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A MULTI-STAGE MODEL OF WORD OF MOUTH THROUGH ELECTRONIC REFERRALS

With the growth and evolution of the internet, electronic peer-to-peer referrals have become an important phenomenon, and marketers have tried to harvest their potential through electronic referral marketing (ERM) campaigns. At the same time, spam, email-based viruses and the like have cluttered electronic communications, making ERM campaigns problematic and challenging to deploy. The key driver in ERM is the effectiveness of unsolicited, electronic referrals to create awareness, trigger interest and generate sales or adoption. Yet, despite an abundant literature, little is known about *how* this electronic, or, indeed, any word of mouth process influences consumers' behaviors offline, much less in a cluttered online environment. In this paper, we propose a model to help identify the role word of mouth plays during each stage of an electronic-referral recipients' decision-making process. We then present an innovative methodology to feed the model with data collected unobtrusively and in real time. We empirically test the model and methodology via a field study, where we observed the reactions of 1,100 recipients after they received an unsolicited email referral from one of their acquaintances. We found that characteristics of the social tie influenced recipients' behaviors, but had different effects at different stages: tie strength exclusively facilitated awareness, perceptual affinity triggered recipients' interest, and demographic similarity had a negative influence on each stage of the decision-making process. We conclude with a discussion of the theoretical and methodological contributions of our work and of managerial implications of these findings for online marketers interested in strategies for leveraging peer-to-peer referral networks.

INTRODUCTION

The internet dramatically facilitates consumer interconnections. Email referrals, online forums of users and newsgroups, as well as customer reviews encouraged by merchant websites allow consumers to “spread the word” and share information far more easily than ever before. This interconnectivity is a global phenomenon that facilitates the dissemination of negative word of mouth (Shankara et al. 2003, p.160), dissemination that cannot be easily controlled by marketers and brand managers. In addition, it challenges the existence of geographical markets, and hence the ability to conduct local marketing strategies.

However, marketers have also noted the customer-leveraging possibilities the internet offers (Brodin 2000), among which electronic referral marketing (ERM) is one of the most intriguing (although ERM is often referred to as "viral marketing" in the literature, we avoid this term due to its negative connotation). The goal of ERM is to use consumer-to-consumer (or peer-to-peer) communications, as opposed to company-to-consumer communications, to disseminate information about a product or service, hence leading to its rapid and cost effective market adoption (Krishnamurthy 2001).

Message dissemination can either be intentional or unintentional. In the latter situation, consumers are not intentionally-active actors in the marketing-message dissemination process. A common example of unintentional dissemination involves Hotmail, where each outgoing email sent via this free Web-based service contains a line promoting the company (i.e., “Get Your Private, Free Email at <http://www.hotmail.com>”). Hence, users sending emails from a Hotmail account automatically promote the service to every person they send a message to.

The most common, intentional version of ERM occurs when consumers willingly become promoters of a product or service and spread the word to their friends, driven to do so either via an explicit incentive (e.g., financial incentives, need to create network externalities) or simply to share the product benefits with friends (e.g., fun, intriguing, valuable for others). As an example, PayPal, by providing financial incentive to have members recommend members, acquired more than three million users in its first nine months of operation. Table 1 reports several other examples of successful ERM campaigns.

{ Insert Table 1 Here }

The ERM concept suggests that marketers can leverage the power of interpersonal networks to promote a product or service. The concept assumes that electronic, peer-to-peer communications are an effective means to transform (electronic) communication networks into influence networks, capturing recipients' attention, triggering interest, and eventually leading to adoption or sales. Yet it is difficult to identify substantial evidence to support these assumptions or to explain why and how it works, which is perhaps why ERM is currently viewed as more of an art than a science (Diorio 2001).

Emails are here to stay, and there is no doubt that peer-to-peer, email-based communications will continue to play an informational and influential role on recipients' behavior. The proliferation of spam (i.e., unsolicited bulk emails) and email-based electronic viruses, however, have made most unsolicited emails suspicious. Consumers experience a high level of noise in their day-to-day electronic communications, and for ERM campaigns to be designed more effectively, there is a need to better understand which online referrals are likely to cut through the clutter, and which are not.

To better understand why and how ERM can be effective, we must understand its pass-along process and its underlying mechanisms of influence. While the existing word-of-mouth (hereafter WOM) literature can inform us, electronic referrals differ from their “offline” counterparts in two significant ways:

1. They are electronic by nature; there is no face-to-face communication.
2. Those referrals are usually unsolicited, that is, they are sent to recipients who are not looking for information, and hence who are not a priori willing to pay attention to them.

