

A MEDIA SYMBOLISM PERSPECTIVE ON THE CHOICE OF SOCIAL SHARING TECHNOLOGIES

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Last revised: March 4, 2018

Abstract: The emergence of social sharing technologies, including blogs, microblogs, personal social networking sites, social bookmarking, and forums, has diversified the media through which information content can be shared. This study anchors on the concept of media symbolism to theorize about social sharing technologies. Our theorization is validated through a set of social sharing data, containing focus group interviews and more than 1 million observations on the content sharing behavior of online users. The results indicate that individuals prefer microblogs and social bookmarking, which are more open to accessing shared content from third-party sources, to share commercial contents.

Keyword: Social sharing technology; media choice; media symbolism; secondary data; focus group

1. INTRODUCTION

The emergence of social sharing technologies, such as blogs, microblogs, personal social networking sites (e.g., Facebook), social bookmarking, and forums, has provided considerable opportunities for individuals to share the information content they have read and come across. For example, Facebook users are sharing 25 billion pieces of information content per month (Zephoria, 2017). Information shared from other websites can generate substantial in-stream traffic to a focal website. In fact, the in-stream traffic generated by online shares may be higher than those generated by search engines. For example, Fox News received 5.50% of its in-stream traffic from Facebook and a mere 1.18% from Google News, while CNN received 5.92% of its in-stream traffic from Facebook compared to 1.77% from Google News (Hopkins, 2010). High in-stream traffic is needed for any website, particularly e-commerce websites. An implicit assumption is that high in-stream traffic to e-commerce websites means a better chance for such websites to engage more consumers and generate higher business values. For Eventbrite, an online ticketing service provider, each shared link on Facebook results in 11 new visits to their website and US\$2.52 worth of ticket sales (Schonfeld, 2010). Therefore, understanding the users' choice of social sharing technologies is pertinent for websites to increase in-stream traffic and subsequent sales.

Academically, a few theories are heavily anchored on to understand the media choice, such as media richness (Daft and Lengel, 1986) and social influence theories (Fulk et al., 1990). The former indicates that media differ in "richness" and media choice is constrained because a leaner media cannot be chosen to convey rich information content; by contrast, the latter indicates that media perceptions are socially constructed and social forces influence media choice. Progress has been made through these theories; however, the related studies have predominantly focused on the media choices among traditional and conventional electronic media (e.g., fax, telephone, and e-mail), leaving the understanding of social technologies, which are contemporary in nature, startlingly lacking.

A primary obstacle to the aforementioned situation is that social sharing technologies provide an additional facet to media choice in lieu of its social component. Media choice among social sharing technologies faces different problems, and previously employed theories may lack the necessary explanatory power. Social sharing technologies are able to transmit all information (e.g., text, picture, video) required for online sharing. Thus, media choice is not constrained by the richness of social sharing technologies. Situational factors, such as location and time constraints, also have limited effects on the choice of social sharing technology because any such technology can immediately relay the message (shared by senders) to recipients in any part of the world. An avant-garde argument presented by Webster and Trevino (1995), at a period when social sharing technologies had yet to be developed, suggested that a method to address this issue is to understand the symbolic cues that social-related technologies convey. The current study seeks to address this gap.

Based on media symbolism theory, the present study theorizes social sharing technologies and evaluates the individuals' choice of these technologies for sharing either commercial or non-commercial information content. Commercial information content denotes information that contains commercial products/services, price discounts, or deal content. We conducted focus group interviews, through which qualitative data of user feedbacks on commercial content sharing and media symbolism of social sharing technologies were collected. A field study was also conducted by collecting quantitative data of the online social sharing choices of users.

The current study provides important theoretical contributions, which include adding to the field of investigations on media choice but focusing on increasingly important social sharing technologies. These technologies are instrumental to the spread and dissemination of information content, particularly those that are of commercial interest. Liang and Turban (2011) emphasized that the manner in which social sharing technologies can be leveraged for commercial purposes remains fundamentally unclear, although a few early studies have advocated the opportunity of doing so (Kaplan and Haenlein, 2011). Prior studies on media choice have also predominantly focused on the technological characteristics of media through media richness theory or through the social interaction aspect, such as social influence theory. The present study adds to this field of exploration by decrementing the symbolic meanings of media, that is, the specific social sharing technologies. By doing so, this study is also aligned with the increased recognition that a medium itself entails an implicit social meaning, as in social construction theory (Pinch and Bijker, 1984).

2. PRIOR STUDIES

This section presents two main research streams, namely, prior studies on social sharing technologies and prior investigations on media choice.

2.1 Social Sharing Technologies

The emergence of social sharing technologies, including blogs, microblogs, personal social networking sites, social bookmarking, and forums, have triggered a research stream on the sharing behavior of users for commercial value.

A blog is a relatively early application of the different social sharing technologies (Chau and Xu, 2012). Through blogs, bloggers share their personal views and stories, and forward posts and links from other online sites. Blogs provide information to readers, and the mode of transmission is one-to-many (Mayzlin and Yoganarasimhan, 2012). Blogs are also similar to a personal newspaper that publishes various topics but on a limited scale (Mayzlin and Yoganarasimhan, 2012). Millions of blogs are interconnected on a blog platform, which is called blogosphere, and specific blog posts can be searched through a search engine (O'Leary, 2011). Data and text mining processes have been applied to blog posts

for various purposes, such as the identification of opinion leaders for marketing (Li and Du, 2011). In the blogosphere, bloggers' attitude toward blogging is positively associated with ease of use, enjoyment, and knowledge sharing (Hsu and Lin, 2008). Bloggers' switching behaviors of their blog services are highly associated with satisfaction, sunk costs, and appealing alternatives (Zhang et al., 2009). Furthermore, blog use has a positive influence on social capital in the blogosphere (Vaezi et al., 2011). Blogs have also been determined to be an important type of social sharing, which is useful for business intelligence analysis (Chau and Xu, 2012). Blog-based metrics are important leading indicators of firm equity value (Luo et al., 2013). Blog posts can also assist companies to increase the visibility of their products; even negative blog posts can lead to positive outcomes because of the increase in readership (Aggarwal et al., 2012b). However, the effect of negative blog posts on venture financing is greater than the influence of positive blog posts (Aggarwal et al., 2012a). Expert blogs sentiments and volume on a focal brand have a positive relationship with consumer perceptions of the focal brand (Luo et al., 2017). The quality of blog posts can improve if the advertisement revenue of bloggers increases (Sun and Zhu, 2013). However, social sharing of product recommendations in blogs can have different effects. It has been found that social sharing sponsored by the marketers have negative effects on reader's future interest in the blogger, intention to engage in word-of-mouth, and purchase intention, whereas non-sponsored social sharing does not affect blog reader's behavioral intentions (Liljander et al., 2015).

