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Does Culture Matter in Effectiveness of Social Media Marketing Strategy? An Investigation of Brand Fan Pages

Abstract

Purpose- Along with traditional marketing channels, social media outlets are integrated as a part of the marketing mix. Social media has changed the dynamics of interaction between companies and consumers that foster this relationship. Managing brand fan pages on social networking sites is a specific way the companies are using. Customers can become brand fans on these pages and indicate that they like the brand's posts, share them on their wall or simply comment. Our study analysed the impact of cultural differences on the effectiveness of social media metrics and scientifically tested brand engagement in terms of commitment, loyalty and brand recommendations.

Design/methodology/approach- We analysed 1922 brand posts from 5 different brands of a single product category in 3 different countries. Ordinary least square (OLS) and hierarchical moderation regression was used to test the hypotheses.

Findings- Results show that all determinants are not equally suitable for enhancement of number of likes, comments and shares. More specifically, vivid and interactive brand post determinants enhance the number of likes. Furthermore, interactive brand posts enhance the number of comments while vivid brand posts enhance number of shares. Moreover, impact and intensity vary across different cultures.

Originality/value- Brand fan page moderators can obtain guidance from our research in formulating their social media marketing strategies in order to decide which post determinants to place on the fan page.

Keywords: Social networking sites; Social media marketing; Online engagement, Facebook, Post contents, Interaction, Social Media, Content analysis

Article Classification: Research Paper

1 Introduction

The intensity of following brand on social media is increasing gradually. Half of the social media users are addicted to following brands on social media (Hutchinson, 2015) and the investment of companies in social media is also increasing rapidly. The increasing investment in social media is for the purpose of enhancing the interactive relationship with customers. To attain this objective, companies are using different ways such as blogs, electronic word-of-mouth (e-WOM) and microblogs (e.g., Facebook and Twitter).

Social media provides user-generated contents which are more effective than the conventional marketing communication in influencing behaviours and attitudes of consumers (Thackeray *et al.*, 2008). Web 2.0 is a platform in which software and contents are more dynamic in nature and these can be developed and produced by many participants in a continuous and collaborative way (Laroche *et al.*, 2012). This interactive application has positively attracted organizations in developing and managing brand fan pages on social media to enhance the organizational social network salience and shape strong customer relationships, resulting in social media being an effective and vital communication strategy tool.

Prior research identified that culture impacts consumers' decision making process and information seeking (Mangold and Smith, 2012, McGuinness *et al.*, 1991). However, no research available in the literature shows the impact cultural difference has on social media metrics and do not explore the structural differences in depth (King *et al.*, 2014).

The aim of the current research is to analyse the impact of cultural differences on the effectiveness of social media metrics and to scientifically test brand engagement in terms of commitment, loyalty and brand recommendations.

The paper continues with the following structure: The next section discusses related studies and hypotheses development. The third section describes the adopted methodology and section 4 explains the results of the analysis. Section 5 concludes the paper with managerial implications, and lastly, section 6 provide limitations of the study and suggests guidelines for future research.

2 Related Studies and Hypotheses Development

Recently, numerous investigators have conducted research on the content analysis of brand fan pages on Facebook to social media content effectiveness in consumer responses. Details are available in Table 1 about the variety of studies conducted on social media content analysis and also provide details on content dimensions or metrics, social platforms used and variable(s). Organizations are using engagement metrics to track their activities on social media but the measurements remain a challenge (Moorman *et al.*, 2015). Numerous researchers (e.g., Ashley and Tuten, 2015, Yang *et al.*, 2016) demonstrate how social media (e.g., Facebook) can be leveraged to increase engagement behaviour of consumers. Available literature focused on traditional advertising frameworks for media orientation classification. A little effort has been made addressing distinctive traits of social media as an interactive channel (Labrecque, 2014). The effectiveness of different types of social media content for the generation of consumer response has been discussed in the recent literature, for example, comparison of social media contents effect with different orientation types (e.g., information-oriented vs. entertainment-oriented contents) (Cvijikj and Michahelles, 2013, Swani *et al.*, 2013). According to them, content effectiveness depends on product type. Some studies have compared content effectiveness across different brand categories or products in anticipating consumer response. No literature is available that highlights the content effectiveness in the context of cultural differences. Therefore, in its current state, a gap is seen with regards to the effectiveness of social media metrics with respect to cultural differences.

Insert Table 1 here

We argue in a general way that post characteristics (vividness & interactivity), post contents (information & entertainment), post top position, and corporate social responsibility (CSR) communication are related to brand fan engagement in terms of brand commitment, loyalty and brand recommendations (number of likes, number of comments & number of shares). Cultural differences (country/location) play a moderating role in checking the brand fan engagement effectiveness of post characteristics, post contents, CSR communication, and

post top position in different geographical locations. These relationships are illustrated in Figure 1. We discuss the underlying reasoning and hypotheses formulation in the following.

Insert Figure 1 here

2.1 Post characteristics

Post characteristics include vividness and interactivity, and their details are as follows:

2.1.1 Vividness

Media richness is referred to as online content vividness (Daft and Lengel, 1986). A brand post has high salience if it has vividness characteristics. Vividness is associated with the diversity of brand post features which may stimulate the senses of brand fans (Steuer, 1992). One can generate vividness in brand posts through lively animations, colours, and pictures (Cho, 1999, Dreze and Hussherr, 2003, Fortin and Dholakia, 2005, Goldfarb and Tucker, 2011, Goodrich, 2011). Change in vividness can change its impact on sense stimulation (Coyle and Thorson, 2001). The still picture has less vividness than lively animation or video including audio which may generate more stimulation through both sight and hearing. Cho (1999) proved that vividness and intention to click have a positive relationship, while vividness also has a direct relationship with click-through rates (Lohtia *et al.*, 2003). Furthermore, the degree of website vividness appears to be most effective at increasing attitudes toward a website (Coyle and Thorson, 2001, Fortin and Dholakia, 2005). The degree of vividness has a positive impact on the engagement with brand post (De Vries *et al.*, 2012). We propose that the more vivid the brand post is, the more it leads toward positive attitude about brand post engagement in terms of liking, commenting and sharing. Therefore, we postulate:

H1. Levels of vividness have positive impact on brand fan engagement.