For reasons we will review later, and despite an abundant literature, little attention has been given to *unsolicited* WOM communications of any sort, much less electronic ones. In addition, researchers who have addressed that issue have usually been limited in their ability to collect complete, detailed and accurate information. Largely as a consequence of the lack of such data, the mechanisms by which WOM communications influence behaviors are not well understood. We concur with Bansal and Voyer (2000) that “...there is surprisingly little empirical research that examines [WOM] ‘procedural’ aspects” (p.166). And the advent of the ERM phenomenon underscores the importance of developing both methods to study and substantive findings about this phenomenon. Hence, our goals in this paper are threefold:

1. To introduce multi-stage decision-making models as means to study and refine our understanding of unsolicited, electronic referrals.
2. To describe a research methodology we used to feed the above model with data collected unobtrusively and in real time.
3. To illustrate the above model and methodology with a field study, and to compare our results to those from traditional one-stage models. The specific application chosen to

illustrate this approach is how characteristics of the source moderate the effectiveness of the online referrals.

We proceed as follows. In the next section, we present a brief overview of the WOM literature and examine why so little is known about how unsolicited WOM communications influence consumers' decision. We then propose a model and a series of hypotheses based on a multi-stage framework to help decompose and predict the level and antecedents of WOM influences in each stage of recipients' decision-making processes. Next we introduce a research methodology to study the influence of WOM referrals at each stage of the decision process, and present the results of a field study in which we tracked the actual influence of email-based, unsolicited peer-to-peer referrals; an example of ERM. We find that the antecedents of WOM influence (e.g., tie strength, demographic similarity, etc.) vary significantly and predictably across stages, thus enriching our understanding of the mechanisms of influence, and demonstrating the value of this new methodology for future research. We conclude with discussions of the theoretical, methodological and managerial significance of this work.

THE LITERATURE ON HOW WORD OF MOUTH (WOM) WORKS

Word-of-mouth communications have received extensive attention from both academics and practitioners for decades. Since the early 1950s, researchers have demonstrated that personal conversations and informal exchange of information among acquaintances could not only influence consumers' choices and purchase decisions (Arndt, 1967, Whyte, 1954), but could also shape consumers' expectations (Zeithaml and Bitner 1996), pre-usage attitudes (Herr et al. 1991), and even post-usage perceptions of a product or service (Bone 1995; Burzynski and Bayer 1977). WOM research has reported its influence as greater than print ads, personal selling and radio advertising (Engel et al. 1969; Feldman and Spencer 1965; Katz and Lazarsfeld 1955),

although Van den Bulte and Lilien (2001a) show that some of those effects may have been overstated.

A considerable amount of research has been directed at better understanding the antecedents and consequences of WOM. The existing literature can be classified into three streams of research. The first category focuses on the reasons why consumers proactively spread the word about products and services they have experienced. That research reports that factors such as extreme satisfaction or dissatisfaction (Dichter 1966; Richins 1983; Yale 1987), commitment to the firm (Dick and Basu 1994) and novelty of the product (Bone 1992) drive such behaviors.

The second stream of research aims at better understanding information seeking behaviors, or, more specifically, under what circumstances consumers rely on WOM communications more than on other sources of information to make a purchase decision. Consumers with little expertise in a product category (Furse et al. 1984; Gilly et al. 1998), who perceive a high risk in decision-making (Bansal and Voyer 2000; Kiel and Layton 1981), or are deeply involved in the purchase decision (Beatty and Smith 1987) are more prone to seek the opinions of others for product advice.

The third stream of research studies why certain personal sources of information have more influence than others. Factors such as source expertise (Bansal and Voyer 2000; Gilly et al. 1998), tie strength (Brown and Reingen 1987; Frenzen and Nakamoto 1993), demographic similarity (Brown and Reingen 1987) and perceptual affinity (Gilly et al. 1998) have been identified as important antecedents of WOM influence.

Despite this rich literature, we actually know very little about the ways WOM communications influence consumers' choices for four reasons. First, as Bristor (1990) notes,

much research is biased toward successful WOM communications, that is, it exclusively reports on communications that have actually influenced the decision maker (see for instance Brown and Reingen, 1987).

Second, many studies focus only on recipients who were actively seeking information, i.e., who were interested in the product category in question a priori and were actively seeking to be influenced in their decisions. While these studies are useful to better understand information seeking behavior and the flow of influence that spreads through social networks, their design precludes them from explaining why some WOM communications have little or no influence.