Personal social networking sites, such as Facebook, are web-based services that allow users to create public profiles, share a connection with a list of users, and view their list of connections within a bounded system (Boyd and Ellison, 2007). User behaviors on these sites have been studied to much extent. For example, Facebook has been determined to focus on having fun and knowing the social activities occurring in one's social network (Quan-Haase and Young, 2010). People use personal social networking sites to maintain relationships with other people (Ellison et al., 2007), as well as to communicate and maintain a connection with their friends (Cheung et al., 2011). Content quality, popularity, and appeal of personal social networking site messages can lead users to share content (Chang et al., 2015). However, content sharing can be disrupted because of social surveillance and social control from different types of social capital, such as family, friends, and acquaintances (Brandtzarg et al., 2010). In fact, people spend more time observing contents than sharing contents (Pempek et al., 2009). Social overload on personal social networking sites, where the amount of social information demanding a reaction increases as the number of messages and social relationships increase, can also lead to a considerable intention to reduce or stop using the site (Maier et al., 2015). Apart from individuals, companies are also using personal social networking sites for commercial purposes. Several studies have investigated the manner of improving business performance on personal social networking sites, such as the effect of social ties on advertising effectiveness (Chang et al., 2012), the moderating effect of social tie strength and structural

embeddedness on the strength of peer influence (Aral and Walker, 2014), and user engagement for Facebook apps (Claussen et al., 2013). Users' motives for sharing commercial content on personal social networking sites have been explored. For instance, self-interest incentive influences sharing the intention of commercial messages (Fu et al., 2017). Compared with users' social desires, the desires to engage in commercial activities on personal social networking sites are more influential to their intention to share their shopping experience (Ko, 2018). Moreover, extrinsic financial incentives could induce their willingness to share (Vilnai-Yavetz and Levina, 2018).

A microblogging site, such as Twitter and Weibo, is a micro-messaging service enabling users to generate messages consisting of 140 characters or less. Microblogging sites are open systems that can be accessed publicly (Toubia and Stephen, 2013; Zhang et al., 2011). Twitter, considered as the most popular microblogging site, explained that a microblog is "a real-time information network powered by people all around the world that lets you share and discover what's happening now" (Twitter, 2010). The researchers have also determined that a microblog is a different medium from personal social networking sites. Kwak et al. (2010) analyze the topology and tweets on Twitter and conclude that this microblogging site is more of a news media rather than a personal social network. Therefore, the primary category of Twitter users is information seeker (Java et al., 2007). People search Twitter to acquire temporally relevant information, such as news and trends, and information related to people, such as information on people of interest and general sentiments and opinions (Teevan et al., 2011). Therefore, people generate content on microblogging sites to disseminate information to the public and consume content to seek information. Two main types of utility motivate users to post content on microblogging sites: intrinsic utility and image-related utility (Toubia and Stephen, 2013). It has also been found that information uniqueness, information crowding, and social interactivity affect individuals' positive emotion, which promotes their sharing behavior (Wang et al., 2017). Similarly, the capabilities of microblogs to share unique content, interconnectivity maintenance, positive emotion strengthening, and unidirectional relationship enhancement have been found to affect users' sharing behavior (Wang et al., 2015). In other studies, social identity is found as the most influential factor on users' sharing intention (Jiang et al., 2016). Commercial contents are frequently shared by the users; 19% of microblogs contain mentions of brands that convey commercial content (Jansen et al., 2009).

A forum or discussion forum is an online community for like-minded users from geographically dispersed areas. Consequently, community identity (i.e., common interests, themes) and individual member identity can be developed through interactions in forums (Pan et al., 2015). Previous studies have analyzed user participation and sharing behavior in forums (Boh, 2014). Expectancy on hedonic and utilitarian outcomes and peer pressure has been determined to positively influence the intention of students to participate in an online discussion forum (Yang et al., 2007). Knowledge sharing behavior can

also be enhanced by the perception on user reputation (Wasko and Faraj, 2005) and social networking support integration (Pan et al., 2015).

Another type of social sharing technology is a social bookmarking system. Bookmarking functionality is initially embedded in Internet browsers for online users to organize bookmarks and assign tags. Social bookmarking systems, such as Delicious and Spurl, utilize this functionality and place it on the public Internet; hence, each individual's tags and bookmarks are visible to other online users (Gray et al., 2011). Therefore, one user's choice of which online resources to visit is influenced by the prior actions of other online users who share on social bookmarking systems (Gray et al., 2011). The success of social bookmarking systems depends on user contributions, which are driven by the intentional bookmarking of resources for other users and the users' belief that their bookmarks are valuable to other users (Arakji et al., 2009). Social bookmarking recommendation approaches have been determined to facilitate appealing bookmarks to online users (Bogers and van den Bosch, 2011). Moreover, tag-based content categorization mechanism leads to high level of knowledge building (de Carvalho et al., 2015). The social bookmarking system has also been determined to be beneficial for a company because this technology increases the personal innovativeness of employees (Gray et al., 2011).

