

How Businesses Draw Attention on Facebook through Incentives, Vividness and Interactivity

Alton Y. K. Chua, and Snehasish Banerjee

Abstract—Businesses often use Facebook to create brand pages and disseminate brand-related posts. However, not all brand-posts equally draw users' attention. In this vein, this paper identifies three factors—incentives, vividness and interactivity—that are potentially related to users' attention toward brand-posts. Specifically, the objective of this paper is two-fold. First, it investigates how incentives, vividness and interactivity are separately associated with users' attention toward brand-posts. Second, it investigates how the interplay of the three factors is associated with attention toward brand-posts. Facebook brand pages for businesses in Singapore are considered as the test case for investigation. Attention toward brand-posts is conceived as the volumes of likes, comments and shares attracted by the entries. Results suggest that brand-posts without incentives are most likely to draw attention if they arouse visual appeal, and solicit trivial interactions that are not overly time-consuming.

Index Terms—Facebook, social media marketing, attention, information overload, social networking sites

I. INTRODUCTION

THE advent of web 2.0 has made social media a buzzword. Several social media applications exist. To name a few, these include micro-blogging applications such as Twitter, video-sharing applications such as YouTube, image-sharing applications such as Flickr, location-aware mobile applications such as Foursquare, and social networking applications such as Facebook. In particular, the popularity of Facebook as a social media application is widely acclaimed [1]. This is evident given its large user base. “Facebook’s massive population, third to India and China,” [2, p. 1] makes its use a global phenomenon. Facebook awareness among Internet users across the world is close to 100%, while more than 60% of them constitute its registered members [3]. It boasts of over 800 million active daily users on average with a 21% year-over-year increase in the size of its community [4].

As a widely used social media application, Facebook opens up a plethora of new opportunities for interaction to not only individual users but also businesses. Specifically, in an attempt to harness its large user base, businesses use Facebook to connect with their customers. For example, businesses often rely on Facebook to offer information about

products and services to customers. They also seek information about customers’ preferences through polling questions in Facebook [5]. The participatory and communal nature of Facebook is known to enhance customers’ engagement with brand pages [6]. Moreover, [7] found that Facebook brand pages enable businesses to enhance customer loyalty by promoting trust, satisfaction, perceived value, and commitment. To make their presence felt in Facebook, businesses create brand pages allowing their customers to join as fans. As posts related to the brand (henceforth, referred as brand-posts) are submitted, fans engage in liking, commenting and sharing activities, thereby enhancing visibility of the entries within the community.

However, not all brand pages in Facebook effectively draw fans’ attention. For example, Rotary International, the world’s first service club organization, launched its brand page in 2012 only to garner dismal engagement from its fans [8]. Most of its brand-posts failed to garner likes, comments and shares. When brand-posts remain largely ignored, the *raison d’être* of brand pages in Facebook is called into question.

It is hence pertinent to find out what factors draw fans’ attention toward brand-posts in Facebook. For the purpose of this paper, attention toward brand-posts is conceived as the volumes of likes, comments and shares attracted by the entries. Specifically, three possible factors potentially related to fans’ attention toward brand-posts are identified. These include incentives, vividness and interactivity. First, providing incentives often serve as dangling the carrot in order to draw attention. When brand-posts incentivize, they could receive substantial likes, comments and shares from fans [9]. Second, vividness of brand-posts could draw attention by being visually captivating [10]. Third, brand-posts that call for interaction could also draw fans’ attention toward the entries [11].

Building on related prior studies [9]-[14], the objective of this paper is two-fold. First, it investigates how incentives, vividness and interactivity are separately associated with fans’ attention toward brand-posts. Second, it investigates how the interplay of incentives, vividness and interactivity is associated with fans’ attention toward brand-posts. In particular, Facebook brand pages for businesses in Singapore are considered as the test case for investigation in this paper. The findings offer clues to businesses on ways to make better use of Facebook for social media marketing.

The remainder of this paper proceeds as follows. The following section reviews the related literature. The methods and the results are presented next. Thereafter, the key findings gleaned from the results are discussed. This is

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followed by the conclusion.

II. LITERATURE REVIEW

Facebook is increasingly deemed as a useful avenue for businesses to foster relationship with customers. Businesses create brand pages, and submit brand-posts containing photos, videos, or anecdotes. In return, customers who join brand pages as fans engage in liking, commenting and sharing activities with the alluring posts. However, the extent to which fans pay attention toward brand-posts is jeopardized in part by what is known as information overload.

Classically, information overload is defined as a situation where individuals' information processing requirement exceeds their information processing capacity [15]. Here, requirement denotes the quantity of information that must be processed within a certain period of time, whereas capacity denotes the total time available for information-processing tasks [16].

Facebook users are increasingly over-whelmed with information overload as suggested by Zuckerberg's Law: the volume of content contributed by each individual doubles every year on average [17]. Amid the bewildering array of information, users suffer from exhaustion and stress [18], [19]. Their limited cognitive capacity prompt them to engage in liking, commenting and sharing activities heuristically as they plough through the ever-growing volume of information [4], [20].

