

Research Assessment Exercise 2020
Impact Case Study

University: The Hong Kong University of Science and Technology

Unit of Assessment (UoA): 22-Business

Title of case study: Novel quantitative tools to manage viral marketing campaigns

(1) Summary of the impact

Novel quantitative tools to predict, design, and manage viral marketing campaigns, developed by Ralf van der Lans and his collaborators, have led directly to advances in business practice in creative marketing, benefiting an agency and its clients, ranging from multinationals such as [text removed for publication] to intergovernmental organizations such as [text removed for publication]. These advances, including a key performance indicator (KPI) not previously available and a predictive “seeding” model bringing new insights on social network relationships and influencers, have led to economic impact through improved monitoring and optimization of such campaigns for the agency implementing his tools. Meanwhile, wider impact on professional practice was achieved, with understanding among stakeholders in the marketing sector spread through the recognition of an overseas industry award in 2014; related trade and business media coverage of the award; and later media and conference interest. A chapter in a marketing handbook, downloaded over 2,300 times since 2017, has also broadened its impact among marketing practitioners.

(2) Underpinning research

Nowadays, viral marketing is among the fastest-growing forms of advertising, as evidenced by the Nielsen CMO Report (2018) on digital marketing spending. Such marketing, also known as social media campaigns, took off with the advent of Facebook, Twitter, Weibo, and other mass platforms in the first decade of the new millennium. Yet running such campaigns was initially more art than science, with little quantitative insight into how to maximize effectiveness and no analytical tools that could predict the reach of viral marketing campaigns, a crucial factor to determine return on investment for clients of marketing agencies. This was the setting for the research underpinning van der Lans’ quantitative tools, which started in 2006 in collaboration with [text removed for publication] that shared its data for this research. Studies continued at HKUST Business School, which van der Lans joined in 2010 as associate professor. Overall, the research can be divided into two phases:

i) Development of a viral branching model to forecast reach and success of campaigns

In the first phase, van der Lans led research that developed what he and his collaborators termed a “viral branching model” to forecast both reach and success of viral marketing campaigns. This was started before joining HKUST, with articles published in *Marketing Science* (2010) and *The Connected Customer* (2010). The model was rooted in epidemiology, a field that explores the spread of actual viruses. However, in contrast to epidemics, where the spreading process is unobserved, van der Lans developed a new branching model that can be applied to real data, collected during viral marketing campaigns. This line of research continued at HKUST [R1, R2]. The model takes into consideration the “viral index”, consisting of two parameters: 1) the average number of friends that an individual shares the campaign with, and 2) the probability that a contacted friend responds favorably to the shared message. These parameters can be determined before, or estimated quickly after the launch of the campaign, and used to predict the final reach. The parameters are also useful for managing viral marketing campaigns, being determined by the design of the campaign. In addition, as the viral branching model can be implemented through Excel, it is easy to use in practice.

ii) Identifying influential individuals in social networks for “seeding” viral marketing

After joining HKUST, van der Lans embarked on a second phase of research, in collaboration with Xi Chen, a PhD student at HKUST who is currently an assistant professor at Erasmus University Rotterdam. This phase focused on optimal seeding strategies, which are critical to initiate viral

processes and campaign optimization [R3], [R4]. Other viral marketing and social network analyses have suggested people with many friends (or hubs) are most influential. Going beyond such traditional “recommendations”, van der Lans and his co-authors found not all relationships to be equally important. They developed a seeding model that could ascertain the importance of each connection in a social network [R3]. The seeding tool was applied to two campaigns involving the promotion of microfinance programs in Indian villages and advertising campaigns on social media. The results showed improvements of up to 10% in the first application and over 90% in the second.

Continued collaboration with [text removed for publication] focused on the information overload in social networks and the consequences for optimal seeding strategies. In an accepted paper at *Management Science* [R5], van der Lans and his co-authors further show that people with many friends are less responsive as they face stronger competition for attention. This shows that targeting hubs, as traditionally suggested, leads to sub-optimal solutions as it ignores the fact that such individuals are less responsive and, therefore, less influential.