2.1.2 Interactivity

Interactivity can be expressed as the degree to which content and form of media environment can influence users (Steuer, 1992). More formally Liu and Shrum (2002) defined interactivity as “*the degree to which two or more communication parties can act on each other, on the communication medium, and on the messages and the degree to which such influences are synchronized*”. Interactivity is characterised as many-to-many communications because it is the communication between company to customer, customer to company and customer to customer (Goldfarb and Tucker 2011; Hoffman and Novak 1996). The level of interactivity of brand post is different in that it depends on its characteristics. The literature shows that interactivity has a positive effect on brand engagement (Cho, 1999, Coyle and Thorson, 2001). Basically, the objective of the brand post is to generate reactions (e.g., liking, commenting or sharing). Therefore, we expect that a higher degree of interactivity generates more brand post likes, comments and shares. We formulate the following hypothesis:

H2. Levels of interactivity have positive impact on brand fan engagement.

2.2 Post contents

Uses and Gratification theory (Katz and Blumler, 1974) is an influential sociological paradigm that elaborates how and why individuals actively choose specific media outlets to satisfy specific needs. It is an approach used by media and technology researchers frequently in understanding an individual's motivations and goals of engagement with different content types. The application of this theory in the field of social media and brand communities identifies informative and entertaining contents as the most influential factors. Therefore, we categorised brand post contents into both informative and entertaining contents.

2.2.1 Informative contents

One of the most important reason of joining any social network is acquiring information (Lin and Lu, 2011). According to Dholakia *et al.* (2004), people join social media to share their ideas and feelings in a virtual community and contribute to Facebook groups (Park *et al.*, 2009). People like to guzzle brand posts that show their persuasion towards information (Muntinga *et al.*, 2011). Moreover, they concluded that information and entertainment were the main motivating factors for online engagement over contents related to brands in the form of creation, consumption and contribution. Furthermore, brand fans participate in brand posts containing information regarding product or brand. In the literature of advertising it has been proven that viewers show positive attitudes to informative ads on social networks (Taylor *et al.*, 2011). On the basis of the above discussion, we concluded that a company post containing informative content will increase the engagement level of their fans. Therefore, we propose the following hypothesis:

H3. Informative contents of brand post generate more brand fan engagement than non-informative contents.

2.2.2 Entertaining content

Researchers identified that entertainment is an important reason for people to join social networking sites (Cheung *et al.*, 2011, Dholakia *et al.*, 2004, Lin and Lu, 2011, Park *et al.*, 2009). The entertaining nature of brand-related contents influences people to guzzle, contribute and comment (Muntinga *et al.*, 2011). Humour appeal in advertising does attract viewers (Belch and Belch, 2003), and entertaining advertisements generate a positive attitude towards ads (Taylor *et al.*, 2011) and guides the customer back to the website (Raney *et al.*, 2003). Hence, we propose that entertaining contents encourage and motivate brand fans to consume and participate. Therefore, entertaining contents attract more engagement than non-entertaining contents. This proposition leads to the following hypothesis:

H4. Entertaining contents of brand post generate more brand fan engagement than non-entertaining contents.

2.3 Brand Post Position

Literature of advertisement research reveals that with website advertisements, the banner position does matter in attaining the attention of viewers (Dreze and Hussherr, 2003, Goodrich, 2011). According to Rutz and Trusov (2011), banners posted at the top of the web page can attract more viewers and have a higher click-through rate. The brand post position has a significant impact on brand post engagement in terms of both likes and comments (De Vries *et al.*, 2012). Brand posts appear on the brand page according to the newness of any post. If any brand page manager posts frequently, less recent posts shift down quickly, which means that these posts can receive less attention than posts located on the top of the brand fan page.. So the number of days a brand post remains at the top does impact its level of engagement. Therefore, we propose:

H5. Brand post top positions on fan page have a positive impact on brand fan engagement.

2.4 Corporate Social Responsibility (CSR) Communication

Morsing (2006), defined CSR communication as “communication that is designed and distributed by the company itself about its CSR efforts”. Companies are communicating CSR related messages to enhance the performance index, to develop a responsible image and to forbid negative or counter negative publicity (Nielsen and Thomsen, 2012). Organizations use different mediums to communicate their CSR efforts such as advertising, annual reports, public press releases, product packaging and cause related marketing (Lodhia, 2006). In a recently related study in the field of social networking site (SNS), e.g., Jeong *et al.* (2013) proved through an experimental study that presence of CSR communication in the form of cause-related marketing (CRM) or cause sponsorship (CS) resulted in a higher intention to join brand fan pages. Hence, we conclude that the presence of CSR related posts will increase liking, commenting and spread of the post. Therefore, we formulate the following hypothesis:

H6. CSR communication is positively related to brand fan engagement.

2.5 Cultural Differences (Country)

Culture is an ambiguous concept converting conceptual, operational and definitional impediments for research of cultural influence on consumer behaviour (Soares *et al.*, 2007). Definition of culture provided by Tylor is the earliest definition: “the complex whole which includes knowledge, belief, art, morals, custom and any other capabilities and habits acquired by man as a member of society” (1871, in McCort and Malhotra, 1993).

Numerous researchers have discussed the dimensional choice for operationalization and conceptualization of culture but the most widely used framework for national culture is Hofstede’s framework in the field of sociology, psychology, management and marketing (Søndergaard, 1994). The latest version of Hofstede’s framework includes the following six dimensions (1) individualism-collectivism, (2) uncertainty avoidance, (3) power distance, (4) masculinity-femininity, (5) long-term orientation (more appropriately long- versus short-term designation), and (6) indulgence (Hofstede *et al.*, 2010). Moreover, nations themselves can be used as a substitution for culture as national members share a common language, institutional system, religion, history, and sense of identity (Dawar *et al.*, 1996, Hofstede, 1984).

Prior researchers have identified that culture impacts consumers’ decision making processes and information seeking (Mangold and Smith, 2012, McGuinness *et al.*, 1991), but no research available shows the cultural difference impact on social media metrics and does not explore the structural differences in depth (King *et al.*, 2014).

For the cultural differences variable of our model we used Geert Hofstede’s theory. Based on this theory, we have selected three culturally similar countries Australia, United Kingdom (UK) and United States of America (USA) for evaluation of cultural difference impact on consumer engagement on social networks. These countries have almost the same scores in uncertainty avoidance (AUS=51, UK=35, USA=46) and power distance (AUS=36, UK=35, USA=40) dimensions (Hofstede and Hofstede, 2001). Dawar *et al.* (1996) proved that these dimensions of Hofstede’s framework impact information exchange behaviour of consumers. Other dimensions also have matching scores in all three countries. Research proves that using theoretical aspects with similar based countries, reliability improved and generalizability increased (Alden *et al.*, 1993, Sivakumar and Nakata, 2001). We propose that cultural differences (country/location) play a moderating role among the relationship of brand fan

engagement and effectiveness of post characteristics, post contents, CSR communication, and post top position in different geographical locations. Based on the above discussion we postulate the following hypotheses:

- H7a.** Culture moderates the impact of vividness on brand fan engagement.
- H7b.** Culture moderates the impact of interactivity on brand fan engagement.
- H7c.** Culture moderates the impact of informative content on brand fan engagement.
- H7d.** Culture moderates the impact of entertaining content on brand fan engagement.
- H7e.** Culture moderates the impact of CSR communication on brand fan engagement.
- H7f.** Culture moderates the impact of post top position on brand fan engagement.