Third, in most research, data collection takes place retrospectively, sometimes long (months or years in some cases) after the communications have occurred. Such retrospective data is subject to erroneous recollection of facts, post-interpretation, and hindsight-bias.

Finally most surveys only measure the final outcome of WOM communications (e.g., recipients either bought the product or not); this single measure which ignores intermediate stages, is insufficient to determine *how* WOM communications affect purchase decisions.

A MULTI-STAGE MODEL OF WOM INFLUENCE

In this section, we first review multi-stage models as mechanisms to understand the consumer decision-making process. We then integrate WOM into the model, and introduce hypotheses about how WOM influences each stage of the decision-making process and what antecedents (e.g., characteristics of the source) moderate such influence.

WOM influence and the stages of the decision-making process

It has long been argued that a consumer's purchase decision should be viewed as the outcome of a complex, multi-stage process (Bettman 1979), stages that are conceptually distinct although not necessarily observable. The multi-stage decision-making model consists of a

sequence of mental stages or levels consumers experience throughout a purchase decision, where purchase represents the final stage.

The decision to purchase a good or service or to adopt an innovation, for instance, can be viewed as the end result of a sequence of actions and intermediary decisions, a sequence that typically includes the following steps:

Awareness. The consumer knows the alternative exists, but may have neither interest in it nor enough information to understand its possible benefits.

Interest. The consumer is aware, develops some interest and hence decides to learn more about the product.

Evaluation. The consumer has sufficient evidence that the product addresses his needs, has substantial benefits, and might consider its acquisition, but has not reached a final decision yet; he is further assessing the appeal of the product.

Final Decision. The consumer has now taken an observable action, a purchase of a good or service or the sustained adoption of an innovation.

Note that this process is hierarchical in the sense that each step is conditional on the positive or favorable outcome of the previous one. The original sequence proposed by Rogers (1962) included a trial stage that may not be relevant in all contexts. Other variations of this sequence combine some of the above stages into fewer steps (for illustrations see Hauser and Urban 1977; Rogers 1995). For instance, if a consumer becomes aware through exposure to a very persuasive source (e.g., a very effective ad or an enthusiastic peer), awareness and interest could occur concurrently (Van den Bulte and Lilien 2001b). Alternatively, interest and

evaluation might be combined. However, most models cover the above four-stage decision-making framework in one form or another.

We now consider how WOM communications might influence each stage of such a process, i.e., how to identify and measure WOM influence and its antecedents (e.g., tie strength, demographic similarity) during the *awareness*, *interest*, *evaluation* and *final decision* stages of the consumer decision process.

One approach is to posit that WOM communications only influence awareness. Once aware, the recipient eventually develops interest in the product, gathers additional information to form a more informed opinion about the product's benefits, and makes a final decision. In this approach the nature or characteristics of the informing source would have no further influence beyond generating awareness. This simple conceptualization, however, conflicts with findings that WOM plays a role not only in the flow of information but also in the flow of influence (Lin 1971; Weimann 1983).

We rather posit that each transitional probability (i.e., probability of becoming aware, and probability of going from awareness to interest, from interest to evaluation, and from evaluation to the final decision) may be influenced by source characteristics. Specifically, we hypothesize that certain characteristics play a greater role in early stages, while others have more influence later, as represented in figure 1, reflecting both the flow of influence and our hypotheses.

{ **Insert Figure 1** }

Hypotheses

Tie Strength. The strength of an interpersonal tie is “a (probably linear) combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and the reciprocal services that characterizes the tie” (Granovetter 1973, p.1361; see also Burt 1982; Weimann

1983). Tie strength has been found to be one of the most significant factors to explain the influence of WOM communications. Rogers argues that strong-tie sources are perceived as more credible (Rogers 1983). Brown and Reingen (1987) showed that strong-tie sources were perceived as more influential (although their conclusions were based on retrospective data exclusively collected on successful referrals, which might have limited the scope of their results.) It is natural to hypothesize that the stronger the tie, the more likely the source is to capture recipient's attention. Therefore, we posit that tie strength will positively influence likelihood of awareness.

H₁ The stronger the tie, the more likely WOM communications will generate awareness.

Beyond H₁, however, the existing literature provides little evidence of possible further influences of tie strength alone on recipients' decision.

