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What is This?

Spreading Social Media Messages on Facebook: An Analysis of Restaurant Business-to-Consumer Communications

Linchi Kwok[1] and Bei Yu[1]

Abstract

As a method of determining what types of social media messages work best for hospitality firms, this study examined what types of messages gained the most clicks of "Like" and comments on Facebook. An analysis of the number of likes and comments regarding nine hundred and eighty-two Facebook messages from ten restaurant chains and two independent operators revealed clear patterns. The more popular keywords involved information about the restaurant (e.g., menu descriptions) and the less popular messages were those that contained marketing-related words (including "winner" and "check"). Dividing the messages into four media types, namely, status (text only), link (containing a URL), video (embedding a video), and photo (showing photos), revealed that photo and status receive more likes and comments than the other two categories. Social media messages can also be categorized into two message types: sales and marketing (about two-thirds of the messages in this study) and conversational messages. Based on number of likes and comments, conversational messages are endorsed by more Facebook users. Finally, cross-effects of media type and message type affect the number of comments a message received. Although these results do not expressly assess Facebook users' reactions, the guidelines developed here should help managers improve their use of Facebook, as well as provide groundwork for developing a defined typology of Facebook messages and an automatic text classifier with the machine learning techniques.

Keywords

social media, Facebook, marketing, communication, restaurant, text classification

Social media has become a significant force in consumer decision making, including such areas as increasing awareness, sharing information, forming opinions and attitudes, purchasing, and evaluating postpurchase experience (Mangold and Faulds 2009). In particular, when consumers plan a trip or make a hotel or restaurant reservation, they commonly rely on online reviews for information (Jeong and Jang 2011; Kim, Mattila, and Baloglu 2011), and many rely on the Internet to choose a restaurant (Kimes 2011). It turns out that travelers are more likely to trust the messages and comments posted by other consumers on social media websites as compared with those reviewed by the travel agent websites (Pantelidis 2010).

Hospitality companies have embraced the opportunities provided by social media and the so-called "Web 2.0" technology (Noone, McGuire, and Rohlfs 2011). Not long ago, for instance, Starwood Hotels expressly included social media in its $6 billion strategic plan for revitalizing the Sheraton brand. In November 2009, Sheraton introduced a new website that connects with Facebook, allowing visitors to post their "Sheraton stories" simultaneously on both platforms (Sheraton Hotels & Resorts 2009). In February 2010,

Marriott Hotels invited celebrities to share their "Marriott experience" with their Twitter followers after the company completed a renovation of thirty-eight U.K. properties (Harmer 2010). Many business reports also showed that restaurant entrepreneurs can draw business and increase sales with Twitter and Facebook (e.g., Maines 2009; Young 2010). The truth is, no matter whether a hotel, a restaurant, or a destination chooses to play an active role in social media, consumers might have already shared their experiences in a travel review website or within their social media networks. Consequently, hospitality companies must find effective ways to make good use of the social media tools.

Facebook is ascendant among those social media tools. Facebook has become the most visited website (Dev, Buschman, and Bowen 2010) and is the website where Americans spend the most time (Nelson 2010), recording 42.6

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billion minutes of user time in October 2010 (Peers 2010). According to one study, Facebook recorded 500 million users in August 2010, of whom 50 percent logged into the website every day; people on average spent 46 minutes per day on Facebook (Zhu and Wilbur 2011). By the time Facebook filed for its initial public offering in February 2012, the number of Facebook users had jumped to 845 million worldwide (Raice 2012). A recent survey by the Society for Human Resource Management revealed that Facebook had become corporations' most popular website for external communications, cited by 45 percent of respondents (Leonard 2012).

Many companies now feed content from other social media websites to their Facebook page, and they embed Facebook's "Like" and "Share" buttons in their own websites. Some companies even allow consumers to post comments on their websites or to log into their websites using Facebook credentials. When a Facebook user likes or shares content or writes a comment with his or her Facebook credential, an update of the "Like," "Share," or comment will be posted on that user's wall. By doing so, consumers can quickly exchange information within their Facebook network, and companies can rapidly spread their messages. Thus, companies must pay close attention to Facebook users' reactions to the messages the companies are sending via Facebook. Facebook users' endorsement of a company's messages could be important in indicating the effectiveness of a company's social media strategies.