(3) References to the research

[R1] van der Lans, R, van Bruggen G, Eliashberg J, and Wierenga, B (2012). “Seeding a Message to Harvest Reach: Predicting and Optimizing the Spread of Electronic Word-of-Mouth”. *GfK Marketing Intelligence Review*, 4(1), p. 32-41.

[R2] van Bruggen, G, and van der Lans, R (2014). “Virale Marketing: Hoe Campagnes zich Online Verspreiden”. *Jaarboek MOA/Ontwikkelingen in het Marktonderzoek*, p. 9-24.

[R3] Chen, X, van der Lans, R, and Phan TQ (2017). “Uncovering the Importance of Relationship Characteristics in Social Networks: Implications for Seeding Strategies”. *Journal of Marketing Research*, 54(2), p. 187-201.

[R4] Chen, X, van der Lans, R, and Trusov, M (2017). “Integrating Social Networks into Marketing Decision Models”. *Handbook of Marketing Decision Models*, Second Edition, Springer, 505-529.

[R5] Gelper, S, van der Lans, R, and van Bruggen, G (forthcoming). “Competition for Attention in Online Social Networks: Implications for Seeding Strategies”. *Management Science*.

(4) Details of the impact

Forecasting and optimizing viral marketing campaigns are critical issues for practitioners to determine return on investment (ROI) and whether and how a campaign should be launched. Using the novel tools developed through van der Lans’ research, companies and marketers such as [text removed for publication] are now able to 1) forecast the performance of a viral marketing campaign, even before a campaign is launched; and 2) boost optimization of viral marketing strategies (i.e. the content of the campaign and seeding strategies) to improve their services to clients in a wide variety of sectors. Such work has achieved impact through changing professional practice, and led to economic impact for the agency and its clients by optimizing ROI from their campaigns through their implementation of the new analytical tools. Wider awareness among international marketing practitioners has been generated through an industry award, media coverage, and dissemination through a book chapter and presentations at industry-related events and programs.

i) Changing professional practice to boost business performance

[Text removed for publication] began to implement van der Lans’ viral marketing analytical tools before publication of the first paper in 2010 [S1]. Since then, [text removed for publication] has continued to evolve its business operations through on-going use of such tools and key performance indicators (KPIs) to monitor and forecast the performance of its creative campaigns, as well as improve them. This has resulted in economic and corporate impacts by helping the company deliver greater return on investment for clients through more efficient practices. Such quantitative monitoring and forecasting had not been available to marketers before van der Lans’ research. As noted by [text removed for publication], in his testimony: “*Before our collaboration, the industry did not have analytical tools to predict the success of our marketing campaigns*” [S2]. Indicating the significance of the development of such methods for the company, he further noted that clients had been

increasingly demanding objective metrics to predict and determine the success of campaigns, ahead of [text removed for publication] collaboration with van der Lans. Showing the depth of impact on the agency's operations that the research-based viral index had, [text removed for publication] explained: "We now use the viral index for the following purposes: 1) objectively determine the performance of a campaign; 2) forecast the reach of a campaign, and 3) insights in how to improve the campaign. We monitor this index for all our viral marketing campaigns, and also report it to our client[s] as a key performance indicator." The company's clients include [text removed for publication], and others, widening the reach of the impact across major brands, multinationals, and civil society organizations. Meanwhile, [text removed for publication] staff have benefited from presentations provided by van der Lans, enabling them to implement his recommendations [S2].

In addition to campaign performance monitoring, the company has altered and improved its business practice through KPIs provided by van der Lans. As [text removed for publication] wrote in his testimony: "Instead of focusing on the final reach of campaigns, we now focus [on] two important KPIs: 1) How active[ly] do people share our campaigns? and 2) How do people respond to campaigns?" These KPIs are based on on-going van der Lans' research that considers competition for attention, which affects responsiveness, important for seeding strategies. From the KPIs, the reach of the enhanced strategies extend to different sectors of industry and the third sector through reports to its client base.

ii) Widening practitioner understanding of viral marketing internationally

The model and tools developed by van der Lans have achieved impacts of broadening and deepening awareness of viral campaign practice and management through an industry award, coverage in a variety of media and publications, and conference presentations, attracting the attention of marketers and their organizations in different countries.