Perceptual Affinity. Brown and Reingen (1987) recommend incorporating measures of attitudinal/lifestyle similarity between the source and the target to study WOM communications. Following this suggestion, we consider the role of perceptual affinity (cf. "perceptual homophily", Gilly et al. 1998; Wolfinbarger and Gilly 1993), a construct related to but conceptually distinct from tie strength. Perceptual affinity is defined as a person's similarity of values, likes, dislikes and experience with those of another person. In the context of a multi-stage decision-making process, a WOM communication originating from a source with similar likes and dislikes will likely generate more interest; the fact that the source and the recipient have similar tastes should serve as a cue for the latter that the product or service in question might also be of interest to the former, leading to H₂:

H₂ The higher the perceptual affinity between the source and the recipient, the more likely WOM communications will generate interest.

*Demographic Similarity*¹. Demographic similarity between sources and targets has been found to be highly significant in past research to explain the occurrence and influence of WOM communications. However, the literature reports ambiguous findings about the sign of such effects.

A common finding of social network theory is that demographic similarity facilitates the flow of information. People who are alike tend to interact more often and communicate more easily; an observation known as the “like-me” principle (Laumann 1966). WOM communications are more likely to occur between people who are similar in terms of age, sex and social status (Brown and Reingen 1987). For instance, in their search for a physician, couples with children were found to be more influenced by WOM referrals from other couples with similar demographic characteristics than from sources with different demographic characteristics (Feldman and Spencer 1965).

Under certain circumstances, however, individuals might favor the advice of others outside their immediate social circle (i.e., “unlike-me”), and find them more influential, because such sources open recipients to a broader spectrum of information and experience. This is consistent with Granovetter’s “strength of weak ties” theory (1973). In such instances (where perhaps the receiver feels his or her peers as a group are not particularly knowledgeable about the domain), sources with demographic profiles that differ from those of the recipients may be perceived to have greater or at least complementary experience, knowledge and more seasoned

¹ We adopt the terminology “similarity” -observable characteristics- as opposed to a term often used in the literature called “homophily” -an effect that results from such similarity- throughout.

points of view; here, these differences are likely to convey more salient information, and thus be more influential. For example, college female students were found more likely to be influenced by male, older, more educated sources when envisaging the purchase of a VCR than they were if the source was another female college student (Gilly et al. 1998). This finding hold even after taking into account perceived expertise of the source on the topic.

These seemingly contradictory findings have been partly reconciled by Ferrand et al. (1999), who studied the structure of social relations in France. They found that friendship ties share the most demographic similarity, while mutual aid relations were the most demographically dissimilar.

Translated into WOM communications context, this suggests that sources with similar demographic characteristics will be more influential in situations where a high degree of trust, confidence and intimacy is required (e.g., to choose a personal physician):

H_{3A} When WOM communications relate to ‘personal’ products or services, the more demographically *similar* the tie, the higher the likelihood of awareness, interest, evaluation and final decision.

However, when WOM communications relate to impersonal products or services, that is, when the situation involves objective/factual issues (e.g., to choose a VCR), certain sources are likely to have more influence than others due to their higher perceived authority or superior social status, such as those being older, more affluent or may be more educated. Thus, the effects of demographic dissimilarity may not be symmetrical (e.g., older sources might have more influence than younger ones), even though this asymmetry has not been explicitly discussed in the WOM literature.

Demographic dissimilarity might not only affect the influence of a WOM communication, but also its occurrence: more-influential individuals are more likely to spread the word to less-influential individuals. For instance, a professor is more likely to spread the word to her students about an article on the Web than the other way around.

If we combine the positive asymmetric incidence effect with our posited asymmetry of direction, then overall relationship we observe between demographic dissimilarity and degree of influence is likely to be positive:

H_{3B} When WOM communications relate to ‘impersonal’ products or services, the more demographically *dissimilar* the tie, the higher the likelihood of awareness, interest, evaluation and final decision.

Source Expertise. The role of experts in the flow of information and influence through social networks has been one of the most widely investigated aspects of WOM communications. Consumers are more inclined to seek the advice and be influenced in their decisions by expert sources than by non-expert ones (see for instance Bansal and Voyer 2000; Gilly et al. 1998). We posit three types of influences. First, the expertise of the source might serve as a cue to the recipient that the product or service in question is of value, and might therefore generate more interest. Hence, we posit:

H₄ The higher the perceived expertise of the source, the more likely the WOM communication will generate interest.

Furthermore, especially when benefits of a product or service are not immediately observable, or are intangible, recipients of the WOM communication will rely on the expert opinion of the source for evaluation and purchase (Rogers 1995). Consequently, we posit that:

H₅ The higher the perceived expertise of the source, the more likely the product or service will be positively evaluated.

H₆ The higher the perceived expertise of the source, the more likely the product or service will be eventually purchased or adopted.