As multitude of information vies for attention, businesses find it challenging to engage its fans in Facebook. After all, fans have not only a short attention span but also a low barrier to switching [21]. It is therefore pertinent for businesses to identify what factors would make brand-posts attractive to likes, comments and shares. Drawing from related prior studies [9]-[14], this paper identifies three possible factors, namely, incentives, vividness and interactivity. These are described as follows.

A. Incentives

Scholars have identified various groups of Facebook users based on their level of activity. Specifically in the context of brand-related Facebook use, [9] identified three groups of users. These include consumers, contributors, and creators. Consumers passively browse brand-related information without any substantial involvement. Contributors actively join brand pages as fans to evaluate brand-related information. This group of users is expected to like and contribute comments on brand-related information. Creators comprise the most enthusiastic group who could create brand-related information. This group of users is perhaps likely to share brand-posts, thereby publishing brand-related information in their profiles. Businesses would conceivably want fans to interact with brand-posts as creators and contributors. A possible way to entice consumers to act as either contributors or creators could be the provision of incentives [9], [22].

Provision of incentives suggests that fans would expect some remuneration in return for engaging in liking, commenting and sharing activities toward brand-posts. Prior studies have found different types of incentives to be

effective in promoting engagement and participation. For example, [22] suggested that monetary incentives such as prizes could be useful to promote participation. Job-related incentives are also known to promote users' intention to contribute in Wikipedia [23]. Furthermore, studies such as [24] found that developers participate in open-source software development mainly because obtaining specific software serves as their personal incentives. Applying these findings in the context of brand-posts in Facebook, it seems that entries that incentivize are more likely to draw fans' attention compared with those that do not. Bearing the foregoing, the following are hypothesized:

H1a: Brand-posts that provide incentives will attract more likes than those that do not.

H1b: Brand-posts that provide incentives will attract more comments than those that do not.

H1c: Brand-posts that provide incentives will attract more shares than those that do not.

B. Vividness

Vividness refers to the way a medium appeal to individuals' senses. It entails two sub-dimensions, namely, breadth and depth. Breadth refers to the number of different senses that a medium could engage, while depth is the degree to which the senses could be engaged [25]. A video is considered more vivid than a picture because the former stimulates both visual and aural senses, while the latter stimulates only the sense of sight [14]. Vividness could be incorporated into a medium by incorporating dynamic content such as animations and videos [12], [26].

Businesses often use vivid elements in the home page of their websites in order to enhance the richness of customers' experience [11]. For advertisements in television and the Internet, vividness has been found to attract attention [27], [28]. Vividness of advertisement banners is known to promote click-through rates [10]. Applying these findings in the context of brand-posts in Facebook, it seems that vivid brand-posts are more likely to draw fans' attention in Facebook compared with those that lag behind in terms of vividness. Bearing the foregoing, the following are hypothesized:

H2a: Vividness of brand-posts will be positively related to the volume of likes attracted by them.

H2b: Vividness of brand-posts will be positively related to the volume of comments attracted by them.

H2c: Vividness of brand-posts will be positively related to the volume of shares attracted by them.

C. Interactivity

Interactivity is defined as the extent to which communication parties could act on one another, on the communication medium, and on the messages interchanged [29]. It entails five sub-dimensions, namely, playfulness, choice, connectedness, information collection, and reciprocal communication [30]. Interactivity in an online environment refers to participation and engagement via computer-mediated communication channels [31]. In particular, in the context of this paper, interactivity refers to the extent of two-way communication between businesses and customers, as well as among customers. A website URL

is considered more interactive than simple text because unlike the latter, the former triggers a clicking action among readers.

Research findings on the effect of interactivity on outcome measures have been generally inconclusive. Studies such as [11] suggested a linear effect of interactivity. In other words, the higher the interactivity of brand posts, the greater could be its ability to draw fans' attention. However, [29] questioned if high levels of interactivity would always be beneficial in advertisements. Specifically, in the context of web-based advertisements, studies such as [12] suggested that there could be an optimal level of interactivity. Stated otherwise, increase in interactivity of brand-posts could increasingly draw attention only up to an optimum level, beyond which there could be a negative relationship. Bearing the foregoing, the following are hypothesized:

H3a: Interactivity of brand-posts will be curvilinearly related to the volume of likes attracted by them.

H3b: Interactivity of brand-posts will be curvilinearly related to the volume of comments attracted by them.

H3c: Interactivity of brand-posts will be curvilinearly related to the volume of shares attracted by them.

The hypotheses investigated in this paper are depicted in Fig. 1. Interestingly, even though incentives, vividness and interactivity have been identified as possible antecedents of attention toward brand-posts [12], [13], their interplay has hardly been taken into consideration thus far. Therefore, besides the above hypotheses, this paper also investigates the following research question: How is the interplay of incentives, vividness and interactivity associated with fans' attention toward brand-posts in Facebook?