2.6 Control Variables

Rutz and Bucklin (2011) concluded that search advertisement research shows that weekdays are used preferably by people for internet searching rather than weekends. Therefore, there is a direct connection between the number of visitors on weekdays and weekends. Hence, to overcome this issue, we have to take into account whether the post is posted during weekends or weekdays.

Unobserved characteristics of brand category might lead to differences in explained variables across different countries. Therefore we control for brand categories.

3 Methodology

3.1 Data and Coding

We evaluated empirically the data of five international Fast Food brands: McDonalds, Kentucky Fried Chicken (KFC), Burger King (BK), Subway, and Domino's, that were posting contents actively on the wall of their brand fan page on Facebook from 1 July, 2014 to 31 December, 2014. Facebook fan pages were from three different countries: Australia (AUS), United Kingdom (UK), and United States of America (USA). All these brands are operating in the selected countries with the same parent brand name except BK, which is operating with the name of Hungry Jack's in Australia, and all manage their fan pages on Facebook. In the 1970s, Australian fast food giant Jack Cowin wanted to introduce Burger King to Australia but the problem was that the name "BURGER KING" had already been trademarked by a takeaway food shop in Adelaide, Australia so he chose "Hungry Jack's" (Terry and Forrest, 2008). We collected the data about number of likes, comments and shares and other characteristics of brand posts, from a total of 1,922 posts (posted by brand fan page moderator) of 15 Facebook brand fan pages. We designed a software agent in Python language using Scrapy Framework based on the Facebook Graph API (Facebook-Developers, 2014) to crawl data from the official fan pages of each firm on Facebook. This program crawled data from Facebook fan pages of each firm about moderator posts (e.g., fan post characteristics and contents, likes, comments and shares, and creation time) by using posts connection of the page object which represents all post objects shared by the page moderator(s). It is widely applied in information science literature to use data crawler with an automated software from public websites (Aggarwal *et al.*, 2012, Gu *et al.*, 2012). According to Cvijikj and Michahelles (2013), the average interaction time of a Facebook brand post is 9 days, we monitor the last post up to 10 days from the date of posting for accuracy. To attain

precision we retrieved data from fifteen fan pages on a daily basis over the course of a six-month period. An independent coder with no knowledge about the research hypotheses coded the data manually along with one member of the research team. Codes were explained to the independent coder and further, after coding an initial portion, he consulted with a member of the research team for clarification. The calculated value of inter-coder reliability using the formula of (Perreault and Leigh, 1989) was approximately 0.89 which lies within the acceptable range of 0.80-1.0. Coding discrepancies were resolved by one of the authors.

3.2 Operationalization of variables

The current study explains consumer brand engagement in terms of brand commitment, loyalty and recommendation on SNSs, as indicated by number of likes, comments and number of shares of brand post. Manual coding was performed by utilizing code development strategy (Grounded Theory (GT)) presented by (Glaser and Strauss, 2009). GT is a systematic social science methodology in which researchers review the collected data, elements or repeated ideas become apparent and then categories are developed and tagged with codes.

In accordance with previous research (e.g., Coyle and Thorson, 2001, Fortin and Dholakia, 2005, De Vries *et al.*, 2012), vividness and interactivity have been categorised into four different levels ranging from “No” to “High” (no, low, medium, high). Details about the categories of vividness and interactivity are available in Table-2. Absence of vividness and interactivity (“no” category) is the base category for analysis.

Insert Table 2 here

Brand posts containing information about brand/company is denoted as informative content (e.g., “IT'S BACK!!! Thanks to the love and bombardment from these dedicated Zinger Pie fans, In-store on Tuesday with our NEW Kentucky Pie!” (KFC, 29 Nov, 2014)), and coded as “Yes”, otherwise “No”. Entertaining contents contain no information about brand/company but contain funny contents like anecdotes or movies (e.g., “our thoughts are with the Hughes family and our friends in the cricket community” (KFC, 27 Nov, 2014)). Brand posts that do not contain brand/company information or entertaining content are denoted as the base category for analysis.

Posts containing information about community welfare are denoted as CSR communication (e.g., “Sometimes we need a little pick-me-up on Mondays. Hearing that Baby Pray is going home is such a special day. Thank you Ronald McDonald House Charities of Southwest Florida for keeping her family together!” (McDonalds, 27 Oct, 2014)), and coded “Yes”, otherwise “No”. Data related to the brand post have been collected from three countries and Australia is considered as base category for analysis because the highest number of posts are from Australian Facebook fan pages. Other variables are count variables; we collected the data in count related to likes, comments and shares of post, while post position was counted in number of days a post remains at the top of the brand fan page. When the moderator of a fan page adds a new post on the wall of a fan page, the previous post loses the top position.

4 Results

4.1 Descriptive Statistics

We have empirically investigated 1,922 posts from 15 different Facebook pages of five companies in three countries with an average of 128.13 (SD=54.24) posts per page. Data in Table 3 shows a degree of variation within and across the countries for brand fan engagement (number of likes, comments, and shares) and companies use different stimulating tools to enhance consumer engagement.

Insert Table 3 here

4.2 Model Development

Dependent variables (i.e., number of likes, comments and share of post) and independent variable (i.e., position) are count data with a Poisson distribution, therefore we took the log of these count variables (Cameron and Trivedi, 2005). At first stage we ran the Ordinary Least Squares (OLS) regression by splitting the data into country wise and keep the variable “day of the week” (DOW) and “company/brand” (CO) as control variables. In the second stage we applied hierarchal moderation regression. Thus, the model to explain the number of likes, comments and shares of posts in hierarchal moderation regression can be expressed as:

$$y_{ij} = a + \exp \left(\sum_{d=1}^3 \beta_d VIV_{dj} + \sum_{e=1}^3 \beta_e INT_{ej} + \beta_f INF_j + \beta_g ENT_j + \beta_h TPOS_j + \beta_k CSR_j + \sum_{l=1}^2 \beta_l COUNTRY_{lj} + \beta_c DOW_j + \sum_{b=1}^4 \beta_b CO_b + \sum_{m=1}^3 \beta_m VIV_{mj} * COUNTRY_{ij} + \sum_{n=1}^3 \beta_n INT_{nj} * COUNTRY_{ij} + \beta_o INF_j * COUNTRY_{ij} + \beta_p ENT_j * COUNTRY_{ij} + \beta_q TPOS_j * COUNTRY_{ij} + \beta_r CSR_j * COUNTRY_{ij} \right) + \varepsilon_{ij}$$