Seeing the importance of social media and Facebook to businesses, scholars and practitioners have frequently discussed this subject (e.g., Bronner and de Hoog 2011; Jeong and Jang 2011; Litvin, Goldsmith, and Pan 2008; Mack, Blose, and Pan 2008). Existing literature provides some insight regarding how consumers research and share information on the Internet. Relatively few studies, however, examine hospitality companies' social media messages sent on Facebook. Developing a taxonomy of hospitality companies' messages sent on Facebook, measuring the attention paid to these messages received from Facebook users, and identifying the messages that are endorsed by Facebook users may assist managers in communicating with their consumers more effectively and possibly developing the "right" social media marketing strategies.

Literature Review

Despite social media's significant impact for business, its marketing applications have received little research attention (Line and Runyan 2012), even though managers and scholars in the hospitality, travel, and tourism industries have urged that social media should become a top priority for future research (e.g., Buhalis and Law 2008; Dev, Buschman, and Bowen 2010; Line and Runyan 2012; Williams, Stewart, and Larsen 2012). In particular, research should focus on helping managers face the Web 2.0

challenges—that is, understanding consumer behavior, using social media in managing customer interactions, and measuring customers' activities and outcomes (Hennig-Thurau et al. 2010).

Social Media in Search Engine Marketing (SEM)

Many hotels have integrated SEM as an essential part of their comprehensive marketing strategy (O'Connor 2009; Paraskevas et al. 2011). Fesenmaier et al. (2011) believed that SEM has become one of the most important components of a company's overall Internet marketing strategy. Their national survey found that (a) among those respondents who usually use search engines for travel planning, 24.7 percent had looked at community sites such as TripAdvisor, 16.1 percent visited consumer content generated sites such as YouTube and Flickr, and 15.7 percent sought information on social networking sites such as Friendster and Facebook, and (b) even among those respondents who typically do not use search engines for travel-related information, 8.4 percent consulted TripAdvisor and the like, 6.7 percent went to consumer-generated sites, and 5.6 percent visited social networking sites. Xiang and Gretzel (2010) searched ten travel-related keywords on Google and found that (a) the content yielded from social media websites contributes to approximately 11 percent of the overall search results, and (b) virtual communities (e.g., igougo.com or lonelyplanet.com), online review sites, blogs, and social networking sites constitute 91 percent of the social media content presented in Google Search. More recently, Jacobsen and Munar (2012) conducted a survey study with 405 Nordic tourists to further compare the importance of tourist information sources among "Web 1.0 enterprise sources" (e.g., hotels' and airports' home pages), "independent media search websites" (e.g., guidebooks, magazines, and TV), and "social media sites" (i.e., Facebook and tourist blogs). Although these tourists did not see social media as being as important as the other two information sources, 24 percent of them reported that they had used Facebook and tourist blogs to plan their tours. More important, those who had used social media as an information source seem to be more active in seeking tourist information from the other two sources. These studies highlight the importance of social media in SEM. Social networking sites such as Facebook and Twitter, as well as mobile applications, will "inevitably" change the landscape of SEM (Pan et al. 2011).

Social Media As a Means of Electronic Word of Mouth (eWOM)

Because hospitality and tourism products are intangible and have an experiential nature, eWOM has become important in travel planning (Kim, Mattila, and Baloglu 2011; Litvin,

Goldsmith, and Pan 2008). Accordingly, many research studies also focus on social media's word of mouth (WOM) effect, in particular, online reviews and travel blogs. Using the WOM framework, Kim, Mattila, and Baloglu (2011) investigated the different influences of gender and levels of expertise on consumers' motivations on reading online reviews. Regardless of the differences among groups, consumers in general consider "convenience and quality assurance" an important factor of eWOM. Consumers participate in online reviews to learn what is new in the market in addition to receiving approval of others. Jeong and Jang (2011) examined the relationship between restaurant service (food quality, service quality, atmosphere, and price fairness) and consumers' motivations of positive eWOM (concern for others, expressing positive feelings, and helping the restaurant company). They found that food quality, service quality, and atmosphere can trigger positive eWOM in different ways. Pantelidis (2010) used a content analysis approach to analyze about 2,500 online reviews of 300 restaurants in London. On balance, the comments were fair and favorable, with comments on food, service, ambience, price, menu, and décor (in descending order of frequency).

