Discussion

5.2.1. Market maven and market expert. First, we examine the assumption that badges are viewed as a symbol for market maven while mayorships are viewed as a symbol for market expert. We ask participants to report the likelihood of (Q1) badges indicate this reviewer is a market maven; (Q2) badges indicate this reviewer is a market expert; (Q3) mayorships indicate this reviewer is a market maven; (Q4) mayorships indicate this reviewer is a market expert (1 = "not at all," and 7 = "very likely"). The means of reported likelihood are shown in Figure 4. The mean for badge representing

maven is higher than the mean for badge representing expert ($M_{maven} = 4.52$, $M_{expert} = 4.15$). Similarly, for mayorships, people treat mayorships more like a symbol for expert than a symbol for maven ($M_{maven} = 4.45$, $M_{expert} = 4.93$).
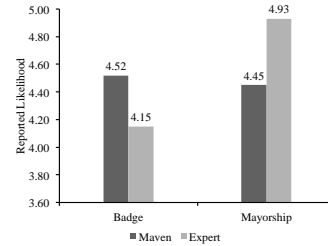

**Figure 4. Representative meaning**

In order to test whether the means are significantly different from each other within each group (badges, mayorships), we conduct two pair-wised t-tests and report the results in Table 4. The first pair-wised t-test applies to Q1 and Q2 for badges, and results indicate that, as we expected, people treat badges more like a symbol for market maven instead of market expert. Similarly, another pair-wised t-test applies to Q3 and Q4 for mayorships. Consistent with what we expected, mayorships is viewed more as a symbol for market expert with deep knowledge instead of market maven with broad knowledge.

Table 4. Paired T-test for maven and expert

	Paired Differences		t	df	Sig.
	Mean	Std. Deviation			
Q1 - Q2	0.37	1.25	4.83	263	0
Q3 - Q4	-0.48	1.37	-5.59	260	0

5.2.2. WOM effectiveness. We conduct an ANOVA with Effectiveness as our dependent measure and category (badges, mayorships), type (restaurant – related, restaurant – unrelated) and number (low, high) as predictors. Surprisingly, none of the main effects were significant. However, we found a significant interaction of category $\times$ number ($F_{crit}(1, 517) = 3.85$, F= 5.434 > 3.85, p = 0.02), which reveals that the effect of category varies by the number of gamification elements. To further investigate the nature of this interaction we split the data into two groups by the number of gamification elements. In each number group (low versus high), we compare the mean of WOM effectiveness between badges and mayorships. As shown in Figure 5, when the number of gamification elements is low, participants feel that review comments provided with badges are more effective compared to comments provided with mayorships ($M_{badges} = 4.417$, $M_{mayorships} = 4.132$). In other words, WOM is perceived

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to be more effective when it comes from a person with broad knowledge and experience instead of an expert with deep knowledge. However, when the number of gamification elements is high, it seems that comments provided with mayorships are more effective than provided with badges (M_{badges} = 4.301, $M_{mayorships}$ = 4.52).
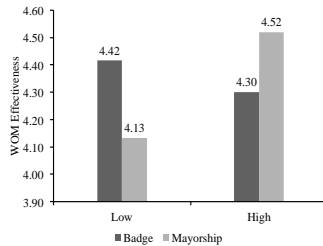
Figure 5. Number versus category

In order to further check whether the two groups of means are significantly different from each other, we conduct one-way ANOVA tests. In the low number group, reviews with badges are rated more effective than reviews with mayorships (M_{badges} = 4.417, $M_{mayorships}$ = 4.132, F = 3.331, p = 0.06). When the number of gamification is high, we find that there is no significant difference between the badge group and mayorships group (M_{badges} = 4.30, $M_{mayorships}$ = 4.52, F = 1.926, p = 0.166).

As we discussed before, badges represent the breadth of knowledge a person has, while mayorships represent the depth of knowledge a person has. When the number of badges and mayorships is low, the difference between the two is still clear. However, as a person's number of mayorships goes up, we suspect that this person may be viewed as having both depth of knowledge and also breadth of knowledge. In order to check this scenario, for the four mayorships groups, we split them into two groups based on number and run an independent-sample t-test to compare how likely mayorships are treated as market maven between the low number group and high number group (M_{low} = 4.24, M_{high} = 4.63, t = -2.426, p = 0.016). The significant t-test result supports our theory that a higher number of mayorships demonstrate both depth and breadth of knowledge.

