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Promoting social change – Assessing how Twitter was used to reduce drunk driving behaviors over New Year’s Eve.

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Abstract.

A number of scholars have identified that social marketers find it difficult to develop engagement through social media. Others believe that there is a poor understanding of how organizations employ such platforms. This article addresses the gaps by assessing how Twitter was used in facilitating a reduction in drunk driving behaviors over New Year’s Eve. The study identified that social marketing organizations were poor at exploiting Twitter, but the general public was prolific in disseminating anti-drunk driving behaviors. It provides recommendations on how social media can be used to help marketing researchers, managers, and policymakers to work more collectively.

Keywords: Social Media, Social listening, Factorial MANCOVA, Social Marketing, Drink Driving.

Promoting social change – Assessing how Twitter was used to reduce drunk driving behaviors over New Year’s Eve.

Introduction.

Social marketing is a process that is designed to promote and enhance a society’s well-being (Lou & Alhabash, 2018). It focuses on ‘wicked’ problems which are defined as “socially complex and have at their root a need for people to change behaviors in order to improve the social good and promote well-being” (Gordon et al., 2016, p.1059). These wicked behaviors can be considered at every level of society and can be resolved through upstream, midstream, or downstream social marketing (French & Gordon, 2019). More specifically, upstream social marketing is designed to change policy and the opinions of decision makers; midstream social marketing is working to support the community, build networks and add value; finally, downstream social marketing is the tactical aspect and focuses on changing the behavior of the individual. French and Russell-Bennett (2015) deem social marketing to be a branch of marketing that is growing in importance. That said, Thackeray et al. (2012) believe that social marketers are not utilizing social media, which has become ubiquitous within the marketing domain. They called for more research on the actual evaluation of social media within social marketing. Since this call, Shawky et al. (2019) identified that social marketers find it difficult to develop engagement through social media, which is supported by Dolan et al. (2016). This paper attempts to address the gap by demonstrating how social listening, which is a “study on real life social media conversations” (Venkatesh & Jayasingh, 2017, p.9), could be used as a mechanism to support the measurement of engagement. A case study, focusing on how Twitter was used to facilitate the process of reducing drunk driving behaviors across the English-speaking world over New Year’s Eve illustrates the methodology. The study’s theoretical framework was based on an adaptation of McCay-Peet and Quan-Haase’s (2017) model of social media engagement. The author argues that such an adaptation enhances the said model by expanding its focus from just the individual to other key stakeholders and organizations. It also demonstrates what positivist researchers should consider when embarking on such projects. These are important contributions to the theory and knowledge of social marketing because it addresses Shawky et al.’s (2019) previously discussed concerns. It also illustrates how the different levels of social marketing can be combined and assessed within a single study, which the author believes has not yet been done. The author also posits that the study will have an impact on the wider marketing domain because it addresses Ngai et al. (2015) concerns that research into why organizations use social media is limited. From a managerial contribution,

it demonstrates an example of the errors made by social marketers and provides options in how they may be resolved. Finally, the study can be seen as a mechanism to facilitate Arora and Sanni's (2019) vision of getting marketing researchers, managers, and policymakers to work more collectively.

Social marketing and social media marketing.

Like most terms in academia, there is no consensus on the definition of social media. An example is McCay-Peet and Quan-Haase's (2017, p.17) definition, which states that "social media are web-based services that allow individuals, communities, and organizations to collaborate, connect, interact, and build community by enabling them to create, co-create, modify, share and engage with user-generated content that is easily accessible". Arguably, such a definition is problematic because social media is not just web-based and not all content is user-generated. For this reason, the author has elected to only focus on the characteristics of social media, which Quan-Haase and Sloan (2017) deemed to be common in most definitions. These characteristics are, facilitating engagement, providing a means to support content, and allowing users to connect. Engagement, which arguably is the most abstract characteristic, takes many forms and is embedded within communication theory. Gomez et al. (2019) present an overview of a range of previous studies. They identified three approaches that help define engagement, which are unidimensional, two-dimensional, or multi-dimensional. Gomez et al. (2019) go on to say that these dimensions utilize one or a combination of the following constructs; cognitive, affective, and behavioral. The cognitive construct is a measure of absorption and can be explained as the following or subscription status of an individual. The affective construct is a measure of direct interaction (likes, retweets, replies, etc.) and the behavioral construct is a measure that goes beyond direct transactions, an example could be the creation of their own content.

Smith and Gallicano (2019) provide a more simplistic approach, they see engagement as the evolution of one-way messaging to active users where such users can respond, co-create, and further disseminate information. Such a consideration has similar foundations to Quan-Haase and Sloan (2017) social media characteristics, demonstrating that engagement could be an antecedent of social media. In terms of conceptualizing social media engagement, the author prefers McCay-Peet and Quan-Haase's (2017) model, which is also the theoretical framework (see figure 1), because they established a lack of other alternatives.