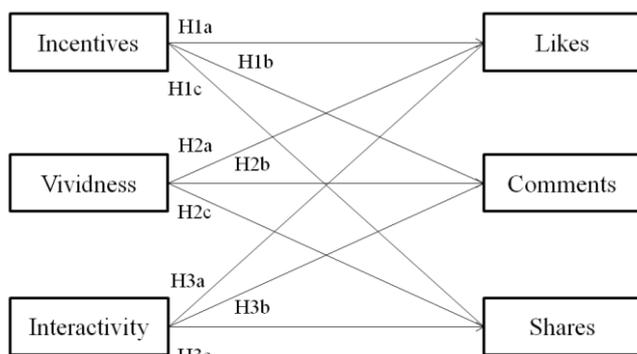


Fig. 1. Hypotheses investigated in this paper.

III. METHODS

A. Data Collection

As indicated earlier, this paper specifically seeks to study brand-post popularity for businesses in Singapore, a city-state in Southeast Asia. It was chosen because of its large user-base in Facebook. Users from Singapore are generally known to be active in social media applications. They spend some 2.2 hours in these platforms daily on average, which is greater than the world daily average [32]. Specifically, Facebook penetration in Singapore is more than some 75% with respect to its online population [33]. A study on Facebook use in Singapore by a marketing firm found that users from Singapore average 19.6 hours of active use per

month on the social network, and 47.5 hours of monthly logged-in duration [34]. They also actively engage in liking, commenting and sharing activities [34]. This sets an appropriate context to study the ways in which brand-posts for businesses in Singapore draw fans' attention in the form of liking, commenting and sharing.

The procedure for data collection involved a two-step process. In the first step, a set of 50 businesses in Singapore that have brand pages in Facebook were identified. This was done on April 7, 2014 with the help of Socialbakers [35], a social media analytics platform that reports country-wise Facebook statistics. Specifically, top 50 businesses in Singapore based on the highest number of local fans for their respective brand pages were identified. These businesses spanned across diverse sectors such as convenience stores, food and beverage, fashion, telecommunication, as well as transport to name a few. The number of local fans for these brand pages ranged from some 57,000 to over 35 million.

In the second step, a total of 5,000 brand-posts submitted in Facebook distributed equally across the 50 identified businesses were retrieved. Specifically, the most recent 100 brand-posts as of April, 2014 for all the 50 brands were garnered to yield the collection of 5,000 brand-posts. From this initial pool, those that did not attract any likes, comments or shares were eliminated. Finally, a total of 4,350 brand-posts were used for analysis.

B. Measures and Analysis

Based on provision of incentives, brand-posts that attempted to motivate fans to like, comment or share by offering monetary incentives, prizes or discounts, were dummy-coded as 1. The rest were coded as 0.

Based on vividness, brand-posts were dummy-coded into four categories ranging from 0 (minimum vividness) to 3 (maximum vividness). In particular, the vividness of brand-posts was coded 1 if they were pictorial in nature, 2 if the entries announced an upcoming offline event of the brand, and 3 if the entries contained videos [11], [12], [14]. The remaining non-vivid brand-posts were coded as 0.

Based on interactivity, brand-posts were dummy-coded into four categories ranging from 0 (minimum interactivity) to 3 (maximum interactivity). Specifically, the interactivity of brand-posts was coded as 1 if they contained links to websites, 2 if the entries asked fans to take some trivial actions involving a single click, and 3 if the entries called for time-consuming interactions involving multiple clicks such as those that solicited answers to one or more question(s) [11], [12], [14]. The remaining non-interactive brand-posts were coded as 0.

To investigate how incentives, vividness and interactivity were separately related to attention toward brand-posts, multiple regression with ordinary least squares estimate was conducted [36]. The independent variables included the two levels of incentives (0-1), the four levels of vividness (0-3), and the four levels of interactivity (0-3). For each of the three groups of the categorical independent variables, the majority group was used as the baseline for comparison. The analysis was repeated thrice with the volumes of likes, comments and shares as the three dependent variables, which were logarithm transformed to account for their non-

normality [37]. For every brand-post, the number of fans for the corresponding brand page was taken as a control variable. The presence of multicollinearity was also examined. For all the three dependent variables, tolerance values for all independent variables were found to be above the minimum acceptable threshold of 0.2. Therefore, multicollinearity was not a concern [38].

To investigate how the interplay of incentives, vividness and interactivity was related to attention toward brand-posts, analysis of variance (ANOVA) was conducted [39]. Specifically, a 4 (levels of vividness) x 4 (levels of interactivity) two-way factorial analysis of variance was conducted for brand-posts that did not offer incentives. However, it should be acknowledged that a 2 (levels of incentives) x 4 (levels of vividness) x 4 (levels of interactivity) three-way factorial ANOVA could not be carried out. This was because only 22 of the 32 possible combinations (2 x 4 x 4) yielded occurrence in the dataset. On delving deeper, it was found that for brand-posts without incentives, all 16 possible combinations (4 x 4) were present in the dataset. However, for brand-posts that offered incentives, only 6 out of the 16 possible combinations (4 x 4) yielded occurrences. As a result, the scope of this investigation was only trained on brand-posts without incentives. The analysis was repeated thrice with the volumes of likes, comments and shares as the three dependent variables, which were once again logarithm transformed [37]. For every brand-post, the number of fans for the corresponding brand page was taken as a covariate.