a) His 2014 article on viral marketing [R2] led to a jury of practitioners and industry leaders from the Dutch Center for Information-Based Marketing and Market Research (MOA) presenting van der Lans and his co-author with the MOA Science Award for that year, with a news item appearing on the MOA website [S3]. MOA is an influential association of companies and institutions engaged in marketing research and intelligence that promotes, develops and stimulates the quality of market research. A further report on the awards by Adformatie, a Dutch multichannel platform – including a magazine and website that target all professionals dealing with brands and organizational behavior – noted that the research had been cited by the jury as "an innovative, very readable and practically applicable overview of recent insights in the field of viral marketing, in which the – methodologically advanced – work of the authors themselves play an important role". (Original in Dutch: "een vernieuwend, zeer leesbaar en praktisch toepasbaar overzicht van de recente inzichten op het gebied van virale marketing, waarbij het – methodologisch geavanceerd – werk van de auteurs zelf een belangrijke rol speelt".) [S4] The van der Lans award was also reported by Dutch trade magazine, *Marketing Tribune*, aimed at marketing decision-makers (e.g. marketing directors, managers) as well as marketing influencers (e.g. consultants). The online report attracted over 17,000 viewings, indicating wide-reaching recognition of van der Lans' contribution to the industry [S5].

b) A chapter by van der Lans on integrating social networks in marketing decision models [R4] was included in the *Handbook of Marketing Decision Models* (second edition, 2017). This completely updated edition of the 2008 book was compiled for practitioners as well as academics. The chapter had been downloaded more than 2,300 times by the end of September 2019 [S6].

c) The global appeal of such research was highlighted when an article and video on van der Lans' seeding strategies [R3] appeared online in *Dinero*, a prominent business magazine in Colombia, in 2017. Highlighting the van der Lans' digital marketing finding that proximity and intensity in social networks are more influential than numbers of contacts to its readers and viewers, the publication noted: "Understanding the dynamics of information dissemination and identifying influencers can be a valuable consideration for the design of strategic mechanisms, reaching the public, and fulfilling the goals of social media presence." (original in Spanish: "Entender las dinámicas de la difusión de

la información e identificar influenciadores puede ser una consideración valiosa para el diseño de mecanismos estratégicos, llegar al público y cumplir los propósitos de la presencia en redes.” [S7]

d) Further dissemination in presentations to a range of professional audiences has extended the reach of his research’s impact on practitioners’ understanding. In 2015, for example, van der Lans presented on optimizing viral marketing campaigns in a keynote speech at the Enterprise Marketing and Globalization (EMG) Conference in Singapore before an audience of 50 professionals and academics. He also relayed his knowledge about viral marketing in the HKUST Executive Education Webinar Series in 2017, and executive programs for [text removed for publication] in 2012 and [text removed for publication] in 2016, with around 50 participants per program [S8].

(4) Sources to corroborate the impact

[S1] [Text removed for publication] website: [text removed for publication].

[S2] Testimony from [text removed for publication].

[S3] Dutch Marketing Research Association: 2014 award-winners article, copy of the online piece in English, on file.

[S4] Adformatie band and creatives practitioner site news report on 2014 MOA awards.

<https://www.adformatie.nl/programmatic/moawards-2014-mwm2-marktonderzoeksbureau-van-het-jaar>

[S5] Marketing Tribune, practitioner website report on the 2014 MOA awards.

<http://www.marketingtribune.nl/bureaus/nieuws/2014/06/moawards-mwm2-marktonderzoeksbureau-van-2014/index.xml>.

[S6] Book Metrix statistics for *Handbook of Marketing Decision Models* Second Edition, 2017.

Eds Wierenga, B and van der Lans, R: http://www.bookmetrix.com/detail_full/book/477df422-d947-4468-8e24-944121611d48#citations

[S7] News article and video in business magazine Dinero:

<https://www.dinero.com/opinion/columnistas/multimedia/en-redes-sociales-impacta-mas-la-cercania-y-la-intensidad/245966>

[S8] Finance Leadership Development Program for [text removed for publication], HKUST (2016): example of executive education and training.