Figure 1 summarizes the model and the hypothesized influences. We next present a field study in which we empirically test these hypotheses.

RESEARCH DESIGN

Methodological considerations

To empirically assess the influence of electronic referrals at different stages of consumers' decisions, we seek a research design that meets the following criteria:

C1. Multi-stage observability.

Subjects' behaviors should be observable at each stage of the decision process; observing only the final outcome is not sufficient.

C2. Exhaustive.

Electronic referrals with little or no influence (i.e., that fail prior to the final decision) should be observable and included.

C3. Unsolicited.

Referrals should be *unsolicited*, that is, sent to recipients who were not specifically looking for information. If this were not the case, the validity of our hypotheses about the *awareness* and *interest* stages would be questionable.

C4. Real time.

Data should be collected as behaviors occur to eliminate incomplete data and recall bias.

C5. Realistic context. The context should be realistic enough to permit the results to be translated into managerially relevant insights.

C6. Unobtrusive and unbiased.

The research should be executed in a manner that neither influences behaviors nor biases observations.

In retrospective surveys, researchers can ask participants to remember unsolicited referrals (C3), including those that did not lead to the adoption of the product or service (C2). Surveys that rely on retrospective data, however, are subject to erroneous recollection and possible hindsight bias, violating criteria C4 and C6. Besides, trying to collect retrospective data consistent with C1 would be challenging.

Although a lab experiment offers many advantages, the controlled setting can make extrapolation of the results and the translation of those findings into managerially relevant insights difficult, thus compromising the realistic context criteria (C5). In addition, certain stages are difficult to satisfactorily replicate in a lab setting (e.g., awareness), thus leading to potentially biased observations and violation of C6.

An internet based field study satisfies the conditions above. Due to the available technology and the electronic nature of the communications, we can conduct field studies (C5) in which we observe, unobtrusively (C6) and in real-time (C4), the actual influence of email-based, unsolicited (C3) WOM communications at different stages of recipients' decision-making process (C1), including referrals with little or no influence (C2). Hence, we selected such a methodology for our research. We adapted Stanley Milgram's "small world methodology" (1967) to the context of the internet, and developed a field study to assess the influence of unsolicited electronic referrals at different stages of a decision to participate in a survey that generated the antecedents of that behavior.

Study Design

The purported purpose of the study stated to the participants was to replicate Milgram's small world experiment (Milgram 1967; Travers and Milgram 1969). We gave participants the identity of a target person, and invited them to send an email-based referral to one of their acquaintances to participate in the study, who would in turn refer the study to another person, and so on, until the target person was reached.

The procedure was as follows. Participants received an email from one of their acquaintances and suggesting that they participate in an online survey. The email contained a brief description of the study, a personalized message written by the sender, and a link that redirected the visitor to a website dedicated to the study. We rewarded participation with a chance to win a \$1,000 cash prize. We designed the link to the experiment's website contained in the email to be unique to each participant and, hence, we were able to automatically and unobtrusively identify those who clicked on the link and visited the website. In addition, when a recipient opened the email, that action triggered a message to our Web server, a technique commonly used by online marketers to identify which emails have been actually opened.

Once on the website, visitors received more detailed information about the study (research goal, privacy policy, informed consent form, etc.), and were invited to continue the chain of emails and answer a few additional questions. Only if they agreed to participate were they informed of the identity of the target person (an international student in a southern US university). They were then invited "to send a message to a personal acquaintance of yours who is more likely than you to know the target person." We then requested the name and email address of their "next link" along with other information.

To help analyze the influence of online referrals (and not merely the influence of forwarded emails), we invited participants to write a personalized message to be sent to the recipient along with the invitation. This message was clearly highlighted in the outgoing emails and identified as originating from the sender, thus enhancing the personal nature of the electronic communication. The following message appeared by default in the box:

Hello: I've just participated in a study conducted by researchers at [name of a northeastern US university]. They are studying the 'small world' phenomenon and are trying to link two strangers through a chain of acquaintances via emails. I'm inviting you to be my 'next link'. Would you agree to participate and to continue the chain, like I did? If you participate you can win a \$1,000 cash prize. It takes only 5 minutes to complete. Check it out, maybe it will be of some interest to you! Best regards, [name of the participant].

Participants were free to erase, modify, or keep the message unchanged. For reasons pertaining to participants' privacy, we did not record the actual messages sent. However, data collected during a pilot study showed that the vast majority of participants do not modify the message by default, thus assuring homogeneity of the outgoing messages.

Once all information had been entered (recipient's name and email, personalized message), the website would then send an email on behalf of the participant, with the name of the participant appearing in the "From:" field, and the chain of emails would continue.