2.2 Media Choice

Existing literature on media choice primarily focuses on investigating the determinants to explain people's choice of communication media in an organizational context, where managers and employees choose the media for work-related tasks. Media choice could be affected by message content and media richness, situational determinants, and symbolic cues of the medium (Trevino et al., 1987; Trevino et al., 2000). Media have varying capacities to resolve message ambiguity because they differ in terms of richness. Therefore, media richness theory suggests that task performance is improved when both task information and medium information richness are matched (Daft and Lengel, 1986). For example, by employing media richness theory, Randolph and Cooper (2003) compare richer media (i.e., face-to-face communication) and leaner media (i.e., electronic conferencing and e-mail) and conclude that the former should be utilized for more equivocal tasks. However, Dennis et al. (2008) argue that media richness theorizes which media should be the most effective, a discussion that does not indicate how media are chosen. Situational determinants, such as geographical distance and time pressure, also affect people's media choice (Steinfeld and Fulk, 1986; Trevino et al., 1987). These situational determinants contextually constrain people from choosing better media for communication because of the cost or availability of certain media (Trevino et al., 1987). Apart from media richness and situational determinants, media choice also depends on the symbolic meaning conveyed by the medium (Trevino et al., 1987; Trevino et al., 2000; Webster and Trevino, 1995). Therefore, media can transmit a meaning that is beyond the content of a particular message and socially constructed over time (Webster and Trevino,

1995). Trevino et al. (1987) suggest that the medium itself is a message and identify media's 15 symbolic cue categories. For example, people choose letters to convey formality and legitimacy; face-to-face communication to convey a desire for teamwork, informality, and trust building; and e-mail to symbolize the low priority of the message.

In an organizational context, media choice could be influenced by institutional condition factors, such as incentives, trust, and physical proximity (Watson-Manheim and Belanger, 2007). Other studies that compare communication media also provide indications. For example, Zack (1993) proposes that face-to-face communication, which is highly interactive, is appropriate for building a shared interpretive context, whereas electronic messaging is more appropriate for communicating within an established context. For media choice among social sharing technologies, Gilfoil (2012) examines the usage pattern of consumers and sellers and argues that blogs and microblogs are favored platforms for consumers to find products to buy.

In the social sharing context via social sharing technologies, people share the content of a webpage in the form of a URL link and page title. Recipients who notice the share can click the link to the share and be directed to the original webpage. Therefore, the medium that people choose for social sharing is the intermediary during the entire sharing process. The richness of social sharing does not differ considerably in the case of conveying the URL link and page title to the recipients. Situational determinants, such as location and time constraints, also have limited effects on social sharing choice. Any social sharing technology can immediately relay the message that senders have shared to recipients in any part of the world. Nevertheless, the symbolic meanings of social sharing technology may influence the choice of such technologies because of the reprehensive message of the medium conveyed along with the shared contents.

3. THEORETICAL FOUNDATION OF MEDIA SYMBOLISM

Trevino et al. (1987) present symbolic interactionism as a theoretical approach to understanding media choice processes during managerial communications. In symbolic interactionism (Blumer, 1969), anything can be considered a symbol and a carrier of meaning (Trevino et al., 1987). Media can transmit symbolic cues beyond the content of the message, and the medium of communication may be selected for a symbolic meaning that transcends the explicit message (Trevino et al., 1987; Trevino et al., 2000). The symbolic cues of both traditional and conventional electronic media have been identified to affect media choice. Webster and Trevino (1995) determine that people prefer telephone calls to convey the urgency of the message, written communication to convey formality, and e-mail to convey the message's lack of importance.

The symbolic cues of social sharing technologies can be determined in existing studies that investigate the nature and characteristics of social sharing platforms, which we described earlier. Table 1 presents a summary of the characteristics of each social sharing technology based on the literature review conducted on social sharing technologies. Compared to other social sharing sites that can be publicly accessible to all online users, personal social networking sites have restricted social access features. Registered users can only see the content from their social connections on such personal social networking sites. With the restricted social access feature, personal social networking site users frequently convey fun and social activities to their social connections in closed and restrictive manners.

The symbolic cue of fun and socializing is constructed over time and carried beyond the contents being conveyed. In social bookmarking sites, all users, including the followers, can read the content shared by each specific user. In such sites, users share valuable bookmarks to others and do not generate their own information. Users who click the shared bookmark are also redirected to the original source website; they do not consume the shared content on social bookmarking sites (Gray et al., 2011). Forum users share information within the forum theme, often in a concise manner. By contrast, blog users generally share lengthy and specific information. Restricted by the site, microblog users share information and news possibly with shortened links that contain the full information. Subsequently, users are redirected to the original source website to consume the shared content. The off-site content consumption behavior on microblogging sites is similar to that on social bookmarking sites. Thus, the symbolic cue of distributing third-party information is constructed and the shared contents carry such meaning.

Table 1. Social Sharing Technology

Social sharing technology/media	Social Accessibility	Audience	Content	Supporting literature
Blog	Open	Blog followers and users	Lengthy information and personal story (on-site content consumption)	Mayzlin and Yoganarasimhan (2012)
Microblog	Open	Microblog followers and users	Information and news in a short and concise manner (third-party links lead to off-site content consumption)	Jansen et al., (2009); Toubia and Stephen (2013)
Personal social networking site	Closed	Social connections	Fun and social activity	Boyd and Ellison (2007); Quan-Haase and Young, (2010)
Forum	Open	Forum users with a common interest	Information within forum theme, often short but can also be long sometimes (on-site content consumption)	Pan et al. (2015)
Social bookmarking	Open	Bookmark followers and users	Valuable bookmarks for others (third-party links lead to off-site content consumption)	Arakji et al. (2009); Gray et al. (2011)

4. RESEARCH MODEL AND HYPOTHESIS DEVELOPMENT

We draw on media symbolism to study the effects of such symbolism on media choice among social sharing technologies in the context of sharing online commercial contents. We predict that the users' choice of a particular social sharing technology to share online commercial contents depends on the symbolic cue of the social sharing technology, which is affected by the social accessibility and content consumption suitability of the social sharing technology.