Where:

- y_{ij} number of likes, comments and shares per brand post j ,
- VIV_{dj} dummy variables showing vividness level d at brand post j (no vividness is baseline category),
- INT_{ej} dummy variables showing interactivity level e at brand post j (no interactivity is baseline category),
- INF_j it is a dummy variable showing whether brand post j is informative (no information is selected as baseline category),
- ENT_j it is a dummy variable showing whether brand post j is entertaining (no entertainment is selected as baseline category),
- $TPOS_j$ shows the position in number of days a brand post j is on the top of the brand fan page,

CSR _j	it is a dummy variable showing whether brand post <i>j</i> is related to CSR message (not related to CSR is selected as baseline category),
COUNTRY _{ij}	it is a dummy variable showing brand post <i>j</i> is from the fan page of country <i>l</i> (country 1 is USA and country 2 is UK while country ‘Australia’ is baseline category. It is moderator, therefore it has interaction with explanatory variables),
DOW _j	it is a dummy variable shows the brand post placed during weekdays,
CO _b	it is a dummy variable for brand category <i>b</i> (“KFC” is base category brand)
ε _{ij}	normally distributed error terms for dependent variables number likes, comments and share.

4.3 Data Analysis

The moderating effect of the variable “Country” on the relationship between explanatory variables and dependent variables was tested using hierarchal moderation regression. According to (Cohen *et al.* (2013)), hierarchal regression analysis is assessed to analyse the unique contribution of blocks of independent variables in explanation of dependent variables. Variables are entered stepwise while applying hierarchal moderation regression. In this type of analysis, controlled variables are entered in the first step of regression before the independent and moderator variables. Explanatory and moderator variables are entered in the second step and the interaction terms - computed on a product of moderator variables and predictors, are entered in third step. This process calculates the main effect that variables impact have on criterion variables prior to the interactions test. If the interaction term accounts for a significant amount of variance in the criterion variable – beyond that accounted for by other variables in the model – then moderation is proved. Table 4 and 5 show the estimated results of hierarchal moderation regression and OLS regression respectively.

Insert Table 4 here

4.3.1 Number of Likes

Results of the first hierarchal moderation regression show the moderating effect of the variable “country” on the relationship between explanatory variables and the number of likes. That result shows that the model is significant as a whole (F-value=72.689, 358.733, 182.530 for step 1, 2, and 3 respectively, p-value<0.01), and reasonably explains the dependent variable (R²=15.9%, 76.2%, 78.2% for step 1, 2, and 3 respectively), while the significant change in R² is a reported 2% that proves moderation. All explanatory variables show the significant main-effect. Their details are shown below.

Post Characteristics

All levels of vividness are significant and positively impact number of likes. Variable “country” separated regression results also show the significant positive impact of all levels of vividness on number of likes in all three countries.

Lower levels of vividness (i.e., ‘images/photos’) are significant and positively related to number of likes ($\beta_{L_VIV_low}=1.262$, $p\text{-value}<0.01$). Moreover, medium level of vividness (i.e., ‘announcement’) and high level of vividness (i.e., ‘video’) are also significant and positively impact the number of likes ($\beta_{L_VIV_medium}=1.460$, $p\text{-value}<0.01$; $\beta_{L_VIV_high}=1.633$, $p\text{-value}<0.01$), in support of our first hypothesis H1.

All levels of interactivity are significant and positively related to number of likes. Variable “country” separated regression results also show the significant positive impact of all levels of interactivity on number of likes in all countries except low level of interactivity that does not show impact in USA. A lower level of interactivity (i.e., ‘website links’) is significant and positively impacts number of likes ($\beta_{L_INT_low}=0.384$, $p\text{-value}<0.01$). Moreover, medium level of interactivity (i.e., ‘enforce to act’) and high level of interactivity (i.e., ‘quiz’) are also significant and positively related to number of likes ($\beta_{L_INT_medium}=0.882$, $p\text{-value}<0.01$; $\beta_{L_INT_high}=1.690$, $p\text{-value}<0.01$), in support of the second hypothesis H2.

Insert Table 5 here

Post Contents

Providing information related to products and company on brand fan page is significant and positively impacts number of likes ($\beta_{L_INF}=0.719$, $p\text{-value}<0.01$), in support of hypothesis H3. Furthermore, entertaining contents are significant and positively related to number of likes ($\beta_{L_ENT}=0.196$, $p\text{-value}<0.01$), in support of hypothesis H4. Variable “country” separated regression results show the significant positive impact of variables “information” and “entertainment” on number of likes in all countries except USA where “entertainment” shows an insignificant result.

Top Position and CSR

Brand post top position is significant and positively impacts on number of likes ($\beta_{L_TPOS}=0.022$, $p\text{-value}<0.01$), in support of our hypothesis H5. Moreover, posting CSR related posts on brand fan pages is also significant and positively related to number of likes ($\beta_{L_CSR}=0.347$, $p\text{-value}<0.10$), in support of hypothesis H6. Variable “country” separated regression results shows the significant positive impact of CSR on number of likes in all three countries while “top position” is significant in AUS and UK.

4.3.2 Number of Comments

Results of the second hierarchal moderation regression show the moderating effect of the variable “country” on the relationship between explanatory variables and the number of comments. Results show that model is significant as a whole ($F\text{-value}=50.578$, 74.550 , 40.315 for step 1, 2, and 3 respectively, $p\text{-value}<0.01$), and reasonably explain the dependent variable ($R^2=11.7\%$, 40% , 44.2% for step 1, 2, and 3 respectively), while the significant change in R^2 is reported at 4.2% , that proves moderation. All explanatory variables except CSR show the significant main-effect, their details are as follows:

Post Characteristics

All levels of vividness are significant and positively related to number of comments ($\beta_{C_VIV_low}=1.009$, $p\text{-value}<0.01$; $\beta_{C_VIV_medium}=0.962$, $p\text{-value}<0.01$; $\beta_{C_VIV_high}=1.148$, $p\text{-value}<0.01$), in support of our first hypothesis H1. Variable “country” separated regression results also show the significant positive impact of all levels of vividness on number of comments in all countries except UK, where the medium level of vividness shows an insignificant result.