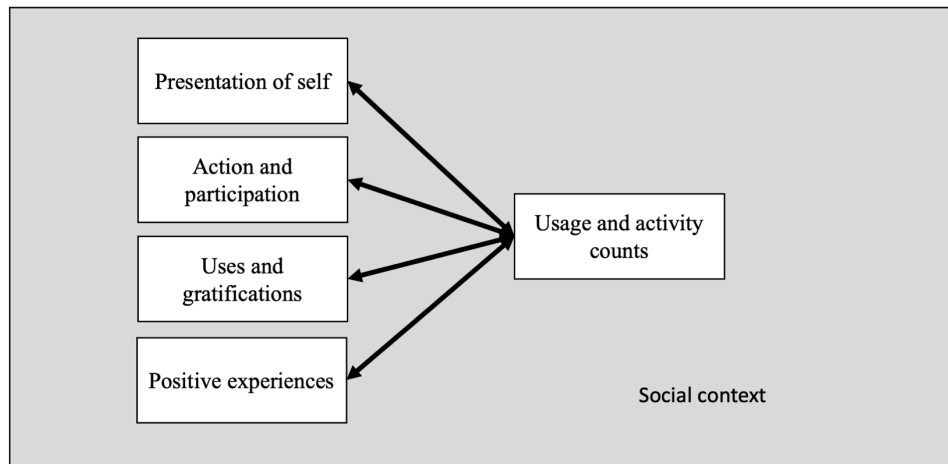


Figure 1: Social Media Engagement in Context (adapted from McCay-Peet and Quan-Haase, 2017).

This conceptualizing of engagement is explained by six constructs. First, there is the ‘presentation of self’, which would be the social media handle of the user (i.e., their chosen name). It provides researchers with a means to segment users into specific groups. The second, ‘action and participation’ is an analysis of the interactions that have taken place, in Twitter these can be tweets, retweets, mentions, likes, and follows. The third, ‘uses and gratification’ is positioned as the motivations needed to engage with a particular tweet, post, or conversation. The fourth, ‘positive experiences’ is linked to the emotions developed during the engagement. To ascertain such experiences, researchers would need to perform some form of direct questioning with the user (either through a quantitative or qualitative process). For this reason, the construct was ignored (this study was not designed to engage with any participants): its limitations will be discussed later. The fifth, ‘usage and activity counts’ are the key performance indicators that measure engagement, it is the model’s dependent variable and tallies the activities of the first four constructs. Finally, the ‘social context’ is an analysis of the user’s follower base. Here McCay-Peet and Quan-Haase (2017) ask researchers to challenge if small close-knit peer groups generated more interactions than the influencers with large followings.

The underlying concepts of McCay-Peet and Quan-Haase’s (2017) model have synergies with many other studies. An example is Arli (2017), his proposal was to use engagement metrics that focus on the number of likes, shares, and comments within a given timeframe. Another is Olson et al. (2019), who argue that the structure and content of a message becomes an important component of engagement. The model also links into Gomez, et al.’s (2019) unidimensional approach to assessing behavior. Twitter, the platform of choice for this study, uses ‘replies’, ‘retweets’, ‘likes’, and ‘sending direct messages’ as its engagement mechanism. These

mechanisms can be sub-divided into specific content features that are characterized as either text, visual, and/or audio. The author has chosen to only focus on the first two because the study's dataset did not include any soundcards (i.e., the audio element). Starting with the text characteristic, the author identified an extensive body of research focusing on the textual discourse of online communities (examples include Mai et al., 2015; Morstatter & Liu, 2017; Nazir et al., 2018; Saxton et al., 2015). Mai et al. (2015), deemed the text messaging process to be an integral aspect of social media networking, and within this text messaging there was the concept of 'hashtagging', which has now become pervasive within social media. Hashtagging uses the character #, which is placed before a word or statement to give others the ability to identify key themes or conversations of interest. Most hashtag studies only focused on individuals, little is known about how and why organizations might use hashtags (Rauschnabel et al., 2019). Jackson and Foucault Welles (2015) have shown that hashtags can help develop publics and support public relations campaigns, which would be ideal for social marketing because it helps build communities. Wang et al. (2016) support this, stating that hashtags would increase the engagement of a post. Guo and Saxton (2014, p.65) also see hashtags as "particularly important for advocacy organizations for aggregating knowledge". Hashtags are not always seen as positive, Pancer, and Poole (2016) found that their inclusion reduced the number of likes a tweet would receive.

There is another body of research that believes that images and videos drive engagement. Examples include Berger and Milkman (2012) and Fortin and Dholakia (2005) but the latter group has argued that increased complexity could provide information overload. The use of images and videos to increase engagement may be linked to the work of Steuer (1992) who professed that the vividness of media would enhance interactions on social networks. Moran et al. (2019) agree and go on to say that such sensory media is now required to help the message stand out. Chua and Banerjee (2015) see video as a mechanism that provides verbal and non-verbal cues to stimulate engagement. Interestingly, Moran et al. (2019) found photo-based content to be more engaging than video. In terms of social marketing, Kofinas et al. (2014) identified no differences between video and images on social media but they did find it more effective than traditional channels in the encouragement of a behavior change. Strekalova and Krieger (2017), on the other hand, found that images on the National Cancer Institute Facebook page were more effective than video in engaging users. This demonstrates that there is no consensus on which format (image, video, or text) provides the highest engagement. That said, Highfield and Leaver (2016) and Schreiber (2017) believe that visual content in social media will continue to gain more prominence. Highfield and Leaver (2016) and Moran et al. (2019)

have encouraged researchers to focus more on understanding the use of visual content in social media. All the above findings led the author to consider the following hypotheses (note, abc relates to the three hypothesis variants link to engagement which is retweets, likes and replies):

H1_{abc}: The use of hashtags will have a significant and positive relationship on engagement.

H2_{abc}: There will be no significant differences in engagement between the use of images or video content.