Online commercial content may be valuable information for some people but not for others. Among social sharing technologies, personal social networking sites have very restricted accessibility. Users share their personal life and fun activities with others on personal social networking sites (Lin and Lu, 2011), and care about the contents they share to maintain their social connections (Ellison et al., 2007). The internal social nature of social sharing sites is reflected even when users are seeking or distributing information (Hughes et al., 2012). Given that the shared contents symbolize the efforts of users to maintain their social connections, users generally avoid sharing commercial content in personal social networking sites. They are worried sharing such content may negatively affect their effort to maintain their online social connections. Thus, we hypothesize the following:

- **Hypothesis 1 (The Social Sharing Site Hypothesis):** *Compared with other social sharing technologies, social sharing sites with closed social accessibility (i.e., personal social networking sites) are less likely to be chosen to share commercial contents.*

Social sharing technologies with open accessibility differ on the content they convey and the place the sharing contents are consumed. Online users share information and news that are potentially attractive for a public audience on microblogging sites and social bookmarking sites (Arakji et al., 2009; Teevan et al., 2011). Users share short sentences with a shortened URL link to direct readers to the site with full information because of the limited number of characters per post allowed on a microblogging site (Toubia and Stephen, 2013). On social bookmarking sites, users only forward the information and links instead of composing their contents (Gray et al., 2011). By directing readers to a merchant website for an off-site consumption, online users who do not own these commercial contents are less likely to be perceived as marketing spammers. Thus, we hypothesize the following:

- **Hypothesis 2a (Microblogging Site Hypothesis):** *Compared with other social sharing technologies, microblogging sites (social sharing sites with open social accessibility and off-site content consumption of third-party information) are more likely to be chosen to share commercial contents.*
- **Hypothesis 2b (Social Bookmarking Site Hypothesis):** *Compared with other social sharing technologies, social bookmarking sites (social sharing sites with open social accessibility and off-site content consumption of third-party information) are more likely to be chosen to share commercial contents.*

5. RESEARCH METHODOLOGY

Two investigations were conducted. The first investigation involved focus group interviews, in which qualitative data on how people perceive social sharing technologies and choose them for content sharing were collected. After obtaining preliminary insights, a field study was conducted to test the hypotheses, in which quantitative data on an individual's sharing behavior were collected by collaborating with one popular social bookmarking provider.

5.1 Focus Group

Focus group interview is a suitable method to explore individual perspectives on novel issues (Stewart et al., 2007). In the present study, we first obtained preliminary insights into symbolic cues of social sharing technologies and individuals' media choices for sharing commercial-related contents. Groups were naturally formed to facilitate rich interactions during focus group interviews (Bryman, 2004; Stewart and Shamdasani, 1990). Three sessions of focus group interviews with eighteen participants were conducted in China. All participants have online shopping experience and use major social media. All interviewees have experienced sharing commercial-related contents to others online. Table 2 shows the characteristics of focus group participants. Their backgrounds differ and the ages of most participants are under 30, which could better represent social media users in China. Two researchers conducted the interviews. One moderated the discussion, and the other managed the recorder and asked additional questions if possible. The focus group interviews lasted approximately one hour and followed a semi-structured guide. The participants were first asked to discuss their use experience and purpose of social sharing platforms (i.e. blog, microblog, personal social networking site, forum, social bookmarking) and their perceptions on these platforms. Then, they were asked to indicate their preferences for commercial-content shares among these social sharing platforms and enunciate the reasons.

Table 2. Focus Group Sample Characteristics

Age	# Participants	Gender	# Participants
Under 20	3	Female	9
21-23	6	Male	9
24-26	4		
27-29	2		
Above 30	2		
Education Level		Internet Experience (yrs)	
High School	1	1-2	1
Bachelor	10	3-4	4
Master	5	5-6	8
PhD	2	More than 7	5
E-commerce Experience (yrs)		Social Media Experience (yrs)	
1-2	9	1-2	2
3-4	8	3-4	7
5-6	1	5-6	9
More than 7	0	More than 7	0

5.2 Field Data

For the field study, we collaborated with a popular social bookmarking (social sharing widget) provider¹ in China and obtained data related to social sharing in 2011. Social sharing widgets can be integrated by website administrators and can appear in every webpage across the website. Website visitors can share the webpage through different social sharing technologies (blog, microblog, forum, etc.) provided by the social sharing widget. As of the end of 2014, more than 780,000 websites had embedded social bookmarking widgets from this provider, which supported social sharing technologies in China.

In the dataset, our social bookmarking provider recorded 1,052,782 observations of social sharing actions. Each observation in the dataset presents 1) the time the user clicked the sharing widget, 2) the social sharing platform the user chose to share, 3) the shortened URL of the shared content, and 4) the title of the webpage the user shared. When a user shares a webpage in a certain social sharing platform, the webpage title (along with a brief introduction and image), the title and the description of the website, and the shortened URL are shown on that platform. To test our hypotheses, we categorized and grouped social media channels and web pages. The categorization of social media channels into nine categories was based on several industry reports (Ramos, 2010), blogs (e.g., Sina Blog, Woshao), microblogs (e.g., Sina Weibo, Twitter), personal social networking sites (e.g., QQ zone, Renren, Kaixin, Facebook, Myspace), discussion forums (e.g., Tianya, Baidu Tieba), and social bookmarking (e.g., Digg, Delicious).

The categorization of web pages was based on the query of a list of commerce-related keywords². When sharing the webpage via the social sharing widget, the title and the description of the website are also added along with the page title. E-commerce websites always add these keywords in the website descriptions. To check the correctness of the categorization, we randomly selected 50 observations from non-commercial contents and 50 observations from commercial contents. These observations were checked and verified that they were grouped into the correct category. We also categorized the time into four slots based on our observations, at night and early morning (2 am–8 am), morning and noon (8 am–2 pm), afternoon and early evening (2 pm–8 pm), and evening and midnight (8 pm–2 am). The baseline was during the night and early morning because the number of shares during this time slot was the lowest.

¹ We did not provide elaborate details on the company to fulfill its anonymity request. However, we endeavored to provide details that are important to this research.

² Keywords (in Chinese) include buy, sell, commerce, shopping, discount, coupon, and deal.

Table 3 presents the descriptive statistics of the data.

Table 3. Descriptive Statistics

Social sharing technology/media	Total obs.	Observation period				Content Type	
		2 am–8am	8 am–2 pm	2 pm–8 pm	8 pm–2 am	Non-Commercial	Commercial
Blog	15,383	1,832	4,559	5,033	3,959	13,020	2,363
Microblog	325,379	40,925	93,771	104,642	86,041	267,626	57,753
Personal social networking site	489,514	53,365	143,223	163,729	129,197	421,478	68,036
Social bookmarking	171,942	21,201	50,120	56,209	44,412	144,850	27,092
Forum	50,564	5,939	14,742	16,777	13,106	43,110	7,454

6. DATA ANALYSIS

6.1 Focus Group Analyses and Results

The focus group interviews were transcribed and coded. Since the discussion topics in these focus groups were not related with group decision making or collaborative problem solving, group interaction data and non-verbal data were considered with low level of precision for analysis (Nili et al., 2014). Thus, content data were mainly analyzed and reported (Stewart et al., 2007). The transcripts were analyzed line by line and keywords and phrases were identified. Specifically, the excerpts describing their perceptions of these social sharing technologies, the contents conveyed, and their preferences to share commercial contents on each platform were captured and coded. Then, these coded excerpts were grouped and categorized based on the technology and the topic. Last, categorized excerpts were conceptualized and underlying patterns emerged (Stewart et al., 2007).