Research studies have also examined online travel review sites and travel-related blogs. For example, O'Connor (2010) conducted a content analysis of online reviews regarding one hundred London hotels listed on TripAdvisor. The results suggest that (a) hotel location, room size, staff (good service), and cleanliness are important attributes for positive online review, and (b) few hotels (less than 0.5%) responded to travelers' online reviews. Mack, Blose, and Pan (2008) compared three identical scenarios about a cruise vacation drawn from the cruise company's blog, a personal blog, and a colleague. A survey of 193 respondents found that consumers perceived the descriptions from a company's or a personal blog significantly less trustworthy than those from a colleague. Numerous other studies highlight the importance and complexity of how consumers share information on social media (e.g., Bronner and de Hoog 2010; Carson 2008; Chalkiti and Sigala 2008; Schmalleger and Carson 2008; Sharda and Ponnada 2008; Wenger 2008).

Research on Facebook

As one of the predominant tools in social media, Facebook has received significant research attention from many disciplines, but only a few of the studies have focused on how Facebook can be used as an effective business-to-consumer (B2C) communication tool. Stankov, Lazic, and Dragicevic (2010), for example, examined to what extent the national tourism organizations (NTOs) in Europe use Facebook as a marketing tool, concluding that few were doing so. Using qualitative approaches, Vorvoreanu (2009) completed a focus group study on college students' perceptions of corporate public relations efforts and corporate presence on

Facebook. The research findings suggest that Facebook users prefer to interact with small business owners through personal messages and can be motivated to "Like" a company's Facebook page if the company posts exclusive discounts and coupons on Facebook. Hsu (2012) conducted a qualitative case study by observing the Facebook pages of six hotels in Taiwan that have a five-diamond ranking. The findings suggest that (a) using the Chinese language on Facebook creates a barrier for English-speaking consumers, and (b) based on the author's impression, it seems that Facebook users tend to like and post comments on the updates about a guest's exciting experience and satisfaction of his or her stay. Lee, Xiong, and Hu (2012) adopted a quantitative approach to test the relationships among Facebook users' emotions that were exhibited on three Facebook pages about festivals, these users' acceptance level of the Facebook pages as a legitimate marketing tool, and their intentions to attend the festivals. The results confirmed that Facebook users' emotional connection to an event page could increase this page's perceived usefulness, ease of use, and enjoyment. Furthermore, Facebook users' perceived enjoyment could improve their attitude toward using the Facebook page, which would ultimately lead to their intention to attend the event.

Although these studies provide insight regarding how consumers share and research travel- and hospitality-related information on the Internet, we still find a lack of in-depth analysis on the nature of hospitality companies' communications on Facebook. Specifically, current literature does not provide sufficient information to answer the following research questions, which could be important for hospitality and tourism marketers and scholars:

Research Question 1: What social media messages do hospitality companies share with consumers on Facebook?
Research Question 2: What types of social media messages are endorsed (and thus propagated) by Facebook users?

If hospitality companies know which types of messages are favored by Facebook users, managers may be able to communicate with their consumers more effectively and possibly develop better strategies to engage with those users. The bottom line is when Facebook users click the "Like" button, "share" the content, and post comments on a company's page, they are helping this company spread the word on a network with 845 million potential customers.

Method

Mangold and Faulds (2009, 357) described social media as a "hybrid element of promotion mix" for its dual marketing functions. First, social media can be utilized as a traditional integrated marketing communications tool (e.g., direct mar-

Restaurants (12)	Sales Volume[a] (A)	Number of Facebook Fans[b] (B)	B / A[c]	Number of Useful Facebook Posts
Quick service (7)				
McDonald's	70,693.0	3,244,673	46	58
Starbucks	13,500.0	14,605,410	1,082	94
Subway	12,900.0	2,218,422	172	57
Pizza Hut	10,400.0	1,473,274	142	112
Taco Bell	6,900.0	2,842,184	412	157
Dunkin's Donuts	5,500.0	2,078,568	378	71
Chick-fil-A	2,962.3	3,106,304	1,049	77
Casual dining (3)				
Chilli's Grill & Bar	4,200.0	470,994	112	80
Olive Garden	3,070.0	544,278	117	61
Outback Steakhouse	2,935.0	883,670	301	62
Independents (2)				
Joe's Stone Crab	26.3	1,628	62	94
Carmine's	24.0	5,190	216	58
Total	11,092.55	31,004,072[d]	n.a.	982

[a]Measured in U.S. dollar (in millions). The number indicates the sales volume for quick service and casual dining restaurant chains of 2008 and for independent restaurants of 2009.
[b]The number of Facebook fans was recorded in September 2010 and may not reflect the current number of Facebook fans of the sample.
[c]The "number of Facebook fans to sales volume ratio." See Recommendation IV under "Managerial Implications."
[d]This is the sum of the column without considering the fact that there might be some Facebook users who follow more than one restaurant.