Returning to the theoretical framework, the social context construct was positioned as the number of connections or followers. These connections can be construed as relationships but in social marketing, relationship building should be extended to include the identification of key advocates (French and Russel-Bennet, 2015). Key advocates or influencers, as they are now known in social media, can take many forms. Freberg et al., (2011) positions the influencer as someone who is external to the marketing organization that can shape consumer attitudes. This shaping can be through the influencer's relationship building capabilities (Enke & Borchers, 2019), or more specifically, their ability to diffuse information through e-word-of-mouth channels (Bakshy et al., 2011). Sterne (2010) identified that influencer engagement was positively correlated to the number of followers. In social marketing terms, if organizations are looking to maximize their reach (diffusing of information) then they either need to build their own follower base or develop relationships with those users who already have a large follower base. Influencers have been identified as being more credible (Djafarova & Rushworth, 2017), as such they could support social marketers in any behavior change program. Influencer research is still a developing field (Schouten, et al., 2020), that said, scholars like Britt et al. (2020) believe that it is important for researchers to consider the influencer's follower size. Moran et al. (2019) take this a stage further by advocating setting the influencer's audience reach as a control measure. Both fit within the theoretical framework and lead to the third hypothesis:

H3_{abc}: The number of followers a user has will have a significant and positive relationship on engagement.

The uses and gratifications characteristic of the theoretical framework take its foundations from Katz et al.'s (1973) uses and gratifications theory (UGT). They describe the UGT as a

mechanism to support scholars comprehend why an individual might choose to engage with a specific piece of media. UGT has a number of weaknesses, Ruggiero (2000) provides a comprehensive overview of each. His concerns relating to a researcher's inability to gain an appropriate probability sample could be addressed by the social listening methods proposed in this study, further details will be discussed later. Much of the research around UGT focuses on why an individual might select a particular platform, an example is the work of Whiting and Williams (2003). Whereas scholars like Dolan et al. (2019) encourage researchers to concentrate on the content and not the platform. Dolan et al. (2019) provide an in-depth review of what content is likely to instill engagement. Their review splits the engagement into the following categories; entertains, provides social interaction, disseminates information, and/or provides reward. Malthouse et al.'s (2013) earlier work provides a different perspective, they focus on the ability to provide value. Value creation is a key aspect of French and Russell-Bennets' (2014) hierarchical framework, so it is an important construct to consider. Value takes many forms (see Sheth et al., 1991), so for illustration purposes, the author will use Zainuddin et al.'s (2013) characterization because they position value in a social marketing context. Zainuddin et al. (2013) identified value to be functional (which can be an economic benefit or the provision of a service) and/or emotional (which can be a demonstration of positivity towards the behavior change in question). The functional aspect is an easier construct to interpret, particularly if it is positioned as a quantifiable number. The emotional construct, however, is more abstract and requires further discussion. Parkinson et al. (2018) believe that emotion is the dominant force in determining intentions and behavior. In terms of social media engagement, Rietveld et al. (2020) propose emotional content to be more important than informative content. Studies of emotion have been conducted across many disciplines. As to social marketing, Brennan and Binney (2010) provide an overview of the research conducted within that domain. Many of these studies focus on the different facets of emotions (i.e., fear, guilt, happiness, etc.). Reviewing emotions in such detail goes beyond the scope of this study, as such, the author elected to only focus on emotions as a stimulus. This decision was based on Hovasapian and Campos (2016, p.260) definition of emotions which is "brief, automatic reactions to self-relevant stimuli that are evaluated as promoting or obstructing an individual's intentions and goals". It also led to the development of the final two hypotheses:

H_{4abc}: Functional value will have a significant and positive relationship on engagement.

H_{5abc}: Emotional value will have a significant and positive relationship on engagement.

In addition to the above hypotheses, this study aims to demonstrate the processes and procedures needed to measure engagement on social media. The following conceptual model (see figure 2) will also help the reader to visualize the study.

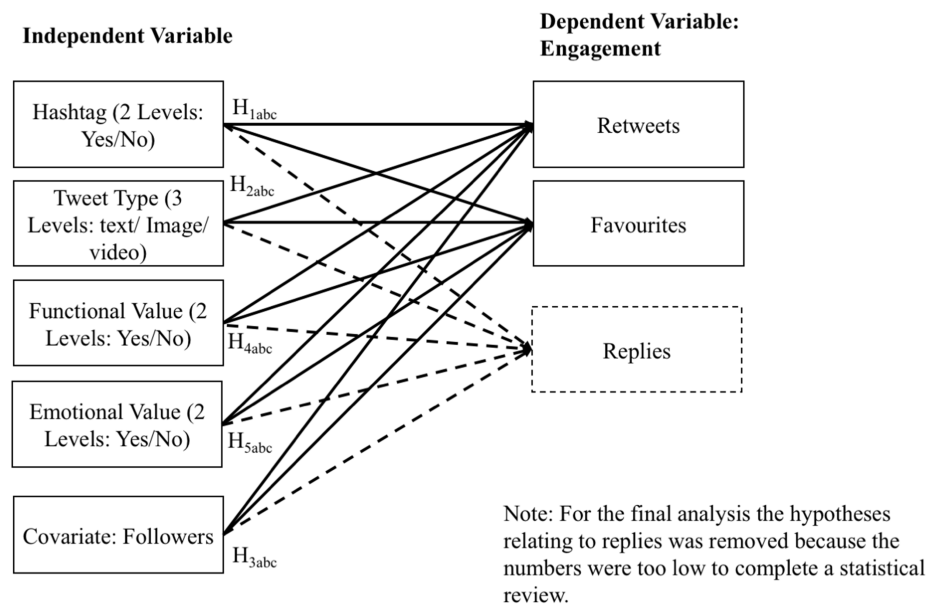


Figure 2: The study's conceptual model.

Methodology.