The contents commonly shared or conveyed on each social sharing platform were identified via categorized excerpts. We only considered the categories of contents which have been mentioned by at least two participants and received no objection from other participants. Table 4 summarizes and contents conveyed on each social sharing platform and related excerpts from focus groups. On blog sites, users often seek knowledge with high-quality information (e.g., IT tips, technical solutions, etc.) or read a diary from others. On microblogging sites, users communicate diverse information, such as news and advertisements, to their followers and the public. For personal social networking sites, participants indicated that such sites were used to communicate their personal life and leisure activities to friends in their closed social networks. On forums, users discuss certain topics within forum themes. For social bookmarking sites, users share bookmarks, which can also be valuable or interesting for the followers and the public. These findings from focus groups largely confirm what we identified from existing literature regarding the contents conveyed on each social sharing platform.

Table 4. Focus Group Findings - Contents Conveyed

Social sharing technology/media	Contents commonly conveyed	Supporting evidence
Blog	Knowledge of high-quality information Diary	“I always access blogs to read IT tips shared by others.” “In blog sites, I convey my emotions and write a diary that I can read again in the future.”
Microblog	News Advertisement	“[I seek] Breaking news and short information with links.” “[I] retweet news and information. But I seldom write my own tweet.” “For the microblog, we have few friends (social connections) on it, and I could see some commercial information and advertisements there.”
Personal social networking site	Personal, private and social lives	“[I share] life tips that are useful for me and my friends. I may also share some love stories to express my emotions.” “[On personal social networking sites], I share my personal lives to friends.”
Forum	Interest/topic based discussions	“In forums, we raise a topic for discussion and try to have more replies in the post.”
Social bookmarking	Useful websites and links	“Instead of bookmarking locally, I bookmark the webpage for others in case they also like it.” “I would share useful websites, such as gaming site, IT site, or e-commerce sites with good deals.”

6.1.1 Social sharing choice for commercial contents

Regarding the media choice to share commercial contents, focus group participants enunciate the reasons why or why not they choose certain social sharing technology. Categorized excerpts related to sharing reasons were only considered when they have been mentioned by at least two participants and received no objection from other participants. Table 5 shows the reasons and supporting evidence from focus groups. Participants found that commercial contents are not suitable for sharing in personal social networking sites because of the diverse categories of friends in closed social networks. Commercial contents on personal social networking are also filtered by the recipients. Most of the participants indicated that they would share commercial contents on the platforms where they had a lower number of friends. Thus, personal social networking sites with close social connections are considered as unsuitable to convey commercial contents.

For other social sharing platforms with open accessibility and fewer social connections, the information disseminated via microblogging sites are considered as less “social” and more “informational”. Users could click the links embedded in the microblogs and consume the commercial contents on merchants’ websites. Similarly, social bookmarking sites allow users sharing useful links for others to consume in source website. The above two social sharing technologies are suitable for disseminating third-party information to the general public audience. However, forums normally contain specific information within the themes of the forums and blogs convey specific knowledge and article, which prevents users from sharing commercial contents.

Table 5. Focus Group Findings - Reasons

Social sharing technology	Shared or not	Reasons	Supporting evidence
Blog	No	Only specific knowledge and articles on blogs	“It is used to write long articles.” “I would only share my experience related with technology.”
Microblog	Yes	Few social connections Third-party information for public	“[If I should send commercial contents to many people], I will choose the social channel with the fewest number of friends who use it, such as a microblogging site.” “[I] probably retweet the links to transmit this information to the public.”
Personal social networking site	No	Too many social connections	“It is so annoying that when you click to share the deal on personal social networking sites, all your friends can see it. Then, you will be crazy. People may assume your computer is attacked by virus.” “I will not share commercial information on personal social networking sites because I have so many kinds of friends, including my teachers and parents. I cannot share everything.” “I will not share it on personal social networking sites because my friends in the social networking sites are quite diverse.” “If some people shared commercial content on personal social networking sites, I would consider it as spam.”
Forum	No	Not in line with most forum themes	“Most forums are not for e-commerce purpose.” “Not very common to share commercial contents, since people seek theme-based information.”
Social bookmarking	Yes	Third-party links for consumption	“I probably share the links of e-commerce sites.” “I would share useful e-commerce sites with good deals.”

The results from focus group interviews offer preliminary insights into media choice for sharing commercial contents, which are consistent with our hypotheses. Users consider the social accessibilities of social sharing technologies and avoid sharing commercial contents via the platform which mainly conveys social or related information (i.e. personal social networking sites). Commercial contents have unmatched symbolic cues with personal social networking sites and can hardly be conveyed for social connection maintenance. For microblogging sites and social bookmarking sites, third-party information (e.g., external links, web pages) are commonly shared for the public audience. Commercial contents from merchant’s websites have matched symbolic cue with these two platforms where users access third-party information and consume in source websites. In the next section, we further validate our assumptions via field data analysis.

6.2 Field Data Analysis

According to the hypotheses, commercial contents are likely to be shared through social sharing technologies with open social accessibility and off-site content consumption of third-party information. In our dataset, the social sharing technologies chosen by the users for online sharing was considered as the dependent variable. The webpage content, which was categorized into non-commercial contents and commercial contents, was the independent variable. We ran the multinomial logistic regression on the choice of social sharing technologies to compare the likelihood that the specific social sharing technology

would be chosen over the baseline social sharing technology for sharing commercial contents. We used each of these five social sharing technologies as the baseline and ran five different models. The time of sharing was also included, and 2am-8am was used as a baseline due to the least sharing activities then.

Table 6 presents the main analysis results. The results from Model 3.1, where personal social networking site was used as the baseline, showed that if the content of the webpage was commercial- instead of non-commercial related, the probabilities of choosing blog (coef. = 0.115), microblogging sites (coef. = 0.286), forums (coef. = 0.067), and social bookmarking sites (coef. = 0.144) over the probability of choosing personal social networking sites were positive. These results indicated that personal social networking sites are least likely to be chosen for sharing commercial contents compared with other social sharing technologies, Thus, the Social Sharing Site Hypothesis (H1) was supported.