keting), where companies control the content, timing, and frequency of information being shared with consumers. Then, social media enables consumers to communicate with each other within their social networks, which create a WOM effect for companies. This hybrid marketing tool brings a new challenge to marketers because they need to learn how to effectively communicate with their target consumers and shape consumers' discussions according to the company's mission and marketing goals. Similarly, Kaplan and Haenlein (2010) believed that social media is a hybrid social and media tool and suggested that researchers rely on theories of "media research" as well as "social processes" when studying social media.

Accordingly, it may seem inappropriate to analyze companies' social media messages based on the traditional media or marketing theories. To answer the two research questions, we adopted text-mining techniques for data analysis. According to Lau, Lee, and Ho (2005), the text-mining approach is different from the traditional quantitative research methods in several ways. First, with the traditional quantitative methods, researchers often draw conclusions for a population based on a representative sample, whereas text mining allows study of an entire population or data set. Second, whereas the traditional methods require researchers to analyze data under a theoretical framework, the text-mining approach allows researchers to explore the meanings of the textual data because "data in the text-mining approach are self-revealed according to the owners' preferences, and

researchers set inquiries without regard to what kinds of information are available" (Lau, Lee, and Ho 2005, 348). Last, text mining allows electronic investigation of text documents (e.g., search engines or computer programs), whereas traditional methods require researchers to make interpretations.

Sampling Procedures

This report discusses an analysis of the Facebook messages initiated by twelve restaurant brands, which we chose using the criterion-based, mixed-purpose sampling procedure (Collins, Onwuegbuzie, and Jiao 2007). In this procedure, we (a) first identified the twenty restaurant chains with the highest sales volume (both quick service restaurants and casual dining restaurants) and the twenty independent restaurants with the highest sales volume according to Killian's (2009) and Restaurants & Institutions (2010) reports, (b) selected eight quick service restaurant chains with more than one million Facebook fans and three casual dining restaurant chains with the most Facebook fans among the top twenty restaurant chains, and (c) selected the two independent restaurants with the most Facebook fans. Note that we were unable to identify KFC's unique Facebook ID, and consequently did not include KFC in this study despite its size. In the end, we identified ten chains' and two independents' Facebook pages (Exhibit 1). The sample represents a total annual sales volume of more than $11 billion.

Data Collection

After we identified the selected restaurants' unique Facebook ID, we developed a computer program to automatically retrieve the Facebook messages initiated by restaurant using Facebook Query Language (FQL). Every two weeks between October and December 2010, we retrieved four fields of data: message body, message media type (i.e., "status," "link," "video," and "photo"), the number of people who clicked the "Like" button on the message, and the number of people who posted comments on the message. (At that time, Facebook had not yet enabled the "Share" button, making it impossible to determine how many times the message had been shared.) Because Facebook FQL only returns the posts in the most recent 30 days or 50 posts, whichever is greater, some messages were downloaded more than once. We deleted the duplicate messages from our final analysis. We retrieved 1,039 messages. In the end, however, we retained 982 (94.51%) messages for analysis, because 57 did not contain any text (Exhibit 1).

Data Analysis

The purposes of this study were to examine what social media messages hospitality companies post on Facebook and more important, to identify what types of messages are "popular" and are heavily endorsed by Facebook users. We adopted a four-step procedure to answer the research questions. First, we used the content-based message popularity prediction model to identify the indicative keywords that are associated with the "more popular" messages and the "less popular" messages in terms of the number of clicks on the "Like" button. We expected that this content-based analysis would reveal concepts or themes that would help us further categorize the Facebook messages by content, as suggested by Lau, Lee, and Ho (2005). Second, we compared the "popularity" of the four Facebook message types (i.e., status, link, video, and photo) according to the number of clicks on the "Like" button, as well as the number of comments posted. Third, based on the indicative keywords identified in the first step, we coded each message under two broad categories (i.e., sales and marketing messages vs. conversational messages), and we compared the "popularity" of the Facebook messages between these two categories in terms of the number of likes and comments. Finally, we tested whether there was any cross-effect of the four media types and two message types, again based on number of likes and comments.

Because the number of people who "Like" a particular restaurant's Facebook page (formerly known as "fans") ranges from 1,628 to more than 14 million, messages from different restaurants with the same number of clicks on the "Like" button may indicate different levels of popularity.