An exploratory sequential mixed-methods approach (see Creswell & Clark 2011) was used. This provided the author with an ability to support the hypothesis testing through the identification of other rich sources of information. The process consisted of two phases; phase one, digital netnography encompassing a combination of thematic and content analysis; and phase two, the statistical analysis to test the conceptual model.

Digital netnography.

The netnographic methodology has four process options: symbolic, humanistic, digital, and auto (Kozinets, 2015). The author selected the digital netnography option because Kozinets (2015) positions it as a process that employs a variety of digital tools to interrogate, manipulate, and visualize data from the World Wide Web. The key digital tool used was Social Bearing, a free Twitter analytics, and real-time search platform (<https://socialbearing.com>). A search of the current literature identified no studies using such a platform, as such, demonstrates a unique and novel approach. The target was to explore tweets, retweets, and replies made, using a summative content analysis approach (see Shaw, 2020). Only tweets in English were reviewed,

and no geographical restrictions were applied. Cut-off points were set at 10:00 Hrs GMT New Year's Eve to 10:00 Hrs GMT 1st January. This would ensure that all countries being reviewed would yield at least one hour's worth of tweets before midnight (note, the two extreme locations were taken as New Zealand and Alaska).

The data capture process was iterative, starting with the keywords 'Don't Drink and Drive' then additional keywords were added as the netnographic review identified others. The summative content analysis focused on the top 20% of engaging tweets, which for this study, was the highest average number of retweets, likes, and replies created from an original tweet. This decision was based on the Pareto Principle as indicated by Sanders (1987). A random 5% sample of the poorly engaging tweets was also considered. This allowed the author to compare and identify any differences in the extremes. As the study's focus was on a reduction in drunk driving, the author made a specific search on all tweets, retweets, and replies instigated by those social marketing organizations tasked with reducing drunk driving behaviors. They included the USA's National Highway Traffic Safety Administration, Canada's Transport Canada, The UK's Department of Transport's Think Road Safety, Ireland's Road Safety Authority and Australia's Transport Accident Commission. A random sample of the three top selling alcoholic brands from each of the same countries highlighted above was also initiated.

The statistical analysis.

The test used to review the hypotheses was a factorial MANCOVA, this is because engagement (dependent variable) had multiple factors. A review of the continuous variables identified that they all had a high degree of positive skewness, with their outliers accounting for, between twenty and thirty percent of the sample population. This was a violation of the factorial MANCOVA's assumptions, so the author adopted Templeton's (2011) two-step approach for transforming continuous variables into a normal distribution. Levene's test of homogeneity of variance was also employed to confirm that the homogeneity of error variances within each of the independent variables and the error variance of the dependent variables were similar (Garson, 2015). The sample population had over 4500 lines of information, Garson (2015) warns against using such large datasets, particularly when the tests for homogeneity of error variances are violated, he recommends restricting the number to 200. This was done using a random sample generator to identify the appropriate items, it also addresses Ruggiero's (2000) concerns of probability sampling. Concern about missing information was considered redundant because the material was downloaded through an Application Planning Interface (i.e., Social Bearing) which provides complete sets of data. The factorial MANCOVA also

assumes that the covariate coefficients were the same as the independent variables. This is known as the homogeneity of regressions and was tested by reviewing all interactions of the covariate with the factors (independent variables), non-significant results mean that the assumption is upheld (Garson, 2015). There was also a need to check the homogeneity of covariance, this was done using Box's M test and is particularly important if the group sizes of the independent variables are unequal. All observations must be independent (Hair et al., 2010), which was the case because the study was not a repeated-measures approach.

Results.

The 24-hour review of Twitter messages linked to not drinking and driving returned a total of 70,567 tweets, retweets, and replies. Its constituent parts can be seen in table 1, which also includes a breakdown of the hashtags and keywords.

Table 1: Descriptive statistics for sampling frame and key search terms.

Output in the 24hr window.						
	Qty	%				
Tweets	4546	6%				
Retweets	65656	93%				
Replies	365	1%				
Total	70,567					

Search Terms (#)	Qty	% of Grand total	Search Terms (Non #)	Qty	% of Grand total	Grand Total
#DontDrinkAndDrive	1109	16.8%	Don't drink and drive	1213	18.4%	
#DoNotDrinkAndDrive	0	0.0%	Do Not Drink and Drive	1209	18.3%	
#NoDrinkingAndDriving	0	0.0%	No Drinking and Driving	396	6.0%	
#DesigDriver	409	6.2%	Designated Driver	743	11.3%	
#DriveSober	364	5.5%	Drive Sober	738	11.2%	
#ArriveAlive	359	5.4%	Arrive Alive	0	0.0%	
#DriveDry	40	0.6%	Drive Dry	0	0.0%	
#MatesMatter	21	0.3%	Mates Matter	0	0.0%	
Hashtag Total	2302	34.9%		4299	65.1%	6601

Note: The use of these search terms in a tweet was not mutually exclusive (i.e., some users had multiple terms in the message), this explains why the grand total of 6601 cannot be linked to any of the descriptive statistics (i.e., 4546).

These were filtered down to unique messages. They were the originating tweets and replies that occurred within the research time frame plus the last retweet from a tweet that originated before the start of the research window. This filtering process left the author with 5632 lines of data, a summary of which can be seen in table 2, which includes an overview of the key variables identified for each hypothesis.

Table 2: Descriptive statistics for tweeter data.