To sum up, in Study 2, we focus on the number and type of gamification elements and try to find evidences that support our hypothesis 2 and 3. Contrary to our expectation, we do not find the main effect of the type and number of gamification elements. The more gamification elements do not lead to higher evaluation of WOM. It is possible that doubling the number does not make our participations feel that there is a significant number difference between the high and low groups for

both badges and mayorships. Surprisingly, the type of the gamification elements is not significant. Originally we assume that restaurant-related badges or mayorships should work better than unrelated one. However, we don't find any evidence to support this assumption. Our results indicate that no matter which type of badges are displayed, they carry the same information that this reviewer has been to different places and collect a lot of experience, and it does not matter these experience belongs to the same domain or not. It may be because our participants do not pay attention to the specific type of the badges and treat them with the same meaning.

However, we do find a significant interaction between number and category. When the number is low, people are more likely to rely on badges than on mayorships to judge the effectiveness of WOM. People value the breadth of knowledge more than the depth of knowledge. When the number of gamification elements is high, there is no significant difference between the impact of badges and the impact of mayorships. However, evidence has been found that when the number of mayorships goes up, they represent not only the depth of knowledge, but also the breadth of knowledge. The symbolic meanings of mayorships and badges start to blur. This explains why there is no difference between the impacts of badges and mayorships when the number is high and provides additional evidence to support the idea that people value the breadth of knowledge more than the depth of knowledge. Study 2 also provides strong evidences to support the hypothesis about market maven and market expert. A reviewer with badges is more likely to be viewed as a market maven with broad knowledge, while a reviewer with mayorships will be viewed as a market expert with deep knowledge.

6. Conclusions and Implications

Games, a long recognized leisure activity, has drawn a lot of attentions because of their potential to help in learning, skill acquisition, attitude and behavior change [6,26]. It also offers an exciting opportunity for marketers – one that most have yet to fully embrace. One venue to pursue is the combination of WOM and gamification. This combination can increase the effectiveness of WOM by providing consumers not only what the reviewer has said, but also what he or she has done. This study represents one of the first attempts to understand how gamification affects WOM which then has a strong connection with product sales.

The first area of inquiry in this research is to explore the impact of gamification on WOM. By providing empirical support for the profound impact of gamification on WOM effectiveness, this study contributes and extends WOM literature by adding a

new dimension – reviewers' activity history. To be more specific, not only what a reviewer has said, where he/she is, or which channel he/she used to post the comments matters, but also what the reviewer has done play a significant role when a message recipient evaluates the WOM.

The second area of inquiry we examine is to understand, between market maven and market expert, which one has more influential power on WOM? Marketing literature has recognized the importance of these two market influencers for a long time [1,18,19], but very little research has been done to compare these two. Based on the underlying gamification mechanisms, we argue that badges can be used as a symbol for market maven, whereas mayorships can be used to represent market expert. We propose that market experts should have higher influence power than market mavens. However, contrary to what we expert, our results suggest that market mavens have stronger influence power than market expert. Specifically, the review comment left by market maven has been rated more effective compared to market experts when the number of gamification elements is low. This suggests that individuals prefer the breadth of knowledge instead of the depth of knowledge. When the number of gamification elements is high, we do not find a significant result suggesting that the breadth of knowledge is preferred. However, we do find that for mayorships, as the number goes up, people start to treating it as symbols for both marketing maven and market expert. Therefore, a high number of mayorships indicate that a reviewer has both broad knowledge and deep/specific knowledge. This explains the insignificant result we have found. Furthermore, it does provide evidence that people still somehow prefer the breadth of knowledge. We also suspect that the type of the gamification elements should matter. For instance, when people evaluate the comments made for a restaurant, we would assume that restaurant-related badges or mayorships should work better compared to unrelated badges or mayorships. However, we do not find any evidence to support this idea. It is possible that consumers do not pay special attention to the type of gamification elements. Therefore, in future research, it is worth to explore participations' attention to the type of gamification elements so that we can have a better understanding on the impact of type of gamification.

The significance of this research for marketers is clear. The rewards for companies that capitalize on these gamification possibilities – deeper engagement with consumers, increased customer loyalty, and enhanced customer lifetime value – are not to be missed. One of the most important findings of this study is the value of reviewer's gamification on the effectiveness of WOM. This finding suggests that online or mobile retailers may be able to increase product sales by incorporating gamification into their sites and platforms. The results of our market maven and expert idea suggest that market mavens, with badges showing their broad knowledge and experience, have higher influential power. Potential buyers will trust their WOM more than other reviewers.

This finding has important implications for online advertising and marketing. It suggests that companies may benefit more if their online advertising and marketing strategies target more on market mavens who have badges displayed in their profiles. Our study also demonstrates how the three dimensions (category, number and type) of gamification elements work differently. Recognizing the importance and differences between these three dimensions, web and gamification designers may benefit from carefully incorporating the differences in order to come up with more effective design.

7. References

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