For example, Carmine's most popular message attracted just 93 likes, whereas the *least* popular Starbucks's message recorded 2,250 likes. Thus, comparing raw numbers of likes or comments is inappropriate. Consequently, we converted the number of likes and the number of comments in reaction to each message into a z score, ranging from -3 to 2. This score indicates the popularity level of a message type within a company. The dependent variables in this analysis are the z scores of the number of clicks on the "Like" button and the number of comments made on each message. The independent variables are the types of messages (four media types and two message types). We used Predictive Analytics SoftWare (PASW) Statistics 18 for statistical analyses.

Findings

Among the 982 messages, a total of 976 messages (99.39% out of 982) were identified with a valid media type as follows: hyperlink (303 or 31.05% of 976), status (338 or 34.63%), video (54 or 5.53%), and photo (281 or 28.79%). The following results will be reported in the order of the four steps of data analysis.

Content-based Message Popularity Prediction

To identify the indicative keywords of the "more popular" messages and the "less popular" messages in terms of the number of likes, we adopted support vector machines (SVMs), one of the best text categorization and feature selection tools available (Forman 2003; Joachims 1998), to train and evaluate the content-based popularity prediction model. This text-mining method allows researchers to explore the differences between the "more popular" messages, which have a positive z score of "Like" responses (above average), and "less popular" messages, which have a negative z score of "Like" responses (below average). If a SVM classifier can predict the message popularity with high accuracy, the weight that this linear classifier assigns to each word feature should indicate the discriminative power that this word bears to distinguish between more and less popular messages. Therefore, the features with the heaviest weight are the most indicative words. We used the SVM-light software package (Joachims 1998) with default settings and the word presence and absence as feature values. To test the SVM classifier, we developed a balanced test set with 300 most popular messages and 300 least popular messages (sorted by the "Like" z scores). It achieved an accuracy of 73.33 percent, substantially higher than the random guess level of 50 percent.

Exhibit 2 lists the most indicative words ranked by the SVM classifier. On one hand, the keywords that indicate "more popular" messages seem to describe menu items (e.g., *sandwich, lobster, chocolate*, and *melty*), special

Exhibit 2:
The Most Indicative Words Ranked by the SVM-Bool Classifier

Category	Top Indicative Words
More popular	Days, sandwich, like, tried, dinner, October, who, fans, lobster, deal, try, holiday, flavors, Friday, menu item, veterans, national, ice, chocolate, August, melty, lunch, celebrate, million, donate
Less popular	Week, check, memories, winners, watch, pictures, family, win, seat, want, photo, fan, great, fun, chance, contest, football, video, twitter, behind, tickets, story, vote, restaurant, commercial

Note: SVM = support vector machine.

Exhibit 3:
Descriptive Statistics of the Sample by Media Type

Statistics	Link	Status	Video	Photo
Number of messages (976)	303	338	54	281
M^a (number of clicks on "Like")	−0.19	0.15	−0.42	0.07
SD (number of clicks on "Like")	0.80	1.09	0.50	1.02
M^a (number of comments)	−0.17	−0.25	−0.30	−0.07
SD (number of comments)	0.65	1.33	0.71	0.81

[a]Measured with z scores.

occasions or days (e.g., *October, Friday*, and *August*), actions or questions (e.g., *like, who, try*, and *celebrate*), and a company's commitment to the communities (e.g., *veterans* and *donate*). On the other hand, the keywords that indicate "less popular" messages seem to describe marketing campaigns (e.g., *winner, win, chance*, and *contest*) and promotions (e.g., *check* and *tickets*).

Media-type Analysis

Reviewing our four media types, status messages have only text descriptions, link messages contain a URL, video messages had videos in them or linked to videos, and photo messages contain a photo (in addition to any text). We tested the differences among four media types with analysis of variance (ANOVA) and found that there is statistical difference in likes among the four media types, $F(3, 972) = 10.7$, $p < .001$, and number of comments, $F(3, 972) = 12.8$, $p < .001$.[1] Exhibit 3 lists the descriptive statistics of the sample by media types, and Exhibit 4 shows the post hoc test results for comparison. Statistically, status and photo messages receive more likes than video and link messages, and status messages receive more comments than the other three types of messages.

