Australasian Marketing Journal ■■ (2017) ■■–■■

Contents lists available at ScienceDirect

Australasian Marketing Journal

journal homepage: www.elsevier.com/locate/amj

Growth of a viral phenomenon: Development and testing of a new methodological framework

Archana Anand Boppolige *, Anjula Gurtoo

Department of Management Studies, Indian Institute of Science, Bangalore, 560012, India

ARTICLE INFO

Article history:
Received 19 September 2016
Revised 16 January 2017
Accepted 19 January 2017
Available online

Keywords:
Viral phenomenon
Measurement
Peaks and Spikes
Methodological framework
TED talk videos
Twitter data

ABSTRACT

Virality or the viral phenomenon refers to the rapid growth and adoption pattern of a product, akin to a biological virus. Whilst evidence of viral success exists in the literature, the measurement of viral success remains underexplored. The exponential growth measurement approach, although popular, has limitations of being a single measure technique. This paper develops a comprehensive methodological framework to empirically measure the viral phenomenon and thereby to identify and differentiate a viral phenomenon from popularity. The concept of spike and peak is introduced to understand the viral diffusion pattern. The high performers are tested for viral growth rate using the curve fitting method. Process mapping to a considerable time-period characterizes the phenomenon at different life stages. Data from TED talk videos test the framework, and Twitter data validate the TED talk results. The paper concludes with a discussion on the significance of the results for product managers and the marketing industry.

1. Introduction

Viral phenomenon has become a business buzzword and garnered a great deal of attention in recent years. Steve Jurvetson and Tim Draper (1997) coined the term ‘viral marketing’ (p. 1) as a reference to the rapid growth and adoption pattern of Hotmail, the free web-based e-mail solution launched in July 1996. Hotmail gained 150,000 subscribers every day, and achieved a phenomenal growth rate in subscriptions (12 million) within a short time period (1.5 years) and with a low advertising budget ($50,000) (Jurvetson, 2000; Jurvetson and Draper, 1997; Montgomery, 2001). The type of growth pattern finds similarity with a biological virus, followed an exponential growth pattern, and hence considered viral (Hemsley, 2011; Jurvetson, 2000; Jurvetson and Draper, 1997; Montgomery, 2001).

Since then, the term viral phenomenon denotes a type of marketing that demonstrates rapid growth rate at maximum market penetration (Hemsley, 2011; Jurvetson and Draper, 1997; Kaplan and Haenlein, 2011) within a short duration of time (Nahon et al., 2011) and yet at a low advertising cost. Spreading rapidly from one customer to the next, the phenomenon mimic’s the growth patterns of a rampant biological virus (Hemsley, 2011; Jurvetson, 2000; Jurvetson and Draper, 1997; Montgomery, 2001). Also referred to as ‘virality’ (Hemsley, 2011, p. 24; Nahon et al., 2011, p. 1), or ‘viral marketing’ (Grifoni et al., 2013, p. 23; Jurvetson, 2000, p. 1; Kaplan and Haenlein, 2011, p. 255), the types of content with a possibility of going viral include information, video, idea, text, picture, story, message, news, audio-visual-textual artefact, brand, product and service (Berger, 2013; Grifoni et al., 2013; Kaplan and Haenlein, 2011; Nahon et al., 2011). Today, business commonly accepts mention of viral market penetration with reference to a product (Berger, 2013; Cruz and Fill, 2008; Kaplan and Haenlein, 2011), technology (Berger, 2013), information (Nahon et al., 2011), an event or an idea (Hemsley, 2011).

The paper develops a new methodological framework to empirically measure the viral phenomenon and thereby to identify and differentiate a viral phenomenon from popularity. The concept of spike and peak gets introduced to understand the viral diffusion pattern. Empirical modelling of the phenomenon, using a multi-measure approach, identifies the high performers and tests for their viral growth pattern. The proposed methodological framework gets tested using videos and further validated with Twitter data.

Two aspects of our analysis make the study relevant. The current literature mentions viral phenomenon as following an exponential growth (Hemsley, 2011; Jurvetson, 2000; Kaplan and Haenlein, 2011). We contend viral phenomenon measured using the single metric limits the measurement of the phenomenon. The exponential growth captures the speed of transmission irrespective of the maximum reach or maximum output. Exponential growth can occur even for low output measures (for example, limited sales of a product or few actual views for a video), whereas in comparison, a high output measure not necessarily follows only an exponential growth. Using the single data measure, therefore, fails to distinguish between popularity and virality. Other traits like speed and reach lack empirical evidence (Hemsley, 2011). Therefore, a multi-measure

* Corresponding author. Fax: +91-80-2360 4534.
E-mail address: baarchana@mgmt.iisc.ernet.in (A.A. Boppolige).

http://dx.doi.org/10.1016/j.ausmj.2017.01.002
1441-3582/

technique to capture virality, using curve fitting analysis for the exponential section of growth, along with speed and reach, becomes a critical need. Two, exploration of viral growth through a considerable time period gets limited mention in the literature. Measuring virality through a longer time frame provides insights on the viral growth pattern evolution over time and captures the time sensitive dynamics of the viral phenomenon methodology.

The proposed methodological framework arrives at a measurement model to address and eliminate the existing limitations. Viral growth should capture the measures of reach and speed of transmission, i.e., exponential growth (Hemsley, 2011; Jurvetson, 2000), which we term as magnitude and viral growth rate respectively. The methodological framework can be applicable for a variety of data types like Facebook messages and Twitter feeds. The output measurement could be revenue, unit sales, or number of video clicks.

