Bruce D. Weinberg
is the Chair of the Marketing Department at Bentley University. Named the 'Netty Professor' by Inc. magazine, he is among the top marketing professors on Twitter. His research on important marketing and e-commerce issues, such as social media, customer lifetime value, and forecasting, has been awarded the MSI/H. Paul Root best paper prize from the American Marketing Association. His publications have appeared in other leading journals such as *Journal of Marketing*, *Journal of Marketing Research* and *Journal of Interactive Marketing*. He earned his PhD at MIT Sloan School of Management.

Paul D. Berger
is a Visiting Scholar and Professor of Marketing at Bentley University, where he is also the director of the Master of Science in Marketing Analytics (MSMA) program. He earned his S.B., S.M. and PhD degrees from the Massachusetts Institute of Technology, Sloan School of Management. His most recent (co-authored) book was published in 2010: *Internet Marketing: Reaching Customers Anytime, Anywhere, Any Platform*. He has published over 150 refereed journal articles and conference proceedings and is on the editorial board of several journals.

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CLV analysis should account for the value associated with the relationship-based and 'connected' nature of social media

Bruce D. Weinberg
Marketing Department
Bentley University 175 Forest St.
Waltham Massachusetts
MA 02452 USA
Tel: +1 781 891 2276
Fax: +1 781 788 6456
E-mail: bostongarden@gmail.com

Connected customer lifetime value: The impact of social media

Bruce D. Weinberg and Paul D. Berger

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Abstract

In this paper, we extend the general definition of Customer Lifetime Value (CLV) to include the value of influence associated with a consumer's network or connections. We introduce *Connected Customer Lifetime Value* (CCLV) as the present value of the net contribution associated with purchases made by a customer, plus the present value of the net contribution made by other customers due to the influence of that customer. We highlight social media engagement as an important process associated with that influence, and propose Customer Social Media Value (CSMV) to represent the value derived through said media engagement. Examples to illustrate CSMV and CCLV are provided. *Journal of Direct, Data and Digital Marketing Practice* (2011) **12**, 328–344. doi:10.1057/dddmp.2011.2

Introduction

The internet and web have brought about significant changes in culture and business. The current driving forces of Web 2.0 and social media vehicles (eg Facebook, Twitter, Blogs) have led to a world where consumers are more connected, and are playing a prominent role in defining brands and influencing the reputations of organizations. Through their connections with others, consumers can wield a lot of power, engaging in activities that can enhance — or reduce — a brand's profitability. Further, many consumers look to build their own brand online, which can include a self-driven association with an organization (eg a 'big name fan').

Customer lifetime value (CLV) analysis, which reflects a relationship-oriented marketing perspective, should account for the value associated with the relationship-based and 'connected' nature of social media and Web 2.0 applications. The value typically considered in current CLV analysis is the present value of the net contribution associated with a customer's purchases/transactions over a 'lifetime'. However, as we know with social media, connected customers can influence the purchase behaviour of other customers (eg by 'tweeting' on Twitter about an experience with an organization or brand, by writing about a product on a Facebook friend's 'wall', by leaving positive or negative feedback about an eBay-auction transaction

We extend the general definition of CLV to include the value of influence associated with a consumer's network or connections

experience). These connections and their associated influence on purchase by others should also be considered part of the lifetime value of a customer. Indeed, such behaviours can bring about purchase, when otherwise it would not take place.

In this paper, we *extend* the general definition of CLV to include the value of influence associated with a consumer's network or connections. We introduce 'Connected' Customer Lifetime Value (CCLV) as the present value of the net contribution associated with purchases made by a customer, plus the present value of the net contribution made by other customers due to the influence of that customer. This includes new customers who otherwise would not become customers, increase in purchase by existing customers, and increased retention of existing customers.

This equation will consist of two components: 'direct purchase' and 'influence on purchase'. Later, we will break the second component down into a referral effect and a social media effect. We make distinctions among various types of social media with respect to CCLV, and show how to strategically leverage CCLV analysis that considers social media. In addition, we highlight directions for further enhancing the research and analysis of CCLV.