Message-type Analysis

With the attempt to better understand why some messages are "more popular" among Facebook users while some are "less popular," we compared the indicative keywords of "more popular" messages with those of "less popular" messages and examined the content of those original messages with the indicative keywords. Based on our observation and intuition, it appears that companies tend to communicate with Facebook users in two ways. On one hand, there are occasions when restaurants inform Facebook users about a sales or marketing event. These messages often contain the

Exhibit 4:
Games-Howell Post Hoc Test Results

Media Type (I)	Media Type (J)	Number of Clicks on "Like"		Number of Comments	
		Mean Difference $(I − J)^a$	p Value	Mean Difference $(I − J)^a$	p Value
Link	Status	−.34	<.001	−.43	<.001
Link	Video	.23	.034	.13	.606
Link	Photo	−.26	.004	−.10	.353
Status	Video	.57	<.001	.55	<.001
Status	Photo	.80	.773	.32	.001
Video	Photo	−.49	<.001	−.23	.154

[a]Measured with z scores.

"less popular" keywords or phrases, such as "winners of the week," "chance to win," "vote for . . . and win," and "a chance to . . . ." On the other hand, there are also times when restaurants posted an update, such as "Happy Veterans Day!" that is not associated with any direct sales or marketing effort but includes some indicative keywords from the "more popular" messages. This finding that traditional marketing messages are not popular on social media has been foreshadowed in other studies. Dev, Buschman, and Bowen (2010) conducted a retrospective analysis of hospitality marketing research between 1960 and 2010 and asserted that marketing communications have been "forever changed," because young consumers rely on the Internet and social media for information. The traditional way of yielding sales or the promotional-focus strategies may not work on social media (Kaplan and Haenlein 2010; Mangold and Faulds 2009). Many social media practitioners believe that consumers who use social media would prefer

Exhibit 5:
t-**Test Results**

| | Independent Variables (Message Type) | | | | | |
| | Sales/Marketing (720) | | Conversational (262) | | | |
Dependent Variables	M	SD	M	SD	T-Score[a]	p Value[a]
Number of clicks on "Like"[b]	−.066	.883	.141	1.193	−2.563	.011
Number of comments[b]	−.139	.758	.363	1.410	−5.485	<.001

[a]Two-tailed, equal variance not assumed.
[b]Measured with z scores.

to have ongoing conversations and a stable relationship with a company rather than hearing advertisements "shouted" by the company (e.g., Qualman 2010; Safko 2010). Nevertheless, few empirical studies have developed a defined typology for categorizing social media or Facebook messages. We also note a lack of empirical evidence to support the assertion that sales messages do not work as well on social media.

For these reasons, we made an exploratory attempt to compare sales and marketing messages with more conversational overtures. We coded the 982 messages according to whether they involved sales and marketing or were conversational messages, which do not directly sell or promote the restaurant. An example of a sales and marketing message is as follows: "Hey, Chili's fans! We're giving you a special sneak peek at one of our holiday offers! Starting today, you can receive 10 percent off any purchase of Chili's gift cards totalling $100 or more! Only you, our Facebook fans know about this today! (followed by a URL)." An example of a conversational message reads like "Hey, Chili's fans! We hope everyone has a Happy Thanksgiving spent with family and friends. We'd love to hear your Turkey Day stories!"

The sample set (982 messages) includes two subsets before they were merged for data analysis. One included the messages downloaded during October and November 2010; the other consisted of the messages downloaded during December. The first author finished coding the first and the second subset separately without knowing that 200 identical messages were included in both subsets before the duplicated messages were deleted for statistical analysis. Because these messages were coded twice at different times without the researcher's awareness of the duplication, the intracoder agreement (87.5%) truly reflects the coder reliability. A more strict measure, Cohen's Kappa level of 0.69, indicates less perfect but solid agreement (Cohen 1960). As for the twenty-five cases where the coding did not match, the second-time code was used. In the end, 720 messages (73.32% out of 982) were coded as sales and marketing and 262 messages (26.68%) were conversational.