All levels of interactivity are significant and positively related to number of comments ($\beta_{C_INT_low}=1.454$, $p\text{-value}<0.01$; $\beta_{C_INT_medium}=1.458$, $p\text{-value}<0.01$; $\beta_{C_INT_high}=1.982$, $p\text{-value}<0.01$), in support of second hypothesis H2. Variable “country” separated regression results also show the significant, positive impact of all levels of interactivity on number of comments in all countries except USA, where low and medium levels of interactivity show insignificant results.

Post Contents

Providing information related to products and companies on brand fan pages is significant and positively impacts the number of comments ($\beta_{C_INF}=1.201$, $p\text{-value}<0.01$), in support of hypothesis H3. Moreover, entertaining contents are significant and positively related to number of comments ($\beta_{C_ENT}=0.320$, $p\text{-value}<0.01$), in support of hypothesis H4. Variable “country” separated regression results show the significant positive impact of variable “information” on number of comments in all countries, while “entertainment” shows significant result only in AUS.

Top Position and CSR

Brand post top position is significant and positively impacts number of comments ($\beta_{C_TPOS}=0.047$, $p\text{-value}<0.01$), in support of our hypothesis, H5. Furthermore, posting CSR related posts on brand fan pages is not significantly related to number of comments, in contradiction to hypothesis H6. Moreover, variable “country” separated regression results show insignificant results of variable CSR on number of comments in all countries, while “top position” shows significant results in USA and UK.

4.3.3 Number of Shares

Results of the third hierarchical moderation regression show the moderating effect of variable “country” on relationship between the explanatory variables and the number of shares. Results show that model is significant as a whole ($F\text{-value}=45.936, 97.687, 49.992$ for step 1, 2, and 3 respectively, $p\text{-value}<0.01$), and reasonably explain the dependent variable ($R^2=10.7\%, 46.6\%, 49.5\%$ for step 1, 2, and 3 respectively), while the significant change in R^2 is a reported 3%, proving moderation. All explanatory variables except variables “entertainment”, CSR and “top position” show the significant main-effect, their details are as follows:

Post Characteristics

All levels of vividness are significant and positively related to number of shares ($\beta_{S_VIV_low}=3.058$, $p\text{-value}<0.01$; $\beta_{S_VIV_medium}=3.084$, $p\text{-value}<0.01$; $\beta_{S_VIV_high}=4.077$, $p\text{-value}<0.01$), in support of our first hypothesis H1. Variable “country” separated regression results also show the significant positive impact of all levels of vividness on number of shares in all three countries.

All levels of interactivity are significant and positively related to number of shares ($\beta_{S_INT_low}=1.132$, $p\text{-value}<0.01$; $\beta_{S_INT_medium}=2.201$, $p\text{-value}<0.01$; $\beta_{S_INT_high}=3.373$, $p\text{-value}<0.01$), in support of second hypothesis H2. Variable “country” separated regression

results show the significant positive impact of all levels of interactivity on number of shares in all countries except USA, where low level of interactivity shows insignificant results.

Post Contents

Providing information related to products and companies on brand fan pages is significant and positively impacts number of shares ($\beta_{S_INF}=1.959$, $p\text{-value}<0.01$), in support of hypothesis H3. Entertaining contents are not significantly related to number of shares, in contradiction to hypothesis H4. Variable “country” separated regression results show significant positive impact of variable “information” in all countries while “entertainment” impacts number of shares in AUS.

Top Position and CSR

Brand post top position and posting CSR related posts on brand fan pages are not significantly related to number of shares, which is not in support of hypothesis H5 and H6. Moreover, variable “country” separated regression results show insignificant results of variables CSR and “top position” in all countries.

4.3.4 Moderating effect of Culture

Results show that companies are using different social media contents in different countries. Post characteristics results show that companies are using low and medium vivid posts to increase number of likes, medium and high vivid posts to increase number of comments and medium vivid posts to increase the number of shares in all the three countries, as they are culturally comparable, because their results are insignificant, in contradiction to hypothesis H7a. Moreover, low vivid posts are impacting on number of comments significantly more in UK as compared to AUS ($\beta_{C_VIV_low}*COUNTRY2=0.916$, $p\text{-value}<0.01$) yet their impact is similar in AUS and USA. Low and high vivid posts strongly enforce the fans of brands to share the post more in AUS as compared to USA ($\beta_{S_VIV_low}*COUNTRY1=-1.535$, $p\text{-value}<0.10$; $\beta_{S_VIV_high}*COUNTRY1=-2.705$, $p\text{-value}<0.01$) but they have similar enforcement in AUS and UK. Furthermore, highly vivid posts are impacting the number of likes and significantly more in USA as compared to AUS ($\beta_{L_VIV_high}*COUNTRY1=0.415$, $p\text{-value}<0.01$), while these type of posts impact lower on likes in UK ($\beta_{L_VIV_high}*COUNTRY2=-0.563$, $p\text{-value}<0.01$). All in all, we find partial support for hypothesis H7a.

Low and medium interactive posts show a lower significant impact on the number of comments in USA and UK as compared to AUS ($\beta_{C_INT_low}*COUNTRY1=-2.499$, $p\text{-value}<0.01$; $\beta_{C_INT_low}*COUNTRY2=-0.821$, $p\text{-value}<0.05$; $\beta_{C_INT_medium}*COUNTRY1=-2.144$, $p\text{-value}<0.01$; $\beta_{C_INT_medium}*COUNTRY2=-0.755$, $p\text{-value}<0.10$), while highly interactive posts show more impact on comments in AUS than that of USA ($\beta_{C_INT_high}*COUNTRY1=-1.694$, $p\text{-value}<0.01$). But, their impact is similar in AUS and UK. Moreover, all levels of interactive posts show lower significant impact on number of likes and shares in USA as compare to AUS ($\beta_{L_INT_low}*COUNTRY1=-1.045$, $p\text{-value}<0.01$; $\beta_{L_INT_medium}*COUNTRY1=-1.121$, $p\text{-value}<0.01$; $\beta_{L_INT_high}*COUNTRY1=-0.854$, $p\text{-value}<0.01$; $\beta_{S_INT_low}*COUNTRY1=-2.771$, $p\text{-value}<0.01$; $\beta_{S_INT_medium}*COUNTRY1=-4.222$, $p\text{-value}<0.01$; $\beta_{S_INT_high}*COUNTRY1=-3.955$, $p\text{-value}<0.01$), in support of hypothesis H7b. But, all levels of interactive posts show similar impact on number of likes and shares in AUS and UK as their results are insignificant, in contradiction to hypothesis H7b.