After receiving confirmation that the email had been sent, participants were asked to answer a few questions about the acquaintance they had chosen to be their "next link" (the questions were personalized with the next link's name) and about themselves. The survey included 6 additional web pages, containing 40 items, 18 of which were used for the purpose of this study (we retained those questionnaire items that corresponded to existing theory, and excluded some others that were collected for other exploratory work.) Fifteen items were related

to the relationship the sender had with his or her next link: the nature of the relationship, demographic similarity, strength of the social tie, and similarity in likes and dislikes. The last 3 items measured the sender's self-reported internet-related expertise.

After completing the survey, participants were asked to enter additional personal information for the purpose of the cash prize drawing, and were also invited to "spread the word" to more persons and initiate more chains. If they did volunteer other names, we asked no additional questions (as we determined that asking these many additional questions per pass-on would have severely lowered the response rate) and we excluded these additional invitations, representing 35.7% of the emails sent by participants, from the data analysis.

We seeded the experiment by inviting 4,500 business students from a large northeastern US university, 634 of whom agreed to participate and initiate a chain of emails (a 14% response rate.) After eight weeks, 2,198 emails had been sent by 1,414 participants, with an average response rate (completed survey) of 25.8%. The target person was never reached.

ANALYSIS

Dataset

After data cleaning and exclusion of incomplete surveys, we were able to retain 1,116 responses for analysis. The measured constructs are as follows (see appendix for verbatim):

TIE STRENGTH was measured by a 5-item version (Cronbach's $\alpha=.93$) of the scale developed by Frenzen and Davis (1990).

PERCEPTUAL AFFINITY was measured using a 4-item version ($\alpha=.87$) of the scale from Gilly et al. (1998).

DEMOGRAPHIC SIMILARITY between the sender and the recipient included 4 dimensions: sex, level of education, age and occupation (since this is a formative scale, we report no

coefficient alpha.) Items were then transformed to a 0 to 1 continuum, where 0 represented complete dissimilarity (e.g., “male-female”, “not at all similar occupation”), and 1 complete similarity (e.g., “male-male”, “extremely similar occupation”).

SOURCE EXPERTISE (in this particular context, internet-related expertise) was measured by 3 items ($\alpha=.81$).

Multi-stage response analysis

Each completed survey was associated with an outgoing electronic referral sent to one of the participants’ acquaintances, whose action at different stages of the study we were able to observe. Specifically we observed whether or not the recipient (1) opened the email, (2) clicked on the link to visit the website, (3) began to answer the survey, and (4) completed the survey.

The above steps are good proxies of the recipients’ *awareness, interest, evaluation* and *final decision* stages of their decision process to complete the survey, following their initial unawareness stage as follows:

Unaware. Recipients receive an email from one of their acquaintances, but have not read it yet and are not aware of its content (the email’s subject was deliberately vague, i.e., “Check it out that might be of interest to you.”)

Awareness. At this stage, recipients open the email and read its content. Hence, they become aware of the existence of the study. Interviews with selected participants confirmed that the amount of information contained in the invitation was sufficient to give a general idea of what the study was all about, but was (consistent with our design goals) vague in terms of exactly what was expected from participants, and how much time and effort it would take.

- Interest.* Recipients' decision to visit the website shows that the referral successfully generated interest.
- Evaluation.* At this stage, participants go to the first question of the survey and might consider participating, but their final decision is yet uncertain. Feedback from participants showed that several important survey characteristics could not be assessed without reading a few questions first (e.g., clarity and simplicity of the questions, progress bar showing the actual length of the survey, etc.). About 25% of visitors who began the survey did not complete it, demonstrating that going to the first question was not sufficient to infer that a final, committed decision to participate had been reached.
- Final decision.* Participants fully participate in the study and complete the entire survey.

Figure 2 provides an overview of the process.

{ Insert Figure 2 Here }

The observable actions of the recipients appear to mimic fairly well the steps of the stylized decision-making process depicted in the literature, at least in the context of this study.

We fit a different Logit model to the observations made at each step. In addition, in order to compare our multi-stage model to the classic, single-stage model benchmark usually reported in the literature (where only the final decision is observed), we fit a fifth model that directly links the reception of the email to the completion of the survey.

RESULTS

Table 2 gives the results of all five models, reporting the parameter estimates of the Logit models. The independent variables are the four constructs discussed earlier (unweighted average

of their corresponding items), mean-centered and standardized across the population, plus an intercept. Dependent variables are dichotomous (e.g., in the first model, the dependent variable equals 1 if the respondent opened the e-mail and 0 otherwise.)