After coding, we used a *t*-test to examine the differences between sales and marketing messages and conversational

Exhibit 6:
Cross-Effect of Media Types and Message Types on Number of Clicks on the "Like" Button
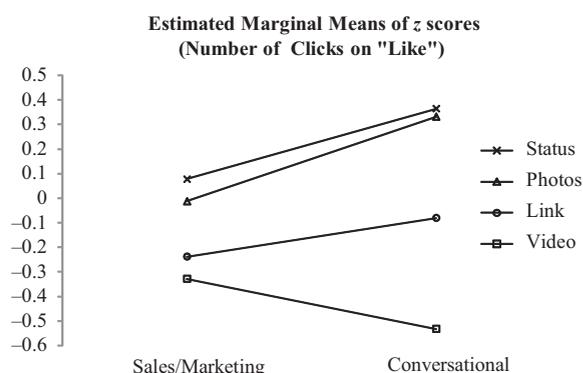
messages in terms of number of likes and number of comments. We found a statistical difference between groups (as shown in Exhibit 5), in which conversational messages seem to be more popular than sales and marketing messages.
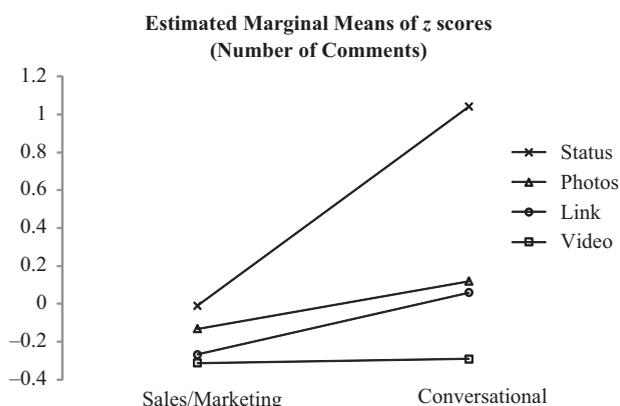
Media-type × Message-type Analysis

We used two-way ANOVA (four media types × two message types) to investigate the cross-effect of media type and message type on a message's popularity. We found no significant interaction effect of media types and message types in terms of number of likes, $F(3, 968) = 1.3$, $p = .260$, but there is statistically significant interaction effect on number of comments, $F(3, 968) = 10.1$, $p < .001$, as shown in Exhibits 6 and 7.

Discussion

Our analysis found that photo and status messages seem to receive more attention (or reaction) from Facebook users than those containing a link or video. Our study does not supply a reason for this finding, but it may be that Facebook users may feel more attracted to those more straightforward

Estimated Marginal Means of *z* scores (Number of Comments)

(and common) messages that contain photos and status updates, rather than those that require clicking on a link or require the time to view a video. It is also possible that the users actually are clicking on the hyperlink or playing the video but are neglecting to click the "Like" button or add comments. One way to further examine this issue is to analyze users' click streams by tracking the traffics to the web pages that are directed by the hyperlink and the video shared on Facebook. A free measurement matrix such as Google Analytic could be helpful in this regard.

When we compared users' reactions with conversational messages and sales and marketing messages, our analysis found that conversational messages receive more attention from Facebook users than sales and marketing messages do, even though more than 73 percent of the messages in our study involved sales and marketing. To some degree, this finding agrees with Vorvoreanu's (2009) focus group study on college students' perceptions of companies' Facebook presence and those assertions from the social media practitioners about how people communicate on social media (Qualman 2010; Safko 2010). Vorvoreanu found that students tend to "friend" small business owners and nonprofit organizations rather than large corporations. Accordingly, hospitality companies need to pay attention to the hybrid functions of Facebook and use both sales and marketing messages and conversational messages strategically.

Managerial Implications

Drawing from the research findings, it is possible that hospitality companies can spread their social media messages among Facebook users by practicing four social media strategies. First, use those eye-catching keywords suggested in Exhibit 2, because Facebook users seem to pay more attention to those messages that describe menu items, talk about holidays and special occasions, and show a

company's commitment to their communities. Our analysis found that people responded far less to message with words more directly associated with selling, such as "win," "check," and "vote." Consequently, hospitality companies also need to evaluate the overall effects of Facebook sales and marketing campaigns.

Second, focus more on status and photo posting, and resist the temptation to post hot links or videos. Although it is a common practice for hospitality companies to share other social media content on Facebook (e.g., an update of a hotel CEO's blog or a page from a restaurant's website), companies may also need to provide a brief summary of what the linked web page or video is about. That way, users can have a better idea of what the link or video is about and they can decide whether to click through. Even if they do not do so, they get an idea of the message. It is possible that they would "Like" or "Share" the content or post comments solely based on a good description without even going to the web page or watching the video.

Third, engage with Facebook users with conversational messages without directly selling or promoting a product or the company. The key is to interact with Facebook users as friends rather than as marketing targets. Analytics and interaction will tell you how to balance the frequencies of sending sales and marketing messages with those of sending conversational messages. A food service operator could, for instance, initiate a conversation by posting good recipes with nice pictures or by asking consumers for feedback on a posted menu. Once people are engaged, it may be appropriate to mention an ongoing deal or promotion in the course of the conversation. Hotels or casinos can take a similar approach by describing or showing property features or amenities with nice pictures.