Providing information related to products and company on brand fan page is significant and shows higher impact in AUS as compared to UK in terms of likes, USA and UK in terms of comments and USA in terms of shares ($\beta_{L_INF}*COUNTRY2=-0.383$, $p\text{-value}<0.01$; $\beta_{C_INF}*COUNTRY1=-1.351$, $p\text{-value}<0.01$; $\beta_{C_INF}*COUNTRY2=-1.638$, $p\text{-value}<0.01$;

$\beta_{S_INF*COUNTRY1} = -2.356$, $p\text{-value} < 0.01$), in support of hypothesis H7c. But, this variable shows similar impact on number of likes and shares in AUS and USA, and AUS and UK respectively, contradicting the hypothesis H7c. Furthermore, entertaining posts impact more on number of likes, comments and shares in AUS as compared to USA ($\beta_{L_ENT*COUNTRY1} = -0.576$, $p\text{-value} < 0.01$; $\beta_{C_ENT*COUNTRY1} = -1.167$, $p\text{-value} < 0.01$; $\beta_{S_ENT*COUNTRY1} = -1.947$, $p\text{-value} < 0.01$), in support of hypothesis H7d, while this variable shows the similar impact on number of likes and shares in AUS and UK, contradicting the hypothesis H7d.

Brand post top position shows similar impact on number of likes and comments in all three countries as their results are insignificant, contradicting the hypothesis H7f, while it impacts more on number of shares in AUS than UK ($\beta_{S_TPOS*COUNTRY2} = -0.109$, $p\text{-value} < 0.05$), in support of the hypothesis H7f. But, it does not show any differential impact on shares in AUS and USA, contradicting hypothesis H7f. Moreover, CSR related posts show the similar impact on number of comments and shares in all the three countries, as their results are insignificant, resulting a contradiction of the hypothesis H7e. But, it impacts more on number of likes in AUS than USA ($\beta_{L_CSR*COUNTRY1} = -0.689$, $p\text{-value} < 0.10$), in support of the hypothesis H7e. Furthermore, it has similar impact on likes in AUS and UK, contradicting the hypothesis H7e.

5 Discussion and Managerial Implications

Brand fan page moderators can get guidance from our research to formulate their social media marketing strategies to decide which post determinants (post characteristics, contents, top position of the post and CSR related posts) to place on fan pages. Current research shows that all determinants are not equally suitable for enhancement of number of likes, comments and shares. Furthermore, their impact varies across different cultures.

5.1 Increasing the Number of Likes

Post characteristics and contents were shown to be vital elements of posting strategy which can significantly enhance the level of engagement. Number of likes can be enhanced by placing posts containing any determinant of post. This might be explained by the fact that a brand fan likes the brand and when he/she views any type of post at the fan page, he/she automatically likes it which shows his/her association with the brand, therefore taking minimum time for commenting and sharing. The most influential factor that enhances the number of likes is a highly vivid post (i.e., video). These results are streamlined with previous studies (De Vries *et al.*, 2012, Luarn *et al.*, 2015, Fortin and Dholakia, 2005, Van Der Heide *et al.*, 2012, Cvijikj and Michahelles, 2013).

Effectiveness of post determinants varies across different countries and cultures. Managers of brand fan pages should keep in mind while formulating international social media post strategy that low and medium level of vividness and position of the post can enhance the number of likes in all countries which have similar cultures.

More specifically, managers of the brand fan pages should focus on low, medium and high levels of interactive posts, entertaining and CSR related posts while formulating social media post strategies in Australia for enhancement of number of likes. Furthermore, highly vivid posts are most effective in USA. Our research further suggests that managers of the brand fan pages can use the same social media post strategy for Australia and UK, related to all determinants of posts except informative and highly vivid posts because they are more effective in Australia. The potential impact of different brand name (Hungry Jack's) used by

Burger King in Australia on results has been controlled as the variable “Brand” has been taken as a control variable for the measurement of the net impact of culture on explained variables.

5.2 Increasing the Number of Comments

Results presented in the previous section showed that highly interactive posts have caused the greatest enhancement in number of comments followed by medium and low interactive posts, informative posts, highly vivid, low vivid and medium vivid posts, and entertaining posts. Managers of the brand fan pages who specifically want to increase the number of comments should post more vivid, more interactive and informative posts at brand fan pages such as ‘video’ and ‘quiz’. Consistent with previous researches (De Vries *et al.*, 2012, Luarn *et al.*, 2015, Cvijikj and Michahelles, 2013), this is an intuitive result because brand fans can answer the questions by commenting only. Furthermore, brand fans show their expression related to informative posts and videos by posting positive or negative comments. Consistent with previous study, results showed that keeping the brand post longer at the top of the page is beneficial for number of comments (De Vries *et al.*, 2012). Moreover, CSR related posts cannot enhance the number of comments. An explanation might be that CSR related post directs brand fans to click a donation website link that does not enhance the number of comments. Another explanation might be that managers post CSR related posts less frequently.

Managers of the brand fan pages should keep in mind while formulating international social media post strategies that medium and high levels of vividness, and position of the post can enhance the number of comments in all countries which have similar cultures.

More specifically, managers of the brand fan pages should focus on low, medium and high levels of interactive, informative and entertaining posts while formulating social media post strategy in Australia for enhancement of the number of comments. Furthermore, low vivid posts are most effective in UK. Our research further suggests that managers of the brand fan pages can formulate same social media post strategy related to medium & high levels of vivid and interactive posts for Australia and UK, while they can formulate the same strategy related to low vivid post in Australia and USA.

5.3 Increasing the Number of Shares

Our findings suggest that highly vivid posts have caused the greatest enhancement in number of shares followed by high interactive, medium and low vivid posts, medium interactive posts, informative and low interactive posts. Managers of the brand fan pages who specifically want to increase the number of shares should post highly vivid and interactive posts at brand fan pages such as ‘video’ and ‘quiz’ as proposed by the previous researches (Luarn *et al.*, 2015, Cvijikj and Michahelles, 2013, Fortin and Dholakia, 2005). This can be explained by the fact that brand fans might be pleased to share their favourite brand videos and questions with their friends to receive interesting comments. They also prefer to share brand photos, announcements related to brand and web links with their friends. Sharing and spreading of information on SNSs build relationship among fans (Cheng and Ho, 2015, Hsu *et al.*, 2015, Hsu *et al.*, 2016). Keeping the brand post longer at the top of the page cannot enhance the number of comments. An explanation might be that brand fans interact with brand posts in a few minutes or hours after it is posted. Because and this top position, brand post does not affect number of shares. Moreover, CSR related post cannot enhance the number of shares. An explanation might be that CSR related post directs brand fans to click a donation website

link that does not enhance the number of shares. Another explanation might be that managers post CSR related posts less frequently.

Managers of brand fan pages should have to keep in mind while formulating international social media post strategy, that low and medium vivid posts can enhance the number of shares in all countries which have the same type of culture.