Message Type ^a	Qty	%	Type of Handle	Qty	%	Hashtags	Qty	%
Tweet	4,546	81%	Text	4,311	77%	No	3,702	66%
Retweet	722	13%	Text and Images	304	5%	Yes	1,930	34%
Reply	364	6%	Text and Video	1,017	18%			
Total	5,632			5,632			5,632	
Functional Value	Qty	%	Emotional Value	Qty	%			
No	4,789	85%	No	451	8%			
Yes	843	15%	Yes	5,181	92%			
Total	5,632			5,632				

Note:

a. This represents the count by source for each unique message considered, only the last retweet and reply is reviewed this will ensure that the maximum number of retweets, likes and replies will be presented, which is needed for the statistical analysis phase.

The exploratory analysis of tweets, retweets, and replies from the top 20% (n=1126) of engagements and the random 5% sample (n=282) of the low engagements identified no major differences in the types of messages used. The one differing factor was the number of followers (i.e., the top engaging messages had more followers), which supports the findings identified in the literature review above. The ensuing themes, from the summative content analysis, were identified as:

Don't drink and drive: this was the overriding theme identified (n=1408, 100%), which should not be a surprise as all the search terms were related to the expression. All text messages were simple and to the point. No questions were asked, which may explain why there was a lack of dialogue. No recognizable differences between high and low engaging tweets were identified in the use of text, images, and videos.

Drink driving impact: many of the high engaging tweets (n=352, 25%) had examples of drink driving accidents. These portrayed an emotional feeling of sadness through the reporting of fatalities. The top performing tweet, which was initiated before the research time frame, had over 103,000 retweets and 193,000 likes (generated over an eight-day period). It included an image of an accident and text explaining how a person was killed, and two others were left hospitalized by a drunk driver. This particular example was a retweet with the message originator only generating 1400 retweets and 3000 likes. It should also be noted that there were several tweets from the low engagement segment (n=25, 11%) that had similar messages, but they all generated less than ten retweets each, indicating that specific message content formats may not be a driver of engagement.

Adding functional value: many of the top tweets (n=200, 22%) included links and reminders to, what the author has coded as, ‘adding functional value’. They related to activities that challenged the competing issues for social marketing, which in this case was the need to drink and drive in order to get home. These ‘adding functional value’ messages included reminders of free public transport, pick-ups, free soft drinks for designated drivers, and taxi discount codes.

Adding emotional value: the author hoped to use the sentiment analysis output from Social Bearing to facilitate this examination. Unfortunately, Social Bearing’s algorithms use the identification of negative words to classify poor sentiment. On inspection the author found this to be misleading, as an example, messages containing expletives were classed with a low sentiment ranking, but the author found most of these to have a high positive emotional value. The author needed to review and code each line separately. It was identified that the majority of messages (n=5181, 92%) had positive connotations concerning reducing drunk driving behaviors, so using guidance from Zainuddin et al. (2013) they were classed as adding emotional value. The remainder (n=451, 8%) were all tweets identifying locations to avoid, i.e., where police roadblocks were in place to test drunk driving (i.e., not adding emotional value to the reduction in the drunk driving process).

In terms of those agencies tasked with implementing drunk driving social marketing campaigns, the USA’s National Highway Traffic Safety Administration had 6 tweets, 98 retweets, and 147 likes during the research window but the UK’s THINK! Road Safety, Transport Canada, Ireland’s Road Safety Authority and Australia’s Transport Accident Commission did not have any. Also, the review of the major alcohol brands identified that none of them had tweets encouraging users not to drink and drive over New Year’s Eve.

The study identified a ratio of 5:17 hashtags to non-hashtag messages. It was also recognized that government agencies tended to use these hashtags in their tweets. Most of the hashtag terms were designed to encourage users not to drink and drive (see table 1). The exception was the UK’s ‘#MatesMatters’. This produced results that were confusing because, on inspection, individuals were using them in scenarios unrelated to drink driving. A summary of the additional exploratory findings, including tweets by location and stakeholder reach, can be seen in table 3.

Table 3: Tweets, retweets and replies by location and handle type.

Tweet Location	Qty	% of Grand total	Final theme for Twitter Handle.	Initial theme for Twitter Handle.	Qty	% of Grand total	Reach ^a
No Location	2792	49.6%	Society	Layperson	5128	91.1%	20,601,907
United States	1962	34.8%	Society	News Agency	42	0.7%	950,524
Canada	379	6.7%	Society	Charity	16	0.3%	110,476
United Kingdom	199	3.5%	Society	Alcohol Business	2	0.0%	994
India	134	2.4%					
South Africa	73	1.3%	Government Body	Law Enforcement	335	5.9%	9,232,167
Other Europe	37	0.7%	Government Body	Other Emergency	64	1.1%	366,033
Other Africa	22	0.4%	Government Body	Government Dept	24	0.4%	786,026
Australia	11	0.2%					
Other Asia	8	0.1%	Social Marketing Body	Social Marketing Body	21	0.4%	145,022
Middle East	7	0.1%					
Central America	5	0.1%					
New Zealand	3	0.1%					
Grand Total	5632				5632		32,193,149

Note:

- a. This is the estimated accounts reached for the search terms used within the timeframe and is based on the culmination of the followers from each unique user and retweeting user.

Statistical analysis.

As per the guidance from Garson (2015), a random sample of 200 cases was used for the final statistical test, the descriptive data is illustrated in table 4. The author also decided to only analyze the ‘retweets’ and ‘likes’ because of the small number of ‘replies’ involved in the study.

Table 4: Descriptive statistics for sample population.