{ Insert Table 2 Here }

Since the experiment was designed as a funnel of 4 successive decisions (e.g., only those who opened the email could click on the link and go to the website, etc.), we fit each model on a diminishing number of observations. This multi-stage analysis is similar to and has the same desirable statistical properties as a “continuation-ratio Logit” analysis, ensuring the statistical independence of estimates across stages (Agresti 1990, pp.319-20). To fit four individual models is therefore equivalent to fit one system of four equations, and we retain the first for simplicity.

Note that observations dropping out at each stage are not random, but are the outcome of respondents' self-selection. While this self-selection is the focus of this study, and hence should not be labeled as a "bias", it might appear to raise statistical concerns; however, parameter estimates for our model structure have been shown to be unaffected by changes in the marginal distributions of the variables (Bishop et al. 1975, cf. Mare 1980).

Hypothesis tests

TIE STRENGTH (H_1). H_1 is supported ($p < .05$). TIE STRENGTH significantly influenced the decision of the recipient to open the email he or she received, hence facilitating awareness, as hypothesized. No other parameters for TIE STRENGTH were found statistically significant in the other models.

PERCEPTUAL AFFINITY (H_2). Once the recipient opened the email, PERCEPTUAL AFFINITY between the sender and the recipient increased the chance that the latter would click on the link and visit the website, strongly supporting H_2 ($p < .01$). Thus, referrals from sources with similar

tastes and preferences are more likely to generate interest. We found no other parameter estimates for PERCEPTUAL AFFINITY to be significant in the other models.

DEMOGRAPHIC SIMILARITY (H_3). In this study, online referrals invite recipients to participate in an online survey. We do not expect that a high degree of trust, confidence and intimacy is required in this context for the referrals to be influential. It is therefore likely that, in this particular context, hypothesis H_{3B} is appropriate: DEMOGRAPHIC SIMILARITY should *decrease* the influence of online referrals. DEMOGRAPHIC SIMILARITY is indeed the only dimension that had a significant impact in each of the 4 models. All parameters are negative and significant, hence strongly supporting H_{3B} . Electronic referrals from demographically dissimilar ties had more influence than referrals from demographically similar ones at each stage of the decision-making process.

SOURCE EXPERTISE (H_4 , H_5 , H_6). Although it might be specific to the nature of the measurements (i.e., sender's self-reported expertise, as opposed to recipient's perception of that expertise) or to the context in question, the SOURCE EXPERTISE of the sender did not seem to bear any direct influence on recipients' actions; H_4 , H_5 and H_6 are therefore rejected.

Comparison with one-stage results

Comparing the results of the observations above with results of our estimation of the one-stage model (usually reported in the WOM literature) provides some striking contrasts. In the one-stage model only one parameter is significant (other than the intercept): DEMOGRAPHIC SIMILARITY.

It is useful to compare the different conclusions we would have drawn if we could only observe the final outcome of the electronic referral. First, PERCEPTUAL AFFINITY, which influences only one stage, loses statistical significance once amalgamated into a single-stage

model. Although its parameter estimate is positive in the fifth model, it does not achieve statistical significance ($p=.13$).

Second, the role of TIE STRENGTH would have been overlooked; its influence would not have been identified, even directionally ($p=.79$ in the fifth model).

Finally, a multi-stage model offers additional insights since the stages at which each factor influences recipients' decisions can be identified. These differences are summarized in Table 3.

{ Insert Table 3 Here }

This comparison highlights the importance of studying electronic referrals' influence within a multi-stage decision-making framework, and the additional insights both researchers and practitioners can gain from such a perspective.

Full models with all possible two-way interactions

For completeness, we report the five models with all possible two-way interactions.

{ Insert Table 4 Here }

The only interaction significant at $p<.05$ is PERCEPTUAL AFFINITY \times DEMOGRAPHIC SIMILARITY in the second model (from awareness to interest). This finding is consistent with Feldman and Spencer (1965, cf. Gilly et al. 1998 p.86), who note that “homophilous [i.e., demographically similar] individuals are more likely to have similar product needs and wants than heterophilous [i.e., demographically dissimilar] individuals, resulting in the most personally relevant product information”. In other words, resemblances in terms of age, sex and occupation, when they signal similarities in likes, dislikes and values, might reinforce recipients' cues that the product or service in question could be of interest to them. Demographic similarities hence reinforce the influence of perceptual similarities (see H₂) to trigger recipients' interest.