More specifically, managers of the brand fan pages should focus on low, medium and high levels of interactive, high level of vivid, informative and entertaining posts while formulating social media post strategy in Australia for enhancement of number of shares. Our research further suggests that managers of the brand fan pages can formulate same social media post strategies related to all posts determinants in Australia and UK for the enhancement of number of shares.

6 Limitations and Future Work

Our study contributes to advancing knowledge about current practice of social media marketing, specifically social media brand engagement, which may provide a fruitful avenue for future research. We have chosen to use only one product category, and data collection was limited to a specific time period, and only a single social media platform was used, which could reduce the generalizability of the findings to other social media platforms and product categories. Thus, future research with extended time periods, a greater number of product categories and multiple social media platforms is needed.

Moreover, our research is limited to expose the engagement factors of brands in terms of likes, comments and shares without manipulating or measuring the brand fan's motive to interact with the brand fan page. Thus, to confirm the brand fan's motive matching effect and fan page post effect on brand fan's response, future research should be conducted with the application of different motives to evaluate how brand fans respond to different brand post dimensions on social media.

Furthermore, our research highlights the effectiveness of different brand post dimensions across different countries. We have chosen to use same-culture countries as per the Geert Hofstede's theory. Future research can confirm the findings of current research while including diverse cultured countries, using multiple cultural theories. Furthermore, they can uncover the important cultural and other factors' impact on brand post engagement.

We did not include existing friendships between brand fans and the dynamic aspect of social media as factors that might impact brand related factors of posts. Future research can consider this existing relationship and evaluate the timing of likes, comments and shares of brand post and model 'adoption curve' of likes, comments and shares by using this dynamic information.

In conclusion, this research analysed the brand post dimensions that enhance brand post engagement. Moreover, it also found the effectiveness of these dimensions in different cultures. More specifically, current research gives an insight as to how social media can be used for marketing, communication, branding and customer relationship management in different cultures. Future research may improve our findings about dimensions that enhance brand related factors and the moderating effect of culture.

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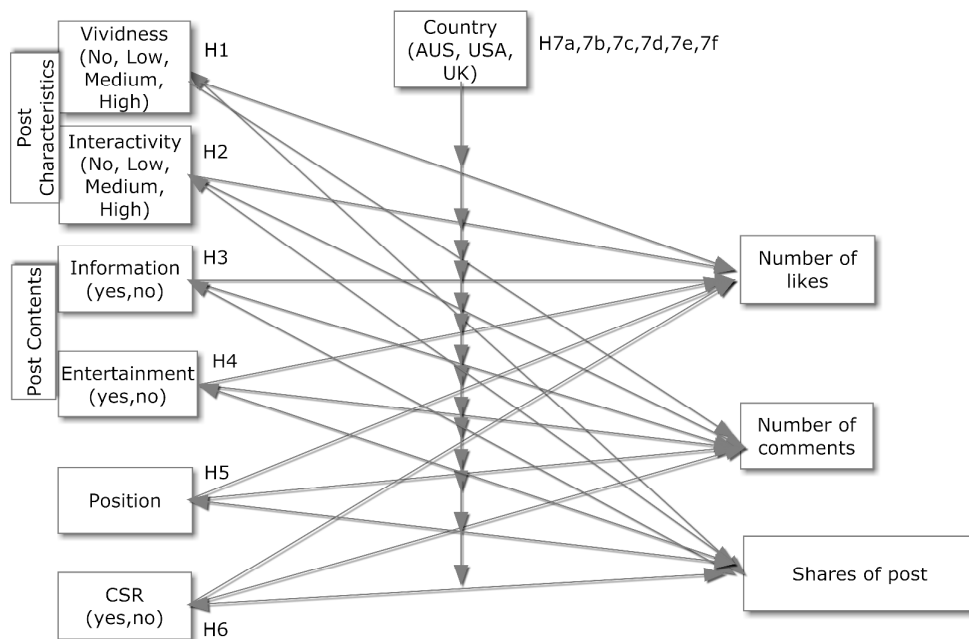


Figure 1 Conceptual Model and Hypothesis

Table 1 Related Studies on Social Media Content Analysis

Authors	Content Dimensions/Metric	Social platform	explained variable (s)
(De Vries et al., 2012)	vividness, interactivity, valence of comment, informational content, entertaining content	Facebook/Fan Page	Number of Likes, Number of Comments
(Cvijikj and Michahelles, 2011)	Announcement, competition, designated questions, advertisement and statement, information, questionnaire	Facebook/Fan Page	Like ratio, comment ration, interaction duration
(Cvijikj et al., 2011)	Announcement, competition, designated questions, advertisement and statement, information, questionnaire	Facebook/Fan Page	Number of likes, number of comments
(Cvijikj and Michahelles, 2013)	Content type, media type, posting time	Facebook/Fan Page	Number of likes, number of comments, shares
(Swani et al., 2013)	Emotional content, Direct call to purchase, corporate branding	Facebook/Fan Page	Number of likes
(Chintagunta et al., 2010)	Valence, volume, variance	Yahoo! Movies website	Movie Performance / earning in dollars
(Godes and Silva, 2012)	Reviews	Book review website	Average rating over time and sequence
(Sridhar and Srinivasan, 2012)	Buying decision, willingness to pay other consumer Reviews and rating	Tourism website	Reviewer's Online Product Rating
(Sun, 2012)	Variance of product rating, Average rating	Amazon website	Consumer purchase decision
(Adjei et al., 2010)	Product opinion, usage information, Valence of information	Brand communities	Consumer purchase behaviour
(Tirumillai and Tellis, 2012)	Rating, positive chatter, negative chatter	Multiple Websites	Abnormal return, risk, trading volume
(Moe and Trusov, 2011)	Variance of rating and volume of rating	Web retailer	Sales, subsequent rating behaviour
(Moe and Schweidel, 2012)	Valence, variance	BazaarVoice	Subsequent rating behaviour
(Berger et al., 2010)	Volume, review length, opinionated percentage, positive percentage	Book review website	Purchase likelihood, sales
(Chen et al., 2011)	Number of postings,	Automobile review sites	Overall rating
(Netzer et al., 2012)	Number of threads	Sedan auto forum, diabetes, drugs	Market structure insight
(Kim et al., 2015)	Task oriented, interaction oriented, self-oriented contents	Multiple industry Facebook pages	Likes, comments, shares
(Luarn et al., 2015)	<u>Vividness, interactivity, information, entertainment, remuneration, social</u>	<u>Facebook/Fan Page</u>	<u>Likes, comments, shares</u>
(Huertas and Marine-Roig, 2016)	<u>Post contents, interactivity</u>	<u>Facebook/Fan Page</u>	<u>Likes, comments, shares</u>
(Ashley and Tuten, 2015)	<u>Message appeals e.g., functional, resonance, experiential</u>	<u>Facebook/Twitter/Youtube/mircrosites</u>	<u>Fans, followers, Klout score,</u>