IV. RESULTS

A. Incentives

Provision of incentives was negatively related to the volume of likes ($\beta = -0.08$, $p < 0.001$). Contrary to expectation, brand-posts that provided incentives were found less likely to attract likes. Hence, H1a was not supported.

With respect to both comments and shares, provision of incentives did not have any significant relationship. In other words, the volumes of comments and shares attracted by brand-posts were independent of the provision of incentives. Hence, H1b and H1c could not be supported.

B. Vividness

With respect to likes, non-vivid brand-posts had a significant negative relationship ($\beta_{\text{Vividness (0)}} = -0.12$, $p < 0.001$). However, the moderate and the high levels of vividness did not have any significant positive relationship with the volume of likes. Hence, H2a was only partially supported. It appears that non-vivid brand-posts will almost certainly not attract likes. Yet, there is no guarantee for vivid brand-posts to attract likes.

With respect to comments, non-vivid brand-posts had a significant negative relationship ($\beta_{\text{Vividness (0)}} = -0.03$, $p < 0.05$). In contrast, the moderate level of vividness had a significant positive relationship ($\beta_{\text{Vividness (2)}} = 0.05$, $p < 0.001$). The high level of vividness was also positively related to the volume of comments ($\beta_{\text{Vividness (3)}} = 0.03$, $p < 0.05$). Vivid brand-posts appear more likely to attract comments vis-à-vis those that lag behind in terms of

vividness, thus lending support for H2b.

With respect to shares, non-vivid brand-posts had a significant negative relationship ($\beta_{\text{Vividness (0)}} = -0.14$, $p < 0.001$). In contrast, the moderate level of vividness had a significant positive relationship ($\beta_{\text{Vividness (2)}} = 0.04$, $p < 0.01$). The high level of vividness was also positively related to the volume of shares ($\beta_{\text{Vividness (3)}} = 0.04$, $p < 0.01$). Vivid brand-posts appear more likely to be shared vis-à-vis those that lack vividness, thereby supporting H2c.

C. Interactivity

With respect to likes, the moderate level of brand-posts' interactivity had a significant positive relationship ($\beta_{\text{Interactivity (2)}} = 0.10$, $p < 0.001$). However, the high level of interactivity was negatively related to the number of likes ($\beta_{\text{Interactivity (3)}} = -0.04$, $p < 0.01$). This suggests that brand-posts' interactivity is curvilinearly related to the volume of likes. Thus, H3a was supported.

With respect to comments, the low level of brand-posts' interactivity had a significant positive relationship ($\beta_{\text{Interactivity (1)}} = 0.04$, $p < 0.01$). Likewise, the moderate level of interactivity had a significant positive relationship ($\beta_{\text{Interactivity (2)}} = 0.29$, $p < 0.001$). In contrast, the high level of interactivity was negatively related to the number of likes ($\beta_{\text{Interactivity (3)}} = -0.03$, $p < 0.05$). Brand-posts' interactivity seems to be curvilinearly related to the volume of comments, thus lending support for H3b.

With respect to shares, the low level of brand-posts' interactivity had a significant positive relationship ($\beta_{\text{Interactivity (1)}} = 0.07$, $p < 0.001$). The moderate level of interactivity too had a significant positive relationship ($\beta_{\text{Interactivity (2)}} = 0.18$, $p < 0.001$). In contrast, the high level of interactivity was negatively related to the number of shares ($\beta_{\text{Interactivity (3)}} = -0.03$, $p < 0.05$). Brand-posts' interactivity appears curvilinearly related to the volume of shares, thus lending support for H3c.

The results of the multiple regression analyses are summarized in Table I. With respect to likes, the overall model was significant ($F = 89.81$, $p < 0.001$), explaining 14.20% variance of the dependent variable. With respect to comments, the overall model was significant ($F = 112.86$, $p < 0.001$), explaining 17.20% variance of the dependent variable. With respect to shares, the overall model was significant ($F = 87.54$, $p < 0.001$), explaining 13.90% variance of the dependent variable. The results of testing the research hypotheses are summarized in Table II.

D. Interplay of Incentives, Vividness and Interactivity

As indicated earlier, the scope of this investigation was specifically trained on brand-posts without incentives. With respect to likes, the 4 (levels of vividness) x 4 (levels of interactivity) two-way factorial ANOVA indicated a significant interaction between vividness and interactivity ($F = 8.68$, $p < 0.001$, partial $\eta^2 = 0.012$). The variation in the volumes of likes across levels of vividness and interactivity is shown in Fig. 2. Brand-posts with videos (vividness level 3) were most receptive to likes even though they were non-interactive (interactivity level 0).