The results of Model 2.1, where microblogging site was used as the baseline, showed that the probability of choosing blogging sites (coef. = -0.171), personal social networking sites (coef. = -0.286), forums (coef. = -0.219), and social bookmarking sites (coef. = -0.142) over the probability of choosing microblogging sites were negative. It indicated that microblogging sites are more likely to be chosen for commercial content sharing. Thus, the Microblogging Site Hypothesis (H2a) was also supported.

The results from Model 5.1, where a social bookmarking site was used as the baseline, showed that the probability of choosing personal social networking sites (coef. = -0.144), and forums (coef. = -0.077) over the probability of choosing social bookmarking sites were negative. However, the probability of choosing blogging sites (coef. = -0.290) over the probability of choosing social bookmarking was not significant. It indicated that social bookmarking sites are more likely to be chosen for commercial content sharing, compared with personal social networking sites and forums only. Thus, Social Bookmarking Site Hypothesis (H2b) was partially supported.

The results from Models 1.1 and 4.1, where blogging sites and forums were used as baselines, confirm our conclusions. Also, the interaction of time and the webpage content was also considered and related models were developed. The results from Models 2.2, 3.2 and 5.2 are also match our conclusions.

In addition, there are some interesting results regarding the time of sharing.

Table 7 presents the analysis results in which we focused on the time of sharing in the models. We used each of the social sharing technology as the baseline and developed the models separately with all shared contents (commercial and non-commercial contents) and shared commercial contents only. The results from Model 7.2 showed that the likelihood for users to choose personal social networking sites over microblogging sites to share commercial messages increased (coef = 0.092) during the daily active periods from 8 am to 2 am (i.e., Time1) compared with the daily inactive period from 2 am to 8 am (i.e., Time baseline). Similar results have been observed in Model 7.2 for blogging sites (coef. = 0.197), forums (coef. = 0.117), and social bookmarking sites (coef. = 0.137).

Table 6. Analysis Results

Social sharing technology/media	Variables	Base: blog		Base: microblog		Base: personal social networking site		Base: forum		Base: social bookmarking	
		Model 1.1 (main effect)	Model 1.2 (interaction term)	Model 2.1 (main effect)	Model 2.2 (interaction term)	Model 3.1 (main effect)	Model 3.2 (interaction term)	Model 4.1 (main effect)	Model 4.2 (interaction term)	Model 5.1 (main effect)	Model 5.2 (interaction term)
Blog	Commercial Content (base: <i>non-commercial content</i>)			-.171*** (.023)	-.296*** (.064)	.115*** (.023)	-.066 (.064)	.048 (.026)	-.076 (.072)	-.029 (.023)	-.072 (.066)
	Time1 (base: 2 am–8 am)			.076** (.028)	.051 (.031)	-.071* (.028)	-.107*** (.031)	.004 (.032)	-.013 (.035)	.050 (.029)	.048 (.031)
	Time 2			.065* (.028)	.031 (.031)	-.106*** (.028)	-.150*** (.030)	-.026 (.031)	-.055 (.034)	.034 (.028)	.020 (.031)
	Time3			.023 (.029)	.011 (.032)	-.111*** (.029)	-.136*** (.031)	-.020 (.032)	-.047 (.035)	.030 (.029)	.025 (.032)
	Commercial Content*Time1				.146 (.077)		.212** (.077)		.093 (.086)		.012 (.079)
	Commercial Content*Time2				.205** (.076)		.262*** (.075)		.174* (.085)		.092 (.077)
	Commercial Content*Time3				.069 (.078)		.138 (.078)		.162 (.088)		.036 (.080)
	Microblog	Commercial Content	.171*** (.023)	.296*** (.064)			.286*** (.006)	.230*** (.017)	.219*** (.013)	.220*** (.036)	.142*** (.008)
Time1		-.076** (.028)	-.051 (.031)			-.147*** (.008)	-.158*** (.009)	-.071*** (.016)	-.064*** (.018)	-.026* (.010)	-.003 (.011)
Time2		-.065* (.028)	-.031 (.031)			-.171*** (.008)	-.181*** (.008)	-.091*** (.016)	-.087*** (.018)	-.031** (.010)	-.011 (.010)
Time3		-.023 (.029)	-.011 (.032)			-.134*** (.008)	-.146*** (.009)	-.043* (.017)	-.058** (.018)	.007 (.010)	.014 (.011)
Commercial Content*Time1			-.146 (.077)				.066*** (.020)		-.053 (.044)		-.134*** (.027)
Commercial Content*Time2			-.205** (.076)				.057** (.020)		-.031 (.043)		-.113*** (.026)
Commercial Content*Time3			-.069 (.078)				.069*** (.007)		.093* (.045)		-.033 (.027)
Personal social networking site		Commercial Content	-.115*** (.023)	.066 (.064)	-.286*** (.006)	-.230*** (.017)			-.067*** (.013)	-.011 (.036)	-.144*** (.008)
	Time1	.071* (.028)	.107*** (.031)	.147*** (.008)	.158*** (.009)			.076*** (.016)	.094*** (.018)	.122*** (.010)	.155*** (.011)
	Time2	.106*** (.028)	.150*** (.031)	.171*** (.008)	.181*** (.009)			.080*** (.016)	.094*** (.018)	.141*** (.010)	.170*** (.011)