Table 2 Operationalization of Variables Vividness and Interactivity of Brand Posts

Level	Interactivity	Vividness
Low	Website links (news/blog web page) Voting (about preferences of customers in taste/design)	Images/photos
Medium	Enforce to act (like or comment on specific page)	Announcement about upcoming brand events
High	Quiz (brand fan can win prize by answering the question)	Videos

Table 2-3 Descriptive Statistics of Category and Count Variables

Category Variables	Level	Country					
		AUS		USA		UK	
		Count	Percentage	Count	Percentage	Count	Percentage
Vividness	No	226	27.83	83	18.4	257	39
	Low	433	53.33	228	50.55	289	43.85
	Medium	28	3.45	53	11.75	22	3.34
	High	125	15.39	87	19.29	91	13.81
Interactivity	No	457	56.28	219	48.56	414	62.82
	Low	172	21.18	80	17.74	143	21.7
	Medium	100	12.32	100	22.17	63	9.56
	High	83	10.22	52	11.53	39	5.92
Information	No	335	41.26	68	15.08	367	55.69
	Yes	477	58.74	383	84.92	292	44.31
Entertainment	No	616	75.86	340	75.39	549	83.31
	Yes	196	24.14	111	24.61	110	16.69
CSR	No	797	98.15	437	96.9	653	99.09
	Yes	15	1.85	14	3.10	6	0.91
Count Variables	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Likes	1327.83	2546.62	12460.41	23066.05	615.69	2362.49	
Comments	266.95	866.2	589.54	1637.7	96.27	364.03	
Shares	46.99	166.76	559.50	3477.76	39.93	261.73	
Position (Days)	1.13	1.01	2.01	2.97	1.39	1.33	

Table 3-4 Hierarchical Moderation Regression Estimates for Brand Fan Engagement

	Likes			Comments			Share		
	Step 1 and 2	Step 3		Step 1 and 2	Step 3		Step 1 and 2	Step 3	
		β (COUNTRY 1)	β (COUNTRY 2)		β (COUNTRY 1)	β (COUNTRY 2)		β (COUNTRY 1)	β (COUNTRY 2)
BRAND2	1.288	-	-	1.718	-	-	3.151	-	-
BRAND3	-0.229	-	-	-0.169	-	-	-2.110	-	-
BRAND4	-0.460	-	-	-1.778	-	-	0.080	-	-
BRAND5	-1.288	-	-	-0.959	-	-	-2.610	-	-
DOW	0.040	-	-	0.020	-	-	<i>0.544</i>	-	-
INF	0.719	-0.121	-0.383	1.201	-1.351	-1.638	1.959	-2.356	-0.425
ENT	0.196	-0.576	-0.079	<i>0.320</i>	-1.167	-1.377	0.415	-1.947	0.573
CSR	<i>0.347</i>	<i>-0.698</i>	0.297	-0.052	-1.116	-0.625	-1.068	0.063	3.530
VIV_low	1.262	-0.074	0.054	1.009	-0.387	0.916	3.058	-1.535	-0.778
VIV_medium	1.460	0.379	-0.479	0.962	-0.302	0.348	3.084	-2.080	-1.014
VIV_High	1.633	<i>0.415</i>	-0.563	1.148	0.425	0.020	4.077	-2.705	-1.046
INT_low	0.384	-1.045	-0.036	1.454	-2.499	-0.821	1.132	-2.771	-0.347
INT_medium	0.882	-1.121	-0.262	1.458	-2.144	<i>-0.755</i>	2.201	-4.222	-0.972
INT_high	1.690	-0.854	-0.323	1.982	-1.694	-0.124	3.373	-3.955	-0.654
TPOS	0.022	-0.013	-0.013	0.047	-0.025	-0.012	0.015	-0.057	-0.109
COUNTRY1	1.981	-	-	1.078	-	-	4.994	-	-
COUNTRY 2	-0.782	-	-	-0.963	-	-	-1.100	-	-
R-Squared	0.159 0.762	0.782		0.117 0.400	0.442		0.107 0.466	0.495	
Δ in R-Sq	0.159 0.603	0.020		0.117 0.283	0.042		0.107 0.359	0.030	
F-statistics	72.689 358.733	182.530		50.578 74.550	40.315		45.936 97.687	49.992	

Bold figures: p-value<0.01, Italic bold figures: p-value<0.05, italic figures: p-value<0.10

Table 4.5 Ordinary Least Square Regression Estimates for Brand Fan Engagement

	Likes			Comments			Shares		
	AUS	USA	UK	AUS	USA	UK	AUS	USA	UK
(Constant)	4.956	6.147	4.142	1.992	3.517	1.424	-5.010	2.499	-2.588
INF	0.952	0.618	0.920	1.968	0.495	0.810	2.856	0.190	3.187
ENT	0.410	0.108	0.364	1.039	0.137	0.093	<i>1.149</i>	0.011	<i>1.197</i>
CSR	0.651	<i>0.686</i>	<i>0.681</i>	0.579	0.377	-0.062	-1.863	0.543	1.145
VIV_low	1.191	1.293	0.696	0.733	0.606	1.043	3.072	1.386	1.388
VIV_medium	1.386	1.586	0.770	<i>0.981</i>	0.794	1.111	3.993	1.581	2.902
VIV_High	1.596	2.200	0.751	0.897	1.453	<i>0.725</i>	4.747	2.788	2.752
INT_low	0.687	-0.173	0.598	2.398	-0.066	1.559	2.486	-0.028	1.946
INT_medium	1.348	0.379	1.199	2.412	<i>0.244</i>	1.786	4.387	0.561	3.622
INT_high	2.070	1.215	1.771	2.575	0.683	2.646	4.891	1.022	3.952
TPOS	<i>0.011</i>	0.016	0.032	0.025	<i>0.027</i>	<i>0.057</i>	0.023	0.004	-0.003
R-Squared	0.785	0.673	0.727	0.444	0.615	0.346	0.428	0.474	0.390
Adj. R-Sq	0.781	0.662	0.720	0.434	0.602	0.331	0.418	0.456	0.376
F-statistics	194.159	59.691	114.061	42.392	46.288	22.672	39.779	26.143	27.408

Bold figures: p-value<0.01, Italic bold figures: p-value<0.05, italic figures: p-value<0.10