TABLE I
RESULTS OF THE MULTIPLE REGRESSION ANALYSES

| | Likes | Comments | Shares |
|-------------------|--------------------------------------|---------------------------------------|--------------------------------------|
| #Fans | 0.32*** | 0.30*** | 0.28*** |
| Incentive (yes) | -0.08*** | -0.02 | -0.01 |
| Vividness (0) | -0.12*** | -0.03* | -0.14*** |
| Vividness (2) | 0.01 | 0.05*** | 0.04** |
| Vividness (3) | 0.00 | 0.03* | 0.04** |
| Interactivity (1) | 0.01 | 0.04** | 0.07*** |
| Interactivity (2) | 0.10*** | 0.29*** | 0.18*** |
| Interactivity (3) | -0.04** | -0.03* | -0.03* |
| Model performance | F = 89.81 R ² = 14.20% | F = 112.86 R ² = 17.20% | F = 87.54 R ² = 13.90% |

Baseline groups for comparison: Incentive (no), Vividness (1), Interactivity (0). Significance levels: *** p < 0.001, ** p < 0.01, * p < 0.05

TABLE II
RESULTS OF THE HYPOTHESES TESTING

| | Likes | Comments | Shares |
|---------------|---------------------------------|---------------------------|---------------------------|
| Incentives | H1a: Not supported | H1b: Not supported | H1c: Not supported |
| Vividness | H2a: Partially supported | H2b: Supported | H2c: Supported |
| Interactivity | H3a: Supported | H3b: Supported | H3c: Supported |

With respect to comments, the 4 (levels of vividness) x 4 (levels of interactivity) two-way factorial ANOVA indicated a significant interaction between vividness and interactivity (F = 17.74, p < 0.001, partial $\eta^2 = 0.025$). The variation in the volumes of comments across levels of vividness and interactivity is shown in Fig. 3. Pictorial brand-posts (vividness level 1) that required fans to take some trivial actions involving single clicks (interactivity level 2) were most receptive to comments.

With respect to shares, the 4 (levels of vividness) x 4 (levels of interactivity) two-way factorial ANOVA indicated a significant interaction between vividness and interactivity (F = 16.93, p < 0.001, partial $\eta^2 = 0.024$). The variation in the volumes of shares across levels of vividness and interactivity is shown in Fig. 4. Brand-posts with videos (vividness level 3) were most receptive to shares even though they were non-interactive (interactivity level 0).

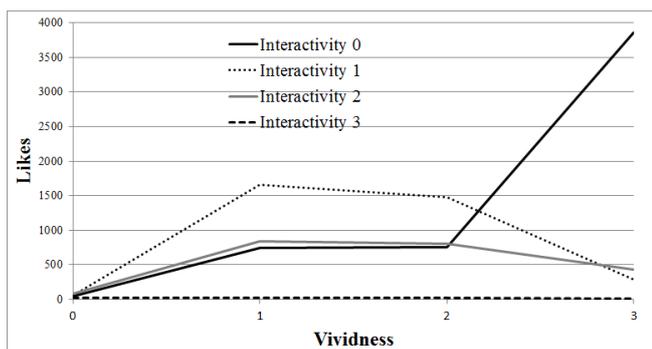


Fig. 2. Variation in the volumes of likes across vividness and interactivity.

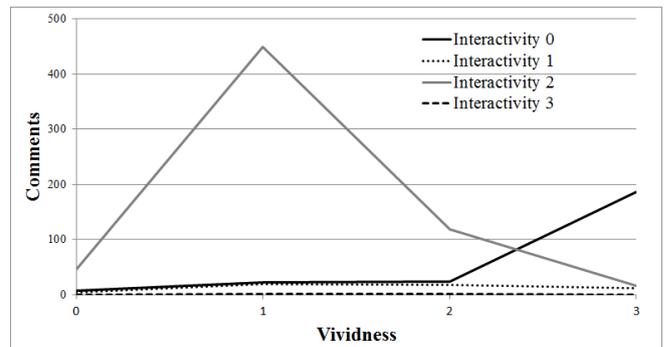


Fig. 3. Variation in the volumes of comments across vividness and interactivity.

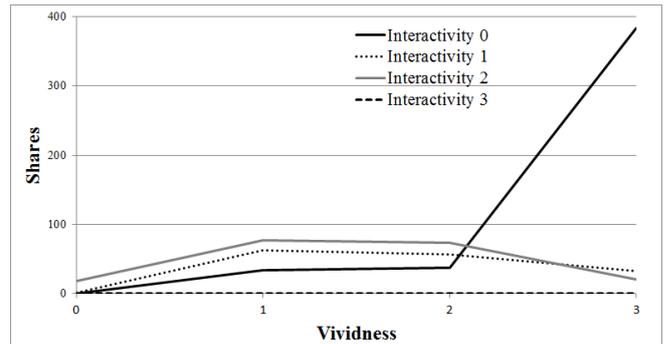


Fig. 4. Variation in the volumes of shares across vividness and interactivity.

V. DISCUSSION

Four key findings are gleaned from the results. First, brand-posts that provide incentives were unlikely to draw attention. This contradicts prior studies such as [22]-[24] which suggested that provision of incentives promotes participation. It was found that brand-posts that provided incentives were less liked than those that did not. Perhaps, the provision of incentives made fans suspicious about the trustworthiness of brand-posts. This contradictory finding could be vestige of the unique context of Singapore, which is high on uncertainty avoidance. Previous studies indicate that users of different countries vary in their levels of uncertainty avoidance [40], [41]. Users of countries, which are high on uncertainty avoidance, are generally cautious in trusting the online environment. That is why, fans in Singapore could be weary of incentives in brand-posts.