Social media

The terms 'Web 2.0', 'user-generated content' and 'social media' gained prominence in about 2005, 2006 and 2007, respectively. These three phenomena are interrelated and are hot topics today in marketing. Social media consists of a set of applications (eg Facebook, Twitter, Flickr) that are built to run on a 'Web 2.0' platform — in essence, think of the web as the 'place' where an application/program resides and runs, or is called upon for use (as opposed to on a computer desktop, as is the case with applications such as Microsoft Word); and, this web-based platform inherently enables the creation and distribution/sharing of information created by users/consumers, namely: user-generated content.^{1,2}

While organizations are in the early stages of learning how to effectively use social media, it has become very popular among, and is frequently used by, consumers. For example, at present, there are more than 125 m blogs in existence,³ more than 500 m Facebook users⁴ and more than 90 m (Twitter) tweets generated daily.⁵ Further, social media has had an impact on purchase; for example, consumers who are a fan of a brand on Facebook, or a follower of a brand on Twitter, are more likely to recommend or buy that brand.⁶ Further, consumers trust more the information obtained from a fellow consumer (eg recommendations, ratings) than from, or created by, an organization (eg advertising, website).⁷

The use of social media is likely to become an enduring part of the web fabric

Indeed, the use of social media is valuable and is likely to become an enduring part of the web fabric, just as, for example, company/brand websites are today. Organizations have begun to dip their toes into using social media (eg creating Facebook, Twitter, Youtube accounts) and appear to recognize its potential value with respect to

relationship marketing. Similarly, research scholars have begun to study social media. Building, naturally, from ‘offline’ word-of-mouth theory,^{8,9} studies have shown that (online) word-of-mouth via Web 2.0 applications, such as blogs, online communities and rating and review websites, can influence the purchase decisions of other consumers.^{10–15} Although there remains a lot of uncertainty about leveraging social media for long-term profits and return, the need for evidence of return on investment (ROI) remains high,^{16,17} and the ROI is viewed as potentially very promising.

Customer lifetime value

Acquisition and retention are key principles for the utilization of CLV. Berger and Nasr¹⁸ is a key guide in modelling CLV, highlighting the importance of retention in profitability,¹⁹ and detailing four general processes by which retention can accelerate profits. One process is referrals. That is, satisfied (current) customers may recommend the purchase of a product to potential (new) customers, thereby acting, to some extent, as marketers for the organization. There is no question that this process occurs. In fact, referrals or word-of-mouth recommendations have been formally considered with respect to new customer acquisition,^{20,21} and to the computation and use of CLV through customer referral value.^{22,23}

While these studies did not consider referrals in the context of social media, a referral process clearly leverages a *connection* between consumers, and is a type of process that does occur in social media contexts via online word-of-mouth. In this research, we consider these referral connections, as well as social media ‘connecting’ elements (eg social networks, blogs, microblogs, communities), in formulating CCLV, a model that unifies them.

We consider traditional CLV, referral connections, as well as social media ‘connecting’ elements, and formulate a model that unifies them

‘Traditional’ CLV without consideration for connectedness

We start with a base case; specifically, we use the notation from Berger and Nasr,¹⁸ and build off of what they refer to as ‘Case 1’, in which it assumed that (1) sales occur once a year, (2) both yearly spending to retain customers and the customer retention rate remain constant over time, (3) revenues achieved per customer per year remain the same.

Notation:

- GC *is the (expected) yearly gross contribution margin per customer. It is, therefore, equal to revenues minus cost of sales.*
- M *is the (relevant) promotion/retention costs per customer per year.*
- n *is the length, in years, of the period over which you want to project the cash flows.*

- r* is the yearly retention rate, that is the proportion of customers expected to continue buying the company's goods/services in the subsequent year.
- d* is the yearly discount rate (appropriate for marketing investments).

Hence, we now have CLV, our basic customer lifetime value:

$$\text{CLV} = \{GC \cdot \sum_{i=0,n} [r^i / (1+d)^i]\} - \{M \cdot \sum_{i=1,n} [r^{i-1} / (1+d)^{i-0.5}]\} \quad (1)$$

Restating Berger and Nasr,¹⁸ the GC and M cash flows are discounted differently because they are assumed to take place at two different points in time; and the 0.5 in equation (1) reflects the approximation of the promotion expenses to all occur at the middle of each purchase cycle. We use an example modelled after that of a cruise ship/resort vacation company. It is assumed that the company pays, on average, US \$40 per customer yearly on promotional expenses, the yearly retention rate is 35 per cent, the time horizon is 10 years, the yearly gross contribution per customer is expected to amount to \$4,000, and an appropriate discount rate for marketing investments is 10 per cent. A similar situation is considered in Berger, Weinberg and Hanna.²⁴