	Qty	%	Mean	SD
Tweet	140	70.0%		
Retweet ^a	55	27.5%		
Reply	5	2.5%		
Retweets per original message ^b			17.28	35.13
Likes per original message ^c			44.47	106.54
Followers per original message ^d			11,251.35	42,133.41
Total	200			

Note:

- a. This is a count of the number of unique retweets.
b. This is mean and standard deviation of all retweets associated with the 200 tweets, retweets and replies above.
c. This is mean and standard deviation of all likes associated with the 200 tweets, retweets and replies above.
d. This is mean and standard deviation of all followers associated with the 200 tweets, retweets and replies above.

Having established the assumptions were valid, a factorial MANCOVA was then conducted to test the hypothesis that there would be one or more mean differences between the use of hashtags, functional value and emotional value but no mean differences in the content type of a tweet (i.e., use of image and video). The Pillai’s trace test was used because it is deemed more robust when the factor group sizes are unequal (Garson 2015). The results demonstrate that the hypotheses relating to followers, tweet content type and emotional values were accepted but those relating to the use of hashtags and functional values were not (see table 5 and 6). The need for a post hoc review was not required because the constructs relating to emotional value were only set at two levels and review of tweet content type assumed no

differences. The test for the covariate, i.e., the number of followers, was significant (Pillai's Trace=.229, $F=26.451$, $df=(178)$, $p=.000$), although the effect size of this relationship was moderate as indicated by partial eta-squared=0.229. When compared with the correlation analysis, as discussed earlier, it can be concluded that engagement was positively correlated with the number of followers.

Table 5: Multivariate test using Pillai's Trace.

Effect	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power
Followers	0.215	24.945	2	182	0.000	0.215	49.889	1.000
Hashtags	0.003	0.296	2	182	0.744	0.003	0.591	0.096
Tweet Type	0.073	3.487	4	366	0.008	0.037	13.947	0.860
Functional Value	0.013	1.226	2	182	0.296	0.013	2.453	0.265
Emotional Value	0.059	5.704	2	182	0.004	0.059	11.408	0.860

Table 6: Hypotheses overview.

Hypotheses	F	Sig.	Observed Power	Decision
H1a. Hashtags > Retweets	0.086	NS	0.06	Reject
H1b. Hashtags > Likes	0.455	NS	0.103	Reject
H2a. Tweet content ND Retweets	1.986	NS	0.407	Accept
H2b. Tweet content ND Likes	0.278	NS	0.094	Accept
H3a. Followers > Retweets	50.029	***	1.000	Accept
H3b. Followers > Likes	33.064	***	1.000	Accept
H4a. Functional Value > Retweets	0.822	NS	0.147	Reject
H4b. Functional Value > Likes	0.009	NS	0.051	Reject
H5a. Emotional Value > Retweets	7.035	**	0.751	Accept
H5b. Emotional Value > Likes	4.637	*	0.777	Accept

Note: NS= Not significant, * $P \leq 0.05$, ** $P \leq 0.01$, *** $P \leq 0.001$

Discussions

The results confirm Guidry et al.'s (2014) proposition that social media could facilitate large-scale social change because of the volume of tweets and retweets relating to not drinking and driving that took place on New Year's Eve. In this case, however, the author will argue that it was the failure of the controlling bodies (i.e., those organizations tasked with reducing drunk driving) to coordinate the process that limited its success. These organizations were almost non-existent in tweeting advice and/or encouragement to not drink and drive on the one day where alcohol consumption is arguable at its largest. That said, it must be emphasized that social media, in isolation, is unlikely to have a direct effect on reducing drunk driving behaviors because there is no way to relate the said cause to the effect. Notwithstanding that, it does have the ability to facilitate and improve the social marketing process. A key factor in this facilitation is the concept of value, which takes many forms. This study demonstrated how the functional and emotional traits of value (see Zainuddin et al., 2013) could be identified and used. Starting

with the functional value, which can also contestably be classed as value co-creation (Domegan et al., 2013), this is because it portrays facets that the end-user would find beneficial in supporting their positive behavior change. This value co-creation is meant to be iterative and begins with value co-discovery (Domegan et al., 2013), which for this study was facilitated by the social listening process. The next two steps are, value co-design and value co-delivery, which did not happen and may explain why the functional value was identified as statistically non-significant. This conclusion was based on the fact that social marketing organizations had not used the values in any of their tweets. Value creation can be complex because there is a higher level of sophistication required in identifying its multiple levels and perspectives (i.e., the who, how, what, where, and when) (McHugh & Domegan, 2013). Social listening can provide this sophistication, making it a valuable contributor to social marketing theory and practice. In this example, it was noted that organizations that brew, distill, and/or distribute alcohol were also, by enlarge, absent in the dialog (n=2, 0.0%). Strategic partnerships or even lobbying activities could be used to address the issue.

Returning to the concept of emotional value, in this instance the study found it to be significant in increasing engagement. This type of social marketing can also be classed as midstream (French & Gordon, 2019), where collaboration projects are initiated with public services and other community actors. The importance of this construct cannot be underestimated because the results of this study demonstrate that it was the layperson (or community actor) that was more effective in creating engagement in the digital world. Building on the work of Luca et al. (2016) social marketers can use social listening to identify the key actors to create midstream value, which can then be used to support the limited resources that are available in social marketing organizations. The social listening can also be used to identify those individuals with the highest reach, which supports Bakshy et al.'s (2011) definition of an influencer or emotional value creator. In the context of influencing positive drink driving behaviors, it was the layperson who also had the biggest reach, which means they were the most influential group and should be considered as potential strategic partners for social marketers. Pivotal to all value creation is the building of relationships, which is also fundamental to the concept of social marketing (French & Russel-Bennet, 2015). The results of this study demonstrate that social media, as a channel, can add value to the social marketing process through the building of relationships. As such, social media marketing should become a key element of the domain.