Second, vivid brand-posts were more likely to draw attention vis-à-vis those that were found wanting in terms of vividness. This finding is generally consistent with previous studies [11], [27], [28]. In particular, it was found that non-vivid brand-posts seldom attracted likes, comments and shares. In contrast, higher levels of vividness in brand-posts triggered commenting and sharing activities, but not liking activities. Interestingly, liking could be regarded as a more superficial activity compared with either commenting or sharing. Brand-posts' vividness seems to endear users to comment and share without necessarily engaging in the more peripheral activity of liking.

Third, increase in interactivity of brand-posts helped draw attention only up to an optimum level, beyond which there was a negative association. Such a curvilinear relationship between brand-posts' interactivity and their popularity was also predicted by prior studies such as [12]. Specifically, it

was found that brand-posts containing links to websites attracted comments and shares. Brand-posts that asked fans to take some trivial actions were also likely to draw fans' attention. In contrast, brand-posts that solicited answers to one or more question(s) were found to deter likes, comments and shares. Fans of brand pages seem to prefer interactivity only as long as it is not overly time-consuming. After all, Facebook users not only have a lot of content to browse, but also a low barrier to switching [21]. On encountering brand-posts that require time-consuming action, it is trivial for them to switch to other content.

Fourth, the interplay among incentives, vividness and interactivity seems to have a bearing on the extent to which brand-posts could draw attention. For one, brand-posts that did not provide any incentives appear to fare better than those offering incentives. Specifically, among those without incentives, brand-posts seem to draw attention when they contain images or videos, and solicit trivial actions that are not overly time-consuming. With respect to vividness, brand-posts need to be visually captivating to result in arousal [42]. As multitude of information competes for attention in Facebook [4], [18], images or videos emerge as being better than text in drawing attention [43]. With respect to interactivity, the results were mixed. It seems that vivid brand-posts need not necessarily be interactive in order to attract substantial likes and shares. Nonetheless, incorporating moderate levels of interactivity in brand-posts by soliciting trivial actions may make the entries likely to attract comments.

VI. CONCLUSION

This paper investigated the extent to which incentives, vividness and interactivity in brand-posts could draw fans' attention in Facebook. Specifically, it was found that brand-posts that provide incentives were unlikely to draw attention. Vivid brand-posts were more likely to draw attention vis-à-vis those that lacked vividness. It was further found that there was an optimum level of interactivity for brand-posts to draw attention. The interplay of the three factors suggests that brand-posts without incentives are most likely to draw attention if they are visually captivating, and solicit trivial interactions.

This paper is significant on two counts. First, by serving as a dovetailing effort to the few related studies [13], [14], it offers useful insights to businesses on ways to use Facebook for marketing purposes. Guided by the findings, businesses are recommended to contribute vivid brand-posts to maximize chances of attracting likes, comments and shares. Brand-posts however should not require fans to take part in time-consuming activities such as answering a survey. Nonetheless, moderate levels of interactivity could be incorporated by soliciting trivial activities that can be performed using a single click. Businesses are better off contributing few significant brand-posts instead of submitting entries frivolously, thereby merely adding to the already existing information overload in Facebook [4].

Second, this paper examines brand-post popularity in Facebook for brands in Singapore, a city-state known for its large user base in the SNS. This context is unique because

management and behavioral research thus far had mostly been conducted in western countries, and specifically in North America [44]. Findings from such studies might not generalize well throughout the globe [45]-[48]. For example, even though prior studies expected provision of incentives to be positively related to popularity of brand-posts, such a finding could not be replicated in the context of Singapore.

This paper is constrained by four limitations, which could be addressed by future research. First, the dataset was drawn for businesses in Singapore only for the social networking site Facebook. It remains unknown if the findings can be replicated for global businesses in other social networking sites such as Google Plus, thereby constraining external validity. Readers are therefore advised to exercise caution in generalizing the findings to other contexts.

Second, the dataset straddled across the various levels of the categorical independent variables disproportionately. A dataset comprising comparable volume of data points across all the levels of incentives, vividness and interactivity might have allowed for a fairer analysis. Nonetheless, the non-uniform spread of the data points across the categories could not be artificially controlled.

Third, the variances explained in the volumes of likes, comments and shares by the three selected independent variables—incentives, vividness and interactivity—was only modest, ranging from some 13.90% to 17.20%. Substantial share of the unexplained variance suggests that there could be several other factors related to the volumes of likes, comments and shares in Facebook.

Fourth, the paper investigated the factors that draw attention toward brand-posts in terms of attracting likes, comments and shares. In doing so, it fails to shed light on what motivates Facebook users to join brand pages as fans in the first place. This paper therefore serves as a call for more comprehensive scholarly investigation that should take into account not only why fans engage with brand-posts but also the reasons for which they join brand pages as fans in Facebook. Such research efforts can further expand the scholarship on social media marketing.