Social sharing technology/media	Variables	Base: blog		Base: microblog		Base: personal social networking site		Base: forum		Base: social bookmarking	
		Model 1.1 (main effect)	Model 1.2 (interaction term)	Model 2.1 (main effect)	Model 2.2 (interaction term)	Model 3.1 (main effect)	Model 3.2 (interaction term)	Model 4.1 (main effect)	Model 4.2 (interaction term)	Model 5.1 (main effect)	Model 5.2 (interaction term)
		(.028)	(.030)	(.008)	(.008)			(.016)	(.017)	(.009)	(.010)
	Time3	.111*** (.029)	.136*** (.031)	.134*** (.008)	.146*** (.009)			.091*** (.016)	.089*** (.018)	.141*** (.010)	.160*** (.011)
	Commercial		-.212**		-.066***				-.119**		-.200***
	Content*Time1		(.077)		(.020)				(.044)		(.026)
	Commercial		-.262***		-.057**				-.088*		-.170***
	Content*Time2		(.075)		(.020)				(.043)		(.025)
	Commercial		-.138		-.069***				.024		-.102***
	Content*Time3		(.078)		(.020)				(.045)		(.026)
Forum	Commercial	-.048	.077	-.219***	-.220***	.067***	.011			-.077***	.005
	Content	(.026)	(.072)	(.013)	(.036)	(.013)	(.036)			(.014)	(.039)
	Time1	-.004 (.032)	.013 (.035)	.071*** (.016)	.064*** (.018)	-.076*** (.016)	-.094*** (.018)			.046** (.017)	.061*** (.019)
	Time2	.026 (.031)	.055 (.034)	.091*** (.016)	.087*** (.018)	-.080*** (.016)	-.094*** (.017)			.061*** (.017)	.076*** (.019)
	Time3	.020 (.032)	.047 (.035)	.043* (.017)	.058** (.018)	-.091*** (.016)	-.089*** (.018)			.050** (.018)	.071*** (.019)
	Commercial		-.093		.053		.119**				-.081
	Content*Time1		(.086)		(.044)		(.044)				(.047)
	Commercial		-.174*		.031		.088*				-.082
	Content*Time2		(.085)		(.043)		(.043)				(.046)
	Commercial		-.162		-.093*		-.023				-.126**
	Content*Time3		(.088)		(.045)		(.045)				(.048)
Social bookmarking	Commercial	.029	.072	-.142***	-.224***	.144***	.006	.077***	-.005		
	Content	(.023)	(.066)	(.008)	(.022)	(.008)	(.021)	(.014)	(.039)		
	Time1	-.050 (.029)	-.048 (.031)	.026* (.010)	.003 (.011)	-.122*** (.010)	-.155*** (.011)	-.046** (.017)	-.061*** (.019)		
	Time2	-.034 (.028)	-.020 (.031)	.031** (.010)	.011 (.011)	-.141*** (.010)	-.170*** (.010)	-.061*** (.017)	-.076*** (.019)		
	Time3	-.030 (.029)	-.025 (.032)	-.007 (.010)	-.014 (.011)	-.141*** (.010)	-.160*** (.011)	-.050** (.018)	-.071*** (.019)		
	Commercial		-.012		.134***		.200***		.081		
	Content*Time1		(.078)		(.027)		(.026)		(.047)		
	Commercial		-.092		.113***		.170***		.082		
	Content*Time2		(.077)		(.026)		(.025)		(.046)		
	Commercial		-.036		.033		.103***		.126**		
	Content*Time3		(.080)		(.027)		(.026)		(.048)		

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, *Time1*: 8am-2pm, *Time2*: 2pm-8pm, *Time3*: 8pm-2am.

Table 7. Post-hoc Analysis Results (time only)

Social sharing technology/media	Variables	Base: blog		Base: microblog		Base: personal social networking site		Base: forum		Base: social bookmarking	
		Model 6.1 (all shared contents)	Model 6.2 (commercial contents only)	Model 7.1 (all shared contents)	Model 7.2 (commercial contents only)	Model 8.1 (all shared contents)	Model 8.2 (commercial contents only)	Model 9.1 (all shared contents)	Model 9.2 (commercial contents only)	Model 10.1 (all shared contents)	Model 10.2 (commercial contents only)
Blog	Time1 (base: 2 am–8 am)			.083** (.028)	.197** (.071)	-.076** (.028)	.105 (.071)	.003 (.032)	.080 (.079)	.051 (.029)	.060 (.072)
	Time2			.072** (.028)	.237*** (.069)	-.110*** (.028)	.113 (.069)	-.028 (.031)	.119 (.077)	.036 (.028)	.112 (.071)
	Time3			.027 (.029)	.080 (.072)	-.114*** (.029)	.003 (.072)	-.021 (.032)	.115 (.080)	.031 (.029)	.060 (.073)
Microblog	Time1	-.083** (.028)	-.197** (.071)			-.158*** (.008)	-.092*** (.019)	-.080*** (.016)	-.117** (.040)	-.031** (.010)	-.137*** (.024)
	Time2	-.072** (.028)	-.237*** (.069)			-.182*** (.008)	-.124*** (.018)	-.100*** (.016)	-.118** (.039)	-.036*** (.010)	-.124*** (.024)
	Time3	-.027 (.029)	-.080 (.072)			-.141*** (.008)	-.077*** (.018)	-.048** (.017)	.035 (.041)	.004 (.010)	-.020 (.024)
Personal social networking site	Time1	.076** (.028)	-.105 (.071)	.158*** (.008)	.092*** (.019)			.078*** (.016)	-.025 (.040)	.127*** (.010)	-.045 (.024)
	Time2	.110*** (.028)	-.113 (.069)	.182*** (.008)	.124*** (.018)			.083*** (.016)	.006 (.039)	.146*** (.009)	-.000 (.023)
	Time3	.114*** (.029)	-.003 (.072)	.141*** (.008)	.077*** (.018)			.093*** (.016)	.112** (.041)	.145*** (.010)	.057* (.024)
Forum	Time1	-.003 (.032)	-.080 (.079)	.080*** (.016)	.117** (.040)	-.078*** (.016)	.024 (.040)			.049** (.017)	-.020 (.043)
	Time2	.028 (.031)	-.119 (.077)	.100*** (.016)	.118** (.039)	-.083*** (.016)	-.006 (.040)			.063*** (.017)	-.007 (.042)
	Time3	.021 (.032)	-.115 (.080)	.048** (.017)	-.035 (.041)	-.093*** (.016)	-.112** (.041)			.052** (.018)	-.055 (.044)
Social bookmarking	Time1	-.051 (.029)	-.060 (.072)	.031** (.010)	.137*** (.024)	-.127*** (.010)	.045 (.024)	-.049** (.017)	.020 (.043)		
	Time2	-.036 (.028)	-.112 (.071)	.036*** (.010)	.124 (.024)	-.146*** (.009)	.000 (.023)	-.063*** (.017)	.007 (.042)		
	Time3	-.031 (.029)	-.060 (.073)	-.004 (.010)	.020 (.024)	-.145*** (.010)	-.057* (.024)	-.052** (.018)	.055 (.044)		

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, Time1: 8am-2pm, Time2: 2pm-8pm, Time3: 8pm-2am.