We have:

$$\begin{aligned} \text{CLV} &= \{4000 \cdot \sum_{i=0,10} [(0.35)^i / (1+0.1)^i]\} \\ &\quad - \{40 \cdot \sum_{i=1,10} [(0.35)^{i-1} / (1+0.1)^{i-0.5}]\} \\ &= \$5,810.71 \end{aligned}$$

CLV with connectedness: The case of referrals

There have been several papers that have explored traditional word-of-mouth in many aspects of marketing.^{8,9} Indeed, there have also been various papers that have considered online word-of-mouth/word-of-web.²⁵ A few of these latter papers have considered word-of-mouth, including referrals, together with CLV.^{20,22,23}

In tying together word-of-mouth and customer lifetime value, a key metric has to do with referrals. Kumar, Petersen and Leone^{22,23} introduce the term 'CRV' to represent a customer's referral value. For example, an American Express customer can participate in a promotion to get a 'reward' (eg \$50 gift card, 5,000 Membership Reward points) for each new customer acquired through their referral. This 'refer a friend' phenomenon, of course, is reasonably common in a variety of settings, such as restaurants, personal grooming services, wireless services and financial services.

'CRV' represents a customer's referral value

Table 1: Impact of CRV on CCLV

Customer	CLV	CRV	Total value	Rank by CLV	Rank by TV
A	\$5,810.71	\$50	\$5,860.71	1	3
B	\$5,447.56	\$550	\$5,997.56	2	1
C	\$5,127.11	\$750	\$5,877.11	3	2

Analytically, CRV is determined by various formulas (p. 4),²² and then added to the basic CLV, the sum representing the customer's 'total value'. It is straightforward to envision how this concept could impact managerial decision making, leading to, for example, a difference in who the most valuable customers are to an organization.

Suppose that customer A is described in the previous example with a CLV of \$5,810.71. And, it so happens that this person has a relatively low CRV. Now, suppose that there is a customer B, who has a lower CLV of \$5,447.56, due to having a slightly lower retention rate of 0.30, and a customer C, who has a CLV of \$5,127.11, due to having an even lower retention rate of 0.25. Further, suppose that the customers' respective CRVs are \$50, \$550, \$750. That leads to Table 1 in which total value (TV) for each customer is calculated.

Kumar, Petersen and Leone's²² convention of keeping CLV and CRV separate ensures that 'double counting' of cash flows is avoided. In other words, the \$50 CRV of customer A is, in essence, part of other (referred) customers' CLV. This is not consistent with the suggestion by Noone, Kimes and Renaghan²⁶ and Blattberg, Kim and Neslin (p. 158)²⁷ to include the value of referrals in the calculation of the referring customer's CLV; if done properly, this latter approach also avoids the 'dreaded' double counting.

CLV with connectedness: The case of social media

Social media has not been explored directly with respect to CLV, and it is easy to recognize its potential relevance given its inherent word-of-mouth nature, although in a 'social media' online context. Again, we want to make a distinction between this research, which considers social media, and research that has considered referrals, certainly a word-of-mouth phenomenon. The latter has not been done in a necessarily online or 'social' context, and social media encompass a broader variety of types of communications between and among consumers/individuals. Just as the concept of CRV has been proposed, we believe it would be reasonable to put forth the notion of another 'non-direct' cash-flow factor that impacts overall sales, that of Customer Social Media Value (CSMV).

Certainly, this introduces increased complexity, given the many types of social media that exist currently, or that may be introduced in the future. Indeed, a challenge is recognizing differences in use and effect among the various types of social media. To date, many practitioners and scholars have, for the most part, grouped together social media as one entity or channel element when considering its

It is critical to avoid 'double counting' when determining different components of value

'CSMV represents 'Customer Social Media Value'

impact in a variety of marketing contexts.²⁸ However, recent research has begun to recognize distinctions in various types of social media with respect to its properties, consumer behaviour and marketing.¹⁶

We propose to formulate CSMV as a multiplicative model, in recognition of the fact that there is a likely interaction effect among the different social media effects on CSMV. We view the choice of functional form as somewhat arbitrary until we obtain sufficient real-world data to indicate a clearly superior choice. However, that being said, we view our illustrative choice as both plausible and reasonably sophisticated for the following reasons:

- (1) Having CSMV as a multiple of CLV reflects the fact that a person who has a larger CLV for a company is, on average, more vested in the company's brand, has more experience (and familiarity) with the brand, and as a result of the latter, has more credibility among other customers/prospects of that company. The bottom line is that the social media engagement of a person with higher CLV will, on average, have greater impact; we acknowledge that there are many other factors (eg the customer's writing skill) that are being 'averaged over'.
- (2) Having the effects associated with the different social media represented multiplicatively reflects the fact that the influence a person exerts may be different, depending on his/her engagement in other social media. It is essentially axiomatic that a reputable person who, for example, blogs regularly, will have more effect on others through, say, his/her Facebook pronouncement, than if he/she were somebody who has never blogged before. This is what we refer to in marketing as an 'interaction effect'. A multiplicative model automatically builds in this potential interaction effect.

Specifically, we now postulate that:

$$\text{CCLV} = \text{CLV} + \text{CRV} + \text{CSMV} \quad (2)^{29}$$

where,

$$\begin{aligned} \text{CSMV}_i = & \text{CLV}_i * ([1 + \text{SM}_{i1}] * [1 + \text{SM}_{i2}] \\ & * \dots * [1 + \text{SM}_{ij}] * \dots * [1 + \text{SM}_{iJ}] - 1) \end{aligned} \quad (3)$$

In equation (3), '*i*' indexes individual customers, $i = 1, \dots, I$ and *j* indexes different social media, $j = 1, \dots, J$. CLV_i is the traditional CLV of customer *i* (ie CLV in equation (1)). The SM_{ij} terms reflect, for customer *i*, the impact of social medium *j*, where *j* represents any of a variety of social media applications, such as Twitter, Facebook, communities and blogs.

We assume that the SM_{ij} values are greater than or equal to zero, and reflect a customer's positive influence in social medium *j*. A customer with relatively higher impact (for social medium *j*) would

have a value of SM_{ij} that is indeed relatively higher, whereas, of course, a customer with relatively lower impact would, correspondingly, have a value of SM_{ij} that is relatively lower. A customer who is not engaged at all with any social media would have SM_{ij} 's equal to 0 and, correspondingly, $CSMV=0$. It would be a simple extension to allow negative SM_{ij} values ($-1 < SM_{ij} < 0$ in our formulation; $SM_{ij} < -1$ with a very slightly different formulation) in circumstances where the particular social media engagement would lead to a more negative outcome for the company.

Note that the '-1' in (3) reflects the fact that CSMV is an incremental value (as is CRV); in essence, we are taking $CLV_i * [1 + SM_{i1}] * [1 + SM_{i2}] * \dots * [1 + SM_{ij}] * \dots * [1 + SM_{iJ}]$ and subtracting CLV_i from that, thus arriving at the net increment associated with social media impact. Also note, however, that we model this incremental amount (CSMV) to be proportional to a customer's CLV.

Social media engagement

There are two key aspects that contribute to CSMV: the nature of the social medium itself, and the engagement level of the consumer

While social media may vary in many ways, there are two aspects of social media engagement that we see contributing to the CSMV component of CCLV. One is the *nature of the social medium, itself*, and the other is the *extent to which the customer is engaged in said social medium*. Indeed, there are many dimensions of social media. Weinberg and Pehlivan¹⁶ identify two dimensions in particular that explain well the variation in social media, and that can be used to support marketing decisions: depth of information and the half-life of information (see Figure 1).

Depth of information refers to the richness of the content and the variety of perspectives. For example, a great amount of rich information can appear on Facebook (eg see Coca-Cola's Facebook pages). The half-life of information is a function of both the medium and the content, and refers to the longevity of the information in terms of availability/appearance on the screen, and interest in a topic. For example, a 'tweet' of information can appear on and then disappear

Figure 1: Social media with respect to information depth and half-life

from a Twitter screen within a matter of seconds, depending on factors such as the number of users being followed (n.b., theoretically, the tweet content would remain retrievable for a longer period of time — assuming someone were to proactively search for it).

These two factors can be used to show important distinctions among various types of social media and associated consumer behaviour and response. Twitter³⁰ is structured and used to share relatively shallow information with a relatively short half-life. Blogs,³¹ which tend to focus on a particular theme, share a small number of perspectives on a subject and have an information half-life that is relatively long. Although blogs may allow for interaction, there tends to be, in many cases, little discussion and variety in perspectives (eg Mashable.com, which Technorati rates as one of the top blogs, has many blog posts with no or very few replies).