In relation to social media content, this study found that the use of hashtags was not statistically significant in increasing engagement. Bruns and Burgess (2011) may provide some

insight into this dilemma. They believe that hashtags are used as a means for users to get involved in a discussion outside of their community. In this context, users were only interested in engaging with their community. It may also explain why there were so few replies in the process. The message being relayed (i.e., don't drink and drive) was clear and concise, requiring no explanation and had little contention or objection, hence no need for dialog. Social marketing bodies and government agencies, on the other hand, were the highest users of hashtags, indicating that they wanted wider community engagement and dialog. Social listening would have given these bodies some guidance on the target audience's use. It would have also identified that the UK's '#MatesMatter' campaign to be inappropriate because the term was being used in tweets that were unrelated to drink driving. Pancer and Poole's (2016) proposition on the importance of message fluency, or what Alter and Oppenheimer (2009) define as the perceived ease at which an individual would decipher a piece of information is an important consideration to make.

As expected, different content formats (i.e., image or video) did not yield a significant level of engagement. Nahon and Hemsley (2016, p. 67) suggest scholars and practitioners should focus on content, which has "novelty, resonance, quality, and humor." The author proposes the fifth characteristic, 'emotion' because the top performing tweet in this study was about a death caused by drunk driving. That said, there were similar tweets that had little or no engagement. This signifies that there is no 'silver bullet' or 'magic formula' that can be applied to increase user interaction. The one underlying fact linked to engagement was a user's follower base (i.e., engagement was positively correlated to follower numbers). This is another reason why targeting influencers to support the campaign is important. There is an additional benefit from this influencer marketing approach, many of the followers of these influencers would be what Granovetter (1973) calls weak ties. These are acquaintances who are not classed as family members or personal friends. Such ties are considered to be important as they have a higher propensity of diffusing information across the network (Kim et al., 2015).

The exploratory analysis identified that it would be impossible to target campaigns by location when using Twitter, this is because users do not have to specify their location. Table 2 demonstrates that the majority of users (n=2792, 49.6%) did not have a valid location attributed to their profile. Twitter's paid advertising facility offers a targeting option so if social marketers need to restrict their campaigns by location, then this may be the solution. In this case, the social listening process will be slightly different as Twitter will give users access to a dashboard with analytic data on their campaign's effectiveness. Further research looking specifically at Twitter advertising is proposed.

To summarize the discussion, this research identified that the adoption of a social listening process could provide social marketers (and other market researchers) with an effective and efficient mechanism of measuring a campaign's success in terms of engagement. It was used to evaluate a current practice (i.e., a confirmatory process) and develop new ones (i.e., an exploratory process). From the confirmatory process, the author identified poor engagement in terms of encouraging individuals not to drink and drive. However, from the exploratory process, the author was also able to identify potential influencers that could be used to support the message dissemination (i.e., a midstream social marketing activity). There were also possible partnerships with transport companies and other emergency services that also had interests in reducing drunk driving behaviors (another midstream social marketing activity). These would lead to new messaging content strategies, or as discussed above the value co-design and value co-delivery (see Domegan et al., 2013), like the inclusion of discount codes from taxis or public transport or even free vouchers for non-alcoholic drinks (i.e., a downstream social marketing activity). Finally, the study identified that most of the social marketing organizations had failed to utilize social media on the day which could have yielded maximum benefits. Here an overview of policy and procedure was needed (i.e., an upstream social marketing activity), adopting a platform that schedule tweets could be the simplest solution if there were concerns on staff overtime. The whole process is summarized in a flow diagram (see figure 3).

As demonstrated by Domegan et al. (2013) the process (value creation, which now becomes synonymous with social media marketing) should be iterative, cycling through a range of social media platforms, which can also be used to identify the target audience's preferred use. The confirmatory route (grey) will be the evaluating path, and the exploratory route (white) could be used to develop strategies. Overall, in addition to contributing to management practice (as illustrated through the case study), this paper demonstrates how researchers can use social listening to review the different levels of social marketing. It also demonstrates how Shawkey et al's (2019) concerns could be mitigated by adopting the iterative process as presented in figure 3. Finally, the author would argue that the social listening process provides organizations with information that could bring together key stakeholders to work more collaboratively and thus address Arora and Sanni's (2019) concerns. This is because social listening provides, and environmental analysis of a given market through its social media lens. It can be reviewed strategically or tactically and demonstrates the strengths, weaknesses, opportunities, and threats of a variety of factors. At the macro or strategic level, such factors should never be resolved in isolation.