Fourth, learn from the best examples. As indicated in Exhibit 1 (column 3), Starbucks and Chick-fil-A have the highest "number of Facebook fans to sales volume" ratio among the twelve restaurant brands. Starbucks's Facebook fans increased to nearly thirty million as of May 2012, close to 4 percent of all Facebook users. Chick-fil-A has the highest average *z* scores for the number of likes and comments. Companies can log on to Starbucks's and Chick-fil-A's Facebook pages and learn from their examples.

Research Implications

This study supplements previous research regarding the types of social media messages that are endorsed by Facebook users, and more important, provides foundations for future studies. On one hand, the fact that short status updates and photos receive more attention from Facebook users may provide some additional explanations of why some microblogging and photo-sharing websites like Twitter and Pinterest have become so popular among Internet users. On the other hand, although more research is needed to further validate the two classifications of

Facebook messages (i.e., sales and marketing vs. conversational), the research findings of content-based message popularity prediction and message-type analysis indicate that it is possible to develop a better defined typology for Facebook messages initiated by hospitality companies. By observation, some nouns that describe menu items, special occasions, a company's social responsibility, and certain action verbs and adverbs appear to be more popular than the words that are used in a sales or marketing campaign or promotion. A more defined typology of Facebook messages would assist hospitality companies in developing more specific social media strategies to effectively communicate with Facebook users. Finally, this study also provides a foundation for automatic analysis using machine learning techniques. Future studies can build on these research findings in training computers to automatically separate messages. A reliable automatic text classifier can help hospitality companies assess and monitor the effectiveness of the messages sent on Facebook in real time.

Limitations and Future Studies

This article only reports an analysis of restaurants' Facebook messages, and has the limitation of a relatively small sample size. Consequently, our findings do not represent the whole hospitality or service industry, or perhaps even all restaurants. As a result, the research findings may not be applicable to other service industry sectors, but we see no reason that they should not relate to other industry sectors.

Second, we made an exploratory attempt by coding the Facebook messages into two message types based on the first author's domain expertise. The reliability was reported at an acceptable level. Follow-up studies are highly recommended to further validate the typology.

Third, this study only focuses on Facebook. Although companies often share other social media content on their Facebook page, they may also use different social media strategies on various social media websites. Future research needs to broaden the scope by including more social media tools.

Fourth, this study only analyzes the Facebook messages initiated by restaurants and pays little attention to Facebook users' own communications. As advocated by Hennig-Thurau et al. (2010), research on "new media" also needs to investigate the interactions between consumers and companies as well as the interactions among consumers. Future research may use sentiment analysis techniques to analyze the content of the comments instead of just measuring the number of clicks on the "Like" button and the number of comments. In addition, it may also be important to study the reactions of different demographic groups of Facebook users to the various types of messages.

Fifth, our study was not designed to measure return on investment (ROI). It could be that a sales or marketing message that did not seem to be popular among Facebook users (as measured by likes) could be effective in drawing business traffic and boosting sales. This study only evaluates the effectiveness of a company's Facebook messages by measuring the number of the clicks on the "Like" button and the number of comments. As a result, we suggest that companies also need to consider ROI when implementing the managerial implications of this study.

Sixth, because Facebook and social media constitute an evolving phenomenon, their interfaces are frequently updated and new applications are created. Thus, we are analyzing a moving target. We already alluded to the addition of the "Share" button since our study was conducted. We have also found that companies are acquiring better skills and tactics in managing social media tools over time. Subway changed its Facebook page and FQL in March 2011, and appears to have adopted or tested a new social media strategy at that time. Longitudinal studies of how companies develop and change their social media strategies and tactics may help document the evolution of the social media phenomenon.

Finally, the analysis in this study has a data-driven nature. We advocate future studies in social media to adopt a variety of conceptual frameworks to examine these complex phenomena. Research using unconventional approaches or theories can often bring new insight to the subject (Kwok, Adams, and Feng 2012). Social exchange, cognitive, or other psychological theories, for example, can also be used in social media research.

Note

1. The *p* level of the Levene's test of homogeneity is less than .001, suggesting that equal variance hypothesis should be rejected. Accordingly, Games-Howell was chosen for the post hoc testing.

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