Online communities³² can include a diverse set of members, a great variety of perspectives and enable conversations that can be deep/rich and last for years (eg see Edmunds.com Townhall). Thus, such information is classified as having a relatively long half-life and being deep. MacRumors, a website focused on Apple-related news and rumours, provides Apple and Apple-related product information, buying guides and community forums containing more than 10m posts from more than five-hundred thousand members. Facebook, which is the most prominent social network platform/site/service,²⁸ can have significant depth of information in organizations' Facebook account. For example, Target's Facebook account has many photos and 'wall' comments from amongst its 2+ m fans/friends. And, in many cases, the half-life of the information is relatively short in areas that are maintained regularly.

The more engaged a customer is with different social media, the greater is his/her influence on others

The more engaged a customer is with different social media, the greater is his/her influence on others. One might view this as axiomatic. Indeed, a recent study by Copernicus Inc.³³ surveyed a national cross-section of 808 men and women in 2010, aged 18 years and older, about their blogging behaviours and their personal influence patterns across 21 product/service categories such as soft drinks, fast food restaurants, sports and several others. They found that a combined 77 per cent of the study participants who scored 'high' in terms of cross-category personal influence also scored high in blogging engagement. In contrast, 62 per cent of those who scored 'low' on cross-category personal influence reported that although they know about blogs, they do not read them on a regular basis and never write them.

Having established important relationships between CSMV and both the nature of social media and the extent of engagement in said media, we might think about how to quantify these relationships. A company needs to collect data and determine which characteristics (demographics, psychographics, attitudes, lifestyles, behaviours, needs, etc) correlate most strongly (and with which weights) to what we have argued is a profit-related criterion for the company — namely, social media engagement of its customers.

We now present a numerical example. We repeat (3) for convenience, dropping the subscript i in order to simplify the notation: recall that i indexed customers, and $j=1\dots J$ indexes the different social media.

$$\text{CSMV} = \text{CLV} * ([1 + \text{SM}_1] * [1 + \text{SM}_2] * \dots * [1 + \text{SM}_j] * \dots * [1 + \text{SM}_J] - 1) \quad (3)$$

Suppose that we are considering four social media:

- (1) Facebook ($j=1$)
- (2) Twitter ($j=2$)
- (3) Blog ($j=3$)
- (4) Community ($j=4$)

Social media can be rated along the dimensions of depth of information and half-life of information

As indicated above, two key dimensions that explain differences in social media are the depth of information and the half-life of the information. Table 2 rates the four social media according to these dimensions, based on earlier discussion:

It is clear that a ‘high’ designation is superior to a ‘low’ designation when it comes to the (positive) impact that social media engagement has on CSMV. We acknowledge that there are several other factors that might be considered moderators of this relationship. Examples of these moderators would be the specific number of ‘connections’/ ‘relationships’, quality of the connections/relationships, customer standing in the social medium and activity level. Indeed, Twitter with a very large number of connections, could have a higher impact than a Blog with very few connections. Similarly, a Facebook account of a customer with very high standing could exceed the impact of a customer with relatively low standing in a community. Further, a customer with very few connections, but ones of very high quality, could have higher impact than a customer with relatively many connections, but ones of very low quality. We ignore these moderators in the example below.

Suppose that a customer is categorized as either Low (L), Medium (M) or High (H) in terms of his/her engagement with a given social medium, and assume that the values of the SM_j are as follows for the four respective media noted above (Facebook (F), Twitter (T), Blog (B), Community (C)), as a function of the social medium’s categories in Table 2 above. See Table 3.

Table 2: Rating social media by dimensions of information depth and half-life

Social media	Depth of information	Half-life of information
Facebook	High	Low
Twitter	Low	Low
Blog	Low	High
Community	High	High

Table 3: SM_j values for each social medium as a function of engagement level

	Social medium			
	Facebook (H, L)	Twitter (L, L)	Blog (L, H)	Community (H, H)
Engagement level	L=0.04 M=0.06 H=0.08	L=0.02 M=0.04 H=0.06	L=0.04 M=0.06 H=0.08	L=0.06 M=0.08 H=0.10

Note that the value of SM_j for a given level of engagement is higher for community, with its ‘H, H’ categorization in the dimension table, than for either Facebook or Blog (each having one dimension at H and one dimension at L), which is, in turn, higher than that for Twitter, with its (L, L) categorization. By having the same values for Facebook, with its (H, L) and Blog, with its (L, H), we are, at this time, viewing each dimension (Depth of Information and Half-Life of Information) as equal in contribution to CSMV. There is no doubt that a refinement would be to delve into the relative importance of the two dimensions; we leave that for future research.