In the following sections, we first understand the current measurement techniques from the existing literature, followed by the presentation of the proposed methodological framework for viral phenomenon measurement. The section contains the rationale for arriving at our methodology and the specific measurement model, and provides details of the data as well. Next, we present results of the empirical test of the methodology using TED talk videos and Twitter data, followed by interpretation of the results, and conclude with managerial implications.

2. Literature review: measurement methodologies for viral growth

Viral marketing studies try to understand the type of people, their relationships (social networks and ties), the type of content (viral content triggers and emotional triggers) and the sharing mechanisms of the phenomenon. The studies mostly rely on case examples and interview insights from marketing practitioners. Network analysis and content analysis have emerged as a recent tool. However, new variables and growth indicators have not been explored. The sections below discuss these issues in detail.

The progenitors of viral marketing, Rayport (1996) and Jurvetson and Draper (1997), used analogy of a biological virus in their explanation of the occurrence of a unique type of growth pattern in the diffusion of certain products. Using case examples, the authors provide a practitioner's viewpoint of the phenomenon as 'rapid growth with maximum exposure in little time and minimum budget'. The authors further describe the fundamental elements that drive the viral phenomenon, namely, prolific hosts, wide network ties and social sharing through word-of-mouth. However, they fail to clearly define the type of growth, the very reason why the term got coined to begin with.

Cruz and Fill (2008) used semi-structured interviews to identify the evaluation criteria for viral marketing. The study, although qualitative in nature, uses a multi-criteria measure. Their study reaffirmed the ability of viral marketing communication (VMC) to reach a large number of people, relatively quickly, and with low investment costs. The evaluation criteria included reach (maximum exposure), number of hits or downloads and financial goals like return on investment. Hemsley (2011) perhaps provides the most rigorous, cross-field definition of a viral phenomenon. The author captures both aspects of viral growth, namely, the reach and the speed of product diffusion. However, both studies focus on defining a viral phenomenon and lack empirical investigation. Cha et al. (2009) attempted the first empirical analysis of the phenomenon, using photographs. The authors study the evolution of popularity over time using social network analysis. The popularity metric of favourite count (pictures marked as favourite by users) in Flickr forms the data. Analysis reveals most popular photos (most number of favourites) to often spread slowly in the network following a linear growth, contrary to the exponential growth required for quick and wide spread. The concept of reproduction rate of infectious diseases and theory of information diffusion identifies the reasoning for the slow spread. The study highlights the measure of maximum number alone to be insufficient in explaining the virus like spread, thereby identifying the difference between popularity and virality. Broxton et al. (2013) distinguish between popularity and virality as well. The authors study the phenomenon using YouTube to analyse the sharing mechanism (internal YouTube search, external links) and the relationship to video popularity. However, two issues limit the methodology. First is the lack of clarity in the distinction between 'viral' and 'popular'. Second, the study measures popularity only in the initial time period after video upload, contradicting the premise of the evolution of social sharing over time. Exploration of the viral spread through the entire lifecycle process remains unexplored.

Wallsten (2010) and Nahon et al. (2011) investigated the different dimensions of the phenomenon through YouTube videos. Wallsten (2010) used vector auto regression methodology to study the relationship between online viewership, blog discussion, campaign statements and media coverage. The study uses a single political video, considered most popular and high profile, for the analysis. Nahon et al. (2011) used econometric modelling to study the dynamism of viral content in blogs. The definition of peak gets introduced in the literature for the first time. Both the studies distinguish valuable linkages between viral (popular) video and various characteristics. However, inclusion of the sample as a viral video based on popularity alone limits these studies. Moreover, methodologies to identify and distinguish a viral from a non-viral video remain unexplored.

All the current studies, as summarized above, incorporate the measures of reach (wideness of spread) in terms of maximum number of views, have favourites marked and measure the amount of sharing through different social network platforms. These studies qualitatively explain the importance of reaching a threshold limit for attaining a viral phenomenon (Gladwell, 2010; Kalyanam et al., 2007; Rayport, 1996). However, they remain case summaries and intuitive judgement of practitioners, without reliable metrics. Moreover, the growth rate measure, which reflects the speed of spread, has been overlooked in the studies. The few studies (see Jurvetson, 2000; Kaplan and Haenlein, 2011; Hemsley, 2011) emphasizing exponential growth rate pattern lack empirical evidence for support. The underlying factors explaining the phenomenon and the measurement of the phenomenon remain un-quantified. The existing exponential models, therefore, do not capture the viral phenomenon in entirety, leaving a gap in the current methodologies.

3. Proposed methodological framework

The proposed methodological framework captures the viral phenomenon through the measures of viral growth rate (exponential growth pattern), magnitude (maximum reach in terms of cumulative level) and peak (maximum reach on a single occurrence) (Fig. 1). The main model stems from the exponential growth rate and introduces the multi-attribute measure.

A product can have a high output measure yet not follow an exponential growth. In such case, the output can be attributed to popularity but cannot be termed as following a viral phenomenon. In another case, a product may follow an exponential growth for a low output measure, and therefore, cannot be categorized as a viral phenomenon. We follow the comparative analysis approach, where the peak and magnitude function as a threshold filter. Therefore, we define viral phenomenon as a function of peak, magnitude and rate of growth (exponential growth for peak) as in Equation (1).

Please cite this article in press as: Archana Anand Boppolige, Anjula Gurtoo, Growth of a viral phenomenon: Development and testing of a new methodological framework, Australasian Marketing Journal (2017), doi: 10.1016/j.ausmj.2017.01.002