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REFERENCES

- [1] D. M. Boyd, and N. B. Ellison, "Social network sites: Definition, history, and scholarship," *Journal of Computer-Mediated Communication*, vol. 13, no. 1, pp. 210-230, Oct. 2007.
- [2] A. Lambert, *Intimacy and friendship on Facebook*. New York, NY: Palgrave Macmillan, 2013.
- [3] S. Van Belleghem, D. Thijs, and T. De Ruyck. (2012, September). Social media around the world 2012. *Insites Consulting* [Online]. Available: <http://www.slideshare.net/InSitesConsulting/social-media-around-the-world-2012-by-insites-consulting>
- [4] L. F. Bright, S. B. Kleiser, and S. L. Grau, "Too much Facebook? An exploratory examination of social media fatigue," *Computers in Human Behavior*, vol. 44, pp. 148-155, Mar. 2015.
- [5] A. Y. K. Chua, and S. Banerjee, "Customer knowledge management via social media: The case of Starbucks," *Journal of Knowledge Management*, vol. 17, no. 2, pp. 237-249, 2013.
- [6] W. H. S. Tsai, and L. R. Men, "Motivations and antecedents of consumer engagement with brand pages on social networking sites,"

- Journal of Interactive Advertising*, vol. 13, no. 2, pp. 76-87, Sep. 2013.
- [7] A. M. Gamboa, and H. M. Gonçalves, "Customer loyalty through social networks: Lessons from Zara on Facebook," *Business Horizons*, vol. 57, no. 6, pp. 709-717, Nov.-Dec. 2014.
- [8] E. W. Ngai, K. L. K. Moon, S. S. Lam, E. S. Chin, and S. S. Tao, "Social media models, technologies, and applications: An academic review and case study," *Industrial Management & Data Systems*, vol. 115, no. 5, 2015 [Online]. Available: <http://www.emeraldinsight.com/doi/abs/10.1108/IMDS-03-2015-0075>
- [9] D. G. Muntinga, M. Moorman, and E. G. Smit, "Introducing COBRAs: Exploring motivations for brand-related social media use," *International Journal of Advertising*, vol. 30, no. 1, pp. 13-46, 2011.
- [10] R. Lohtia, N. Donthu, and E. K. Hershberger, "The impact of content and design elements on banner advertising click-through rates," *Journal of Advertising Research*, vol. 43, no. 4, pp. 410-418, Dec. 2003.
- [11] J. R. Coyle, and E. Thorson, "The effects of progressive levels of interactivity and vividness in web marketing sites," *Journal of Advertising*, vol. 30, no. 3, pp. 65-77, 2001.
- [12] D. R. Fortin, and R. R. Dholakia, "Interactivity and vividness effects on social presence and involvement with a web-based advertisement," *Journal of Business Research*, vol. 58, no. 3, pp. 387-396, Mar. 2005.
- [13] A. Y. K. Chua, and S. Banerjee, "Marketing via social networking sites: A study of brand-post popularity for brands in Singapore," Lecture Notes in Engineering and Computer Science: Proceedings of The International MultiConference of Engineers and Computer Scientists 2015, IMECS 2015, 18-20 March, 2015, Hong Kong, pp. 363-368.
- [14] L. de Vries, S. Gensler, and P. S. Leeflang, "Popularity of brand posts on brand fan pages: An investigation of the effects of social media marketing," *Journal of Interactive Marketing*, vol. 26, no. 2, pp. 83-91, May 2012.
- [15] M. J. Eppler, and J. Mengis, "The concept of information overload: A review of literature from organization science, accounting, marketing, MIS, and related disciplines," *The Information Society: An International Journal*, vol. 20, no. 5, pp. 325-344, May 2004.
- [16] Y. Sasaki, D. Kawai, and S. Kitamura, "The anatomy of tweet overload: How number of tweets received, number of friends, and egocentric network density affect perceived information overload," *Telematics and Informatics*, vol. 32, no. 4, pp. 853-861, Nov. 2015.
- [17] T. Bradshaw (2011, September 11). Share and share alike: Social media vie for attention [Online]. Available: <http://www.ft.com/cms/s/2/1671609a-d9f3-11e0-b199-00144feabdc0.html#axzz1bdYNylEn>
- [18] C. Maier, S. Laumer, C. Weinert, and T. Weitzel, "The effects of technostress and switching stress on discontinued use of social networking services: A study of Facebook use," *Information Systems Journal*, vol. 25, no. 3, pp. 275-308, May 2015.
- [19] T. Ravindran, A. Y. K. Chua, and D. H. L. Goh, "Antecedents and effects of social network fatigue," *Journal of the Association for Information Science and Technology*, vol. 65, no. 11, pp. 2306-2320, Nov. 2014.
- [20] A. Lang, "The limited capacity model of mediated message processing," *Journal of Communication*, vol. 50, no. 1, pp. 46-70, Mar. 2000.
- [21] D. Chaffey, and P. R. Smith, P. R. *E-marketing excellence: The heart of e-business* (2nd ed.). Oxford: Elsevier Butterworth-Heinemann, 2005.
- [22] Y. Wang, and D. R. Fesenmaier, "Assessing motivation of contribution in online communities: An empirical investigation of an online travel community," *Electronic Markets*, vol. 13, no. 1, pp. 33-45, 2003.
- [23] O. Nov, "What motivates wikipedians?," *Communications of the ACM*, vol. 50, no. 11, pp. 60-64, Nov. 2007.