7. DISCUSSION

This study investigates media symbolism and media choice among social sharing technologies. Anchoring on the concept of media symbolism, which is a medium that carries the message beyond the content, we studied the effect of media symbolic cues on social sharing technology choice and contextualized online commercial content sharing via social sharing widgets. We first conducted focus group interviews to obtain preliminary insights into symbolic cues of major social sharing technologies and media choice for online commercial contents. A field study was followed to further validate the media choice by analyzing large-scale quantitative data.

Focus group interviews offer us the possibilities to confirm the symbolic cues of social sharing technologies derived from social media literature. Users are reluctant to share commercial content via personal social networking site due to its closed social accessibility. The information conveyed on personal social networking site carries the symbol of social connection maintenance, which cannot be presented by commercial messages. Microblogging site and social bookmarking site commonly convey third-party links and information for public audience, which direct users to consume in source website. Since commercial messages are third-party information which can be transmitted for public audience, microblogging site and social bookmarking site are preferred. The field data analysis reveals similar results and provides additional insights. Personal social networking sites are least likely for users to share commercial contents. On personal social networking sites, people maintain relationships with others from diverse backgrounds (e.g., family, friends, and acquaintance) and prefer to share personal stories and have fun with social connections in the closed network. Among open accessible social sharing technologies, microblog is the most preferred technology to share commercial contents, and social bookmarking is more likely to be chosen compared with forum. However, no significant difference is observed between social bookmarking sites and blogging sites.

7.1 Limitations

Before discussing the contributions of this research, it is important that we are aware of its caveats. We contextualize this study in user's media choice for sharing commercial messages. The future study could employ controlled experiment to observe user's social media choice for other types of messages, in order to validate the impact of symbolic cues on social media choice. Moreover, in our field dataset, we only observed the social sharing behavior that occurred through our social sharing widget provider based in China, which limited this study in several ways. First, we could not observe all social sharing behavior that occurred in these websites because users may just copy-paste the URL of the webpage to social sharing platforms directly. Second, we could not observe the social sharing behavior on the websites in which the social sharing widgets of our partner company were not installed. Third, the social sharing behavior recorded in our dataset were mainly from Chinese web visitors. Future research could

investigate social sharing behavior in other cultural contexts. Fourth, the observations only contain a limited number of variables which prevents us fully controlling users' sharing behavior.

7.2 Theoretical Contributions

This study contributes to the research community in several ways. First, while existing literature on media choice only explores traditional and conventional electronic media (e.g., email, telephone, etc.), this study examines the media choice issue among social sharing technologies. Existing literature investigates media choice in the managerial communication context (Trevino et al., 1987). In a company, managers and employees choose a communication medium for specific tasks. Managers and employees can choose between traditional media (e.g., face-to-face) and conventional electronic media (e.g., telephone, email). Hence, the existing literature focuses on these media. As the proliferation of diverse social sharing technologies increases, the number of communication media choices also increase exponentially, but media choice research lags. This study attempts to fill the research gap in media choice literature by examining major social sharing technologies. By focusing on online commercial contents (e.g., product, deal, discount, etc.), we expand the research context and the type of media investigated by examining the media choice when sharing commercial web pages in daily life.

Second, we examine the symbolism of social sharing technologies to explain the media choice of online users. The symbolic cues of traditional and conventional electronic media have been explored in the existing media choice literature. For instance, the symbolic cues of email are low priority and irrelevant (Trevino et al., 1987; Trevino et al., 2000). Although social sharing technologies have drawn attention from diverse research areas since their introduction, the discussions on symbolic cues of these media are fragmented. We aggregate the findings from existing social media literature and gain insights from focus group interviews to summarize the symbolic cues of social sharing technologies. By differentiating their social accessibilities and mode of content consumption which affect the symbolic cues of the media, we reveal their effects on the users' choice of social media technologies when sharing commercial contents.

Third, we contribute to media choice literature by applying the quantitative analysis of big data, which record the actual media choice. Existing literature on media choice mainly relies on methodologies such as interview and questionnaire (Daft and Lengel, 1986; Trevino et al., 2000). Researchers prompt hypothetical messages and ask people to choose the medium they would use to send those hypothetical messages. Accordingly, the media choices are also hypothetical. In this study, we obtain more than 1 million observations on the actual media choices from social sharing widgets.

7.3 Practical Contributions

This study also contributes to practice. The success of social sharing technologies has provided great opportunities to disseminate information to audiences on a much larger scale than ever. These audiences

become the potential visitors to the website, which is the source of the information. If a webpage is shared on social platforms, then the recipients may click its link and visit the website. The shares on social platforms generate sizeable in-stream traffic, which can be even more than the traffic from traditional ways of finding the website (Hopkins, 2010). For e-commerce websites, high in-stream traffic implies more potential consumers (Schonfeld, 2010). Given the importance of social sharing and of coping with the increased proliferation of social sharing tools, numerous websites have integrated social sharing widgets to provide website visitors with a comprehensive list of social sharing tools they may choose from (e.g., Addthis, Jiathis, etc.). Sometimes, the list is too long, which may hinder the website visitors' intention to share the webpage. How to improve the facilitation of social sharing tools for website visitors to increase shares by understanding which social sharing tools are preferred is still unknown.

This study shows that the choice of social media platforms depends on the contents of the webpages and the symbolic cues of social sharing technologies. For web pages with commercial contents, microblogging sites and social bookmarking sites should be prioritized. Personal social networking sites are considered the most frequently used social sharing tool, and have been integrated into a number of popular e-commerce websites (e.g., Groupon.com). They are less likely to be chosen for sharing commercial content compared with the abovementioned technologies. However, the importance of personal social networking sites cannot be underestimated. Overall, users are more likely to share messages via personal social networking sites. Thus, for non-commercial related web pages, sharing buttons of social networking sites should be prioritized. In addition, the likelihood of sharing commercial contents on social networking sites increases during the daytime. Therefore, sharing buttons of social networking sites should not be totally discarded on commercial web pages.

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