Given all of the above, suppose that customers A, B and C have the following amounts of engagement with the four social media, respectively:

$$A = L, M, L, L$$

$$B = L, H, H, M$$

$$C = H, H, H, H$$

Table 4 provides values for the SM_j for the three customers: If we now compute each customer’s CSMV (using equation (3)), we can see how each person’s CCLV compares and how the rank order is not the same when ranked by CCLV as by the basic CLV. We assume for this example that CRV values are zero for all three customers, although the rank ordering by CCLV would not change if the CRV values were not zero, but were the same for all three customers (See Table 5).

Note that when we determine a customer’s CSMV, we characterize his/her social media engagement into three categories for each medium. A key point is that we do not postulate that we can, or need to, measure social media engagement to an extremely precise degree along some continuous scale, but, rather, into a number of discrete categories. In our example, we have three categories of engagement for each social medium. Perhaps it would suffice to have only two categories; on the other hand, it might be more useful to have four categories; and, it might not be necessary to have the same number of categories of social medium engagement for each social medium.

We do not postulate that his assessment of social media engagement is necessarily easy. Still, we see two paths towards obtaining these values. One is the more ‘low-tech’ method of asking people via a

Table 4: SM_j values for customers A, B and C

Social media impact	A	B	C
F: $SM_1=$	0.04	0.04	0.08
T: $SM_2=$	0.04	0.06	0.06
B: $SM_3=$	0.04	0.08	0.08
C: $SM_4=$	0.06	0.08	0.10
CLV	\$5,810.71	\$5,447.56	\$5,127.11

Table 5: Impact of CSMV on CCLV

Customer	CLV	CSMV	Total (CCLV)	Rank by CLV	Rank by CCLV
A	\$5,810.71	\$1117.72	\$6928.43	1	3
B	\$5,447.56	\$1557.13	\$7004.69	2	1
C	\$5,127.11	\$1845.87	\$6972.98	3	2

Forward-thinking companies are asking customers for their email address, and some companies are asking for their social media account names

questionnaire. The other is the more sophisticated path of (1) identifying the customer's account names for his/her various social media participation; (2) inspecting their social media engagement; (3) from this inspection, determining their specific degree of social media engagement. Step 1 can be combined with the questionnaire approach. However, these days, all forward-thinking companies are asking for email addresses (as opposed to the older, more traditional seeking of just 'name, address, and telephone number'). At present, some companies are already asking customers for their social media account names; indeed, this practice is growing rapidly and is a clear 'wave of the future'. It should also be mentioned that companies are obtaining customers' social media account names *implicitly* when a customer connects with the company through social media — for example, through Facebook.

Ultimately, we have groups of people (in essence, *segments*) with various values associated with their social media engagement — at least as far as their CLV 'multiplier' is concerned. In our example, there are 81 segments ($=3 \times 3 \times 3 \times 3$), consumers in each segment having the same social media engagement pattern. Therefore, we are applying our methodology to (presumably) relatively large segments of customers, and retaining the statistical benefits of averaging over said large segments, achieving more robustness in our results than if we truly had an interval/ratio-scale measure that resulted in each customer being his/her own segment.

We do not claim that the measurement of the appropriate metrics for social media engagement is easy to discern, although there certainly exist several metrics currently used by companies for this purpose (eg for Twitter engagement, the number of tweets!!). Nor do we argue that arriving at CSMV, and correspondingly, CCLV, is without some challenges. However, as companies are becoming more and more focused on monitoring, collecting and analysing social media-generated data, we believe that these challenges can and will be overcome.

We mentioned the above two approaches towards obtaining the information needed. Indeed, we are involved in projects utilizing both approaches. One project is a questionnaire effort addressing the assessment of social media engagement and social media influence; indications are that such information is obtainable by questionnaire, while at the same time indicating that development of multi-item scales and several other issues need refinement. The second project involves collaborating with a leading social media-marketing organization, and access to their data.