- [24] A. Hars, and S. Ou, "Working for free? Motivations of participating in open source projects," in *Proceedings of the Annual Hawaii International Conference on System Sciences*, IEEE, 2001, pp. 1-9.
- [25] J. Steuer, "Defining virtual reality: Dimensions determining telepresence," *Journal of Communication*, vol. 42, no. 4, pp. 73-93, Dec. 1992.
- [26] X. Dreze, and F. X. Husherr, "Internet advertising: Is anybody watching?," *Journal of Interactive Marketing*, vol. 17, no. 4, pp. 8-23, Oct. 2003.
- [27] M. L. Rothschild, *Marketing Communications*. Lexington, MA: D.C. Heath and Company, 1987.
- [28] R. L. Zeff, and B. Aronson, *Advertising on the Internet*. New York: Wiley Computer Publishing, 1997.
- [29] Y. Liu, and L. J. Shrum, "What is interactivity and is it always such a good thing? Implications of definition, person, and situation for the influence of interactivity on advertising effectiveness," *Journal of Advertising*, vol. 31, no. 4, pp. 53-64, 2002.
- [30] L. Ha, and E. L. James, "Interactivity reexamined: A baseline analysis of early business web sites," *Journal of Broadcasting & Electronic Media*, vol. 42, no. 4, pp. 457-474, 1998.
- [31] E. P. Bucy, "Interactivity in society: Locating an elusive concept," *The Information Society: An International Journal*, vol. 20, no. 5, pp. 373-383, 2004.
- [32] M. A. Aziz (2014, January 10). Singapore among the most active on social media: Report [Online]. Today Online Singapore. Available: <http://www.todayonline.com/tech/singapore-among-most-active-social-media-report>
- [33] Singapore Business Review (2012, September). 5 important statistics about Facebook users in Singapore [Online]. Available: <http://sbr.com.sg/leisure-entertainment/news/5-important-statistics-about-facebook-users-in-singapore>
- [34] D. Cohen (2012, November 20). Social Times Facebook Study: Singapore Facebook usage stays strong [Online]. Available: <http://www.adweek.com/socialtimes/rock-publicity-singapore-study/408285>
- [35] Socialbakers (2014, April 7). Socialbakers statistics: Facebook stats – Brands in Singapore [Online]. Available: <http://www.socialbakers.com/facebook-pages/brands/country/singapore/>
- [36] K. W. Li, "A simulation study on intracluster correlation," *IAENG International Journal of Computer Science*, vol. 32, no. 4, pp. 440-446, 2006.
- [37] B. G. Tabachnick, and L. S. Fidell, *Using multivariate statistics (3rd edition)*. New York, NY: HarperCollins College Publishers, 1996.
- [38] A. Y. K. Chua, and R. S. Balkunje, "Interlocking directorates and profitability: A social network analysis of Fortune 500 companies," in *Proceedings of the International Conference on Advances in Social Networks Analysis and Mining*, IEEE, 2012, pp. 1105-1110.
- [39] A. W. Y. Ng, and A. H. S. Chan, "Symbol training in past 40 years," *IAENG International Journal of Applied Mathematics*, vol. 36, no. 2, pp. 38-42, 2007.
- [40] G. H. Hofstede, *Culture's Consequences: International Differences in Work-Related Values*. Beverly Hills, CA: Sage, 1980.
- [41] D. Cyr, "Website design, trust and culture: An eight country investigation," *Electronic Commerce Research and Applications*, vol. 12, no. 6, pp. 373-385, 2013.
- [42] J. Walters, M. J. Apter, and S. Svebak, "Color preference, arousal, and the theory of psychological reversals," *Motivation and Emotion*, vol. 6, no. 3, pp. 193-215, Sep. 1982.
- [43] B. Van Der Heide, J. D. D'Angelo, and E. M. Schumaker, "The effects of verbal versus photographic self-presentation on impression formation in Facebook," *Journal of Communication*, vol. 62, no. 1, pp. 98-116, Feb. 2012.
- [44] J. V. Chen, D. Rungruengsamrit, T. M. Rajkumar, and D. C. Yen, "Success of electronic commerce web sites: A comparative study in two countries," *Information & Management*, vol. 50, no. 6, pp. 344-355, 2013.
- [45] S. C. Chu, and S. M. Choi, "A cross-cultural study of social relationships and use of social networking sites in the US and China," presented at the annual meeting of the International Communication Association, Singapore, Jun. 2010.
- [46] Y. Kim, D. Sohn, and S. M. Choi, "Cultural difference in motivations for using social network sites: A comparative study of American and Korean college students," *Computers in Human Behavior*, vol. 27, no. 1, pp. 365-372, Jan. 2011.
- [47] C. Li, "A tale of two social networking sites: How the use of Facebook and Renren influences Chinese consumers' attitudes toward product packages with different cultural symbols," *Computers in Human Behavior*, vol. 32, pp. 162-170, Mar. 2014.
- [48] L. Qiu, H. Lin, and A. K. Leung, "Cultural differences and switching of in-group sharing behavior between an American (Facebook) and a Chinese (Renren) social networking site," *Journal of Cross-Cultural Psychology*, vol. 44, no. 1, pp. 106-121, Jan. 2013.