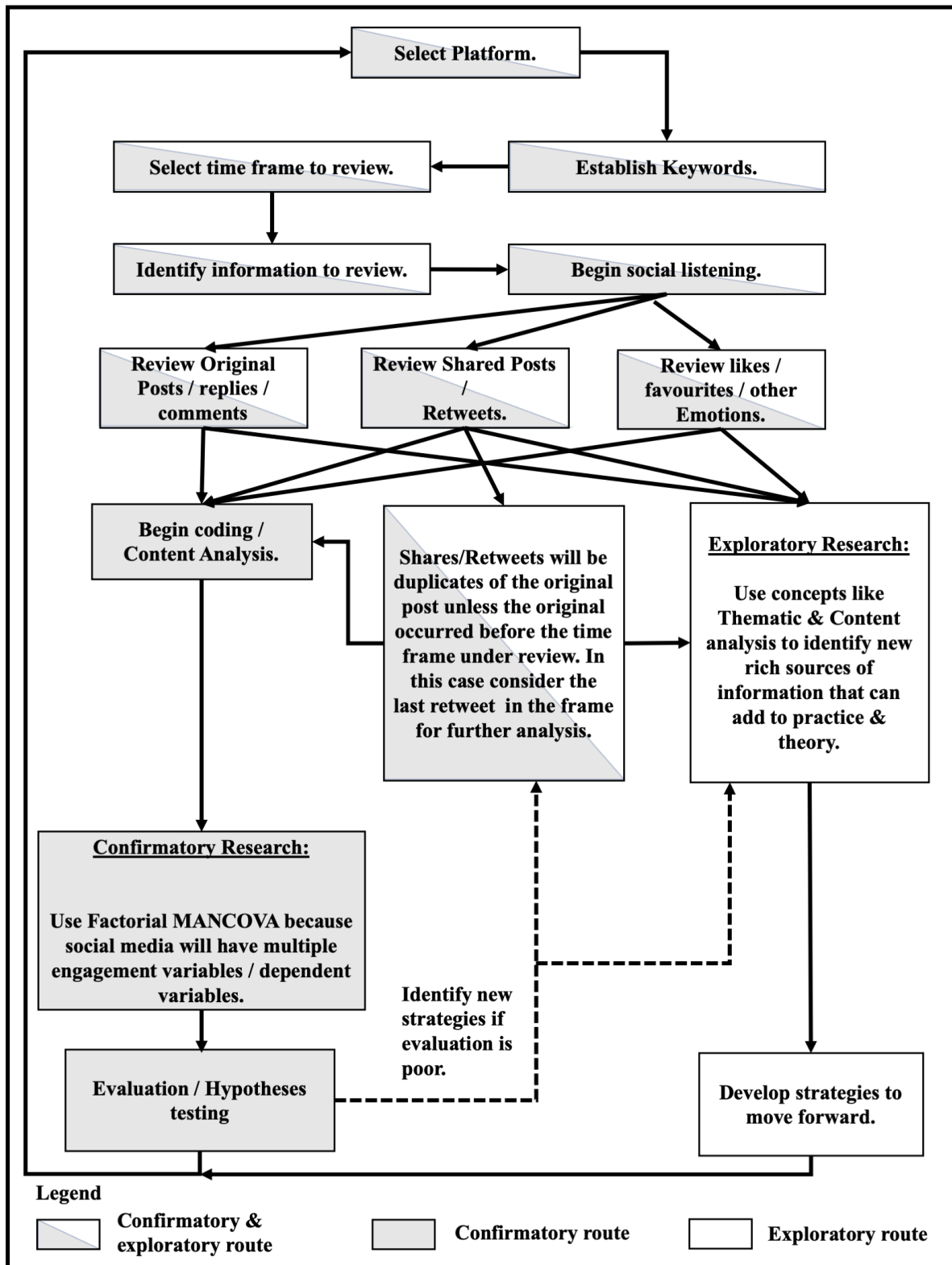


Figure 3: The workflow for assessing engagement.

Limitations

The study used Twitter as its main social media channel, it is unclear what differences other social media platforms might provide. A comparison would be interesting and could provide further direction on how social marketers should proceed within the digital arena. The issues relating to the research timeframe have already been mentioned, analysis over a greater period and/or comparison with activities outside of a key holiday period could also be beneficial.

A snapshot over twenty-four hours can arguably provide researchers with a reasonable profile of how Twitter is used to influence social change. A longer research window may produce a different profile, so the author advocates others to expand, compare, and contrast on these initial findings.

Social Bearing, as a free API does have a number of limitations, the main one being that output is limited to 5000 lines of information. Process iterations which involved excluding then including certain handles allowed the author to overcome this. Not being able to identify who liked a particular tweet was another.

Finally, the focus throughout this study was on engagement, or more specifically McCay-Peet and Quan-Haase's (2017) fifth element, there are a further six forms of engagement that need consideration. Future studies should examine each so that comparisons can be made.

Conclusion

Twitter as a platform has the ability to facilitate large scale social change because as seen from the findings, individuals are prepared to take time to influence their followers not to adopt anti-social behaviors. Unfortunately, there was no coordination of such tweets, the social marketing organizations who were the custodians of facilitating such a behavior change were not exploiting the potential opportunity. It may be that they only see social media as a portal for communication, that said most were absent during a period when such communications could have had its biggest impact. Such organizations should learn from the rest of society, in addition, there is an opportunity to redesign the process to maximize impact. One example is to use Twitter as part of an integrated marketing plan which would include value creation (identifying mechanisms that would reduce negative drink driving behaviors) and relationship building (identifying influencers who could maximize the message reach). As it stands, the author can conclude that current social marketing organizations were poor at using social media to influence positive behavior. To maximize the benefits that social media can provide these organizations need to develop more coherent and considered campaigns across the three levels of social marketing. Upstream, they should revisit their policies and procedures, focusing on

when messages should be disseminated, in addition, a review of the messages provided by alcohol companies via social media should be debated. Midstream, organizations should consider partnering with influencers, other government agencies, and even commercial bodies (like the taxi example identified earlier) to create value for their target market. Downstream, better deliberation of the message content is needed if the organizations want to increase engagement and ultimately change behaviors. Finally, it is the author's belief that the steps identified in this study provide a major contribution to social marketing theory and practice. It addresses Shawky et al.'s (2019) concerns on engagement and supports Arora and Sanni's (2019) vision by demonstrating how social listening can be used to facilitate marketing researchers, managers, and policymakers to work more collectively.

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