Summary and conclusions

There is no question that marketing has undergone a major transition in the past two decades. Most organizations are no longer solely concerned with the initial/immediate transaction, but, rather, are aware of relationship marketing and the need to focus on the long-term relationship with the customer. One primary tool in this endeavour is the use of CLV as a core metric.

However, advances in technology, and associated changes in consumer behaviour, have led to phenomena that impact the value of a customer, beyond the 'traditional' calculation of CLV based on direct purchases. These phenomena include word-of-mouth, referrals and engagement in a variety of social media. In this paper, we refer to these additional phenomena as 'influences on purchase'.

The paper proposes that we combine the direct purchase/traditional measure of CLV with the influence-on-purchase aspect of a customer's 'value', to arrive at what we call 'CCLV'. We first reviewed the traditional CLV measure,¹⁸ then noted previous work on Customer Referral Value,^{22,23} and illustrated by example how consideration of CRV could impact the relative value of different customers. We then proceeded to introduce social media engagement as a potentially prominent influence on customer value.

We noted distinctions in social media, focusing on information depth and half-life.¹⁶ We next provided an example to illustrate how the combination of engagement in the various social media and the properties of said social media lead to yet an additional component of CCLV, which we label 'CSMV', Customer Social Media Value. Our ultimate measure of CCLV is the sum of traditional (basic) CLV, CRV and the newly introduced CSMV.

Limitations and directions for future research

As is often the case, limitations become synonymous with useful directions for further research. One limitation in this paper is that we have chosen a specific additive model to express how CCLV relates to CLV, CRV and CSMV; this would include the assumption that CSMV is directly proportional to CLV. In addition, as noted earlier, we ignored many potential moderators of the relationship between the properties of different social media and the impact on CSMV. Further, we ignored potential interaction effects between the properties (ie depth and half-life) of the different social media on the impact on CSMV.

CCLV is the sum of traditional CLV, CRV and the newly introduced CSMV

As discussed earlier, further research should be conducted into the measurement of social media engagement. In our example, we used a categorical measure of engagement — simply: low, medium, high. This measurement issue has two parts. One is the precise way in which we measure engagement, and the other is the granularity with which it is measured. That is, research needs to explore what the metrics of engagement should be, and ultimately how these metrics relate to CSMV. Similarly, more research is needed to arrive at more granular measures of the qualities/properties of the different social media. We believe that information depth and half-life are excellent metrics for categorizing different social media; however, determining additional metrics would be useful, and, in any event, work should be done to determine the relevant weights of the different metrics.

Another social media application/vehicle that is not explicitly considered in this research, but that deserves special attention, is *reputation systems*. This is important given the significance of branding and brand reputation/equity to organizations³⁴ and the relatively new power that consumers have in defining a brand and impacting a brand's reputation.^{35,36} when they engage in, or use, social media. Reputation systems are designed with four main objectives in mind:³⁶ building trust (eg eBay), promoting quality reviews/contributions (eg Amazon), facilitating member matching — in essence, helping alike or compatible people find each other (eg Yelp) and sustaining loyalty to minimize attrition (eg Xbox Live). In terms of metrics, websites differ by including or placing varying priority on scores (eg Amazon, eBay), activity (eg number of reviews posted, number of purchases/transactions completed) and user-ranking (eg leaderboard of top reviewers). An area of fruitful research would be to determine the degree to which these different objectives would have different impacts on CSMV.

We end our paper with a discussion of issues that are matters of accounting, and not a matter of the usefulness of CSMV and CCLV. Naturally, we do not want to account for 'value' of any kind (whether CLV, CCLV, or CSMV) in any way that does not allow various calculations to retain their traditional and useful meanings — for example, the summing of the firm's customers' CLVs being the firm's 'Customer Equity (CE)'. This CE number is, of course, potentially prominent in the evaluation of a firm's worth.

First, we consider the simplest case. Suppose it can be identified that prospect B would be influenced by customer A's social media engagement enough so as to be acquired by the firm (thus, becoming *customer B*), and that customer B has a CLV of \$1,000 (net of acquisition cost). Then, we acknowledge that customer B has a CLV of \$1,000, while adding \$1,000 to a different metric, CSMV (and also, as a result, CCLV), for customer A. This seems inherently reasonable, as the extra \$1,000 does exist as a value that belongs to *someone's* CLV, and is relevant to sales, profit and the company's CE. We count the \$1,000 once as CLV, as we should (hence avoiding a double counting of CLV), while noting that customer A is worth \$1,000 more than

his/her direct CLV (ie based on customer A's purchases, cost of retention, etc). If we allocated the 'extra' \$1,000 to A's CLV, then we would have a customer, B, with a zero CLV, and that would not be appropriate for several traditional marketing decision-making processes. The CSMV represents, essentially, a measure of incremental 'amount willing to pay' (to acquire or, depending on the time of the calculation of CLV and CSMV, retain) a customer; we would pay \$1,000 more than customer A's formally defined CLV to acquire customer A; in this example, CSMV is somewhat analogous to the CRV in Kumar, Petersen and Leone.²²

Another accounting-related issue may arise in cases where a prospect (or customer) is influenced to purchase by *more* than one customer. If it is the case that more than one customer's social media engagement was influential in leading prospect B to become customer B (with, say, the same aforementioned \$1,000 CLV), then we would again allocate \$1,000 of CLV to B, while deciding how to divide the \$1,000 of CSMV (and again, correspondingly, of CCLV) among the customers who influenced B. It is not perfectly clear how this should be done.

Suppose that the influencers are customers W, X, Y and Z. It might be reasonable to allocate CSMV equally among the influencers (ie \$250 to each); however, that is likely too simplistic. First of all, even if the effect of the influence can be assumed to be additive, it well might not be valid to assign an equal share to each influencer. In fact, the influence might easily be non-additive, but *interactive*. For example, it could be the case that with only one influencer, B would not have become a customer. Indeed, suppose that (at least) two of the four social media engagement influences were needed for prospect B to convert to customer B. However, further suppose that with only two influencers, instead of the four actual influencers, B's CLV would not have been \$1,000, but, rather, a lesser value. For example, it could be the case that B's CLV would be (1) \$500 when influenced (only) by W and X, (2) \$700 when influenced (only) by Y and Z and, (3) \$1,000 when influenced by all four influential customers. Note that there is an interaction effect: the CLV of \$1,000 is not \$1,200, the sum of \$500 when influenced only by W and X, plus \$700 when influenced only by Y and Z.

Therefore, how do we allocate the \$1,000 of CSMV given the above scenario? If there were only one influencer, B's CLV would be ZERO (he/she would not have been acquired); each group of two influencers leads to different CLV values, and if you add up B's CLV's generated by the combinations of (W, X) & (Y, Z), or other combinations of two influencers at a time, a total of \$1,000 is not obtained. It is not clear how to allocate the \$1,000 among the CSMV's. There has been some analogous work in this area; for example, (during litigation) allocating blame for incidence of a disease among two causes, when each cause alone has a probability of leading to incidence of the disease, but when both causes are operating, the probability of incidence of the disease is not the sum of the two individual probabilities. We leave this arena of enquiry for future research.

There is a further need to discuss an accounting — more precisely, ‘double counting’ — issue that is in the spirit of double-entry bookkeeping. Note that for every amount of CSMV that is associated with additional CLV, CCLV accounts for that amount twice: once in the CSMV of the *influencer*, and, once in the CLV of the *‘influencee’*. This accounting issue, as we indicated above, does not affect the consideration of the amount that one would be willing to pay for a customer who does indeed influence others (ie has $CSMV > 0$). However, one might have concern when considering CCLV for all customers. We agree that the sum of all customers’ CCLV is greater than the sum of all customers’ CLV (assuming that $CSMV > 0$ for at least one customer). Nevertheless, we do not believe that this impacts the significance and utilization of CSMV and CCLV; and, we are not suggesting that CCLV should replace CLV when it comes to determining a firm’s CE. CCLV will appropriately prioritize customers by their overall value to the firm.

As a final accounting issue, we note that, right from the beginning,^{18,37} discussion and calculation of CLV has always accounted for the non-retention of all customers every year and that there is constant flux among the customer base. Correspondingly, at any point in time, we would apply our consideration of CSMV and CCLV to the evaluation only of current customers and prospects.

Social media is still relatively new. Organizations have begun to explore and experiment with social media; and, in some cases, firms have advanced to the point of integrating it into selected elements of their current marketing systems (eg customer service). However, we see that many organizations are understandably uncertain of how to analyse or utilize data generated by social media. Marketing managers want to transition beyond simply monitoring and collecting social media data; they are seeking guidance on effective principles and mechanisms for analysing and leveraging these data in an impactful way. We believe that this paper contributes to that process.

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