DISCUSSION AND CONCLUSIONS

Theoretical and methodological contributions

We developed a model to study the influence of unsolicited, electronic referrals within a multi-stage decision-making framework, and hypothesized that the antecedents of WOM's influence varied across stages.

Our innovative research methodology fed the model with data, and illustrated the above model and methodology with a field study. Specifically, we observed the reactions of 1,100 recipients after they received an unsolicited email invitation from one of their acquaintances to participate in a survey. Our internet-based design permitted us to track recipients' reactions at each stage of their decision-making process, unobtrusively and in real time. The internet also allowed us to observe and include referrals that had no influence, that is, that did not lead to the completion of the survey, a marked contrast with WOM studies using traditional methodologies.

An application of this methodology showed how our multi-stage framework helps deepen our understanding of how source characteristics moderate the influence of online referrals. We hypothesized and found supporting evidence that tie strength only facilitated awareness, perceptual affinity triggered recipients' interest, and demographically dissimilar ties were more influential than demographically similar ones across stages. These results are markedly richer compared to those from traditional, one-stage models (where only the final outcome of the WOM communication is measured) as evidenced by our benchmark one-stage model, where demographic similarity was the only parameter found statistically significant. Indeed, a theoretical contribution of our work may be to call into question prior findings on more aggregated models of social influence, where more limited measurement and research frameworks may either mask or overstate theoretical findings (Van den Bulte and Lilien 2001b).

Managerial implications

In light of our findings, it should not be surprising that those online marketers who tried to implement “send-to-a-friend” and “viral marketing” campaigns have faced considerable challenges. While close relationships can be effective in capturing recipients’ attention and creating awareness (e.g., to drive traffic to a website), they had no influence in later stages; indeed, online visitors who were driven to the website because they were close friends of the source were no more likely than others to complete the survey. On the other hand, expert recommenders did not seem to have influence on the final decision stage.

Hence, our work suggests to online marketers looking to design an ERM campaign that not all social networks are equally effective in harnessing the potential of peer-to-peer referrals. Given the importance of tie strength and perceptual affinity to generate awareness and trigger interest, it seems that networks of friends (as opposed to networks of professionals or colleagues) are more suited to the rapid and effective diffusion of peer-to-peer online referrals. Attempts to initiate ERM mechanisms in the absence of close relationships among the actors of a network might be doomed to fail. Notice that all the success stories reported in Table 1 have harvested personal (as opposed to professional) networks of acquaintances, hence providing indirect support for our conclusions.

Limitations

Since recipients’ participation was the focus of this study, independent variables included in the models had to be collected without recipients’ participation: only source-side measures could be gathered. Hence a limitation of our research involves the omission of recipient-side relevant independent variables (such as recipients’ interest in the subject, how the recipient

perceived the source as an expert, and the like), a by product of our unobtrusive measurement strategy.

Second, the results of our study might be specific to the task under analysis here. While we framed this work as including a final “adoption” decision, that adoption represented only a decision to participate in an online survey, a low-risk, low-effort activity.

Third, some of our findings might not generalize to other contexts; for instance, while we found the influence of the source expertise not significant, it could be much more critical in other contexts. We also found tie strength only to facilitate awareness, while its role could be more central in the flow of influence for other products or services. Hence, there is clearly a need to validate and qualify these findings in other contexts.

Also, the instrument we adapted to measure demographic similarity should be refined. Demographic *similarity* might reinforce interpersonal trust, while at the same time demographic *dissimilarity* could be a surrogate measure of perceived authority and social power – both factors susceptible to increase the influence of the WOM communication. The contradictory findings reported in the WOM literature about the role of demographic similarity might be the consequence of such a confounding, and warrants future research.

Finally, ERM is a new phenomenon that keeps evolving in a dynamic marketplace, and to which both firms and consumers are still adapting; its long-term role in the marketing mix is unclear: will the dissemination of a marketing message through “send-to-a-friend” programs will remain effective over time? In other words, the same study conducted several years hence in a more mature market and with more accustomed users, might report different results. How consumers adapt their behaviors to marketers’ attempts to leverage their personal networks of acquaintances warrants further research, as well.

Future Research

The study reported here is an illustration of the valuable insights that can be gained from multi-stage models to better understand the mechanisms of influence of WOM communications. Our goal is not to draw generalizations from a single study, but rather to illustrate the fact that the multi-stage decision-making model, usually considered as a useful “conceptual” framework or a mental model of how consumers make decisions, can now be operationalized and fed with real-life data thanks to today’s technologies.

More importantly, this paper opens the way to further experiments and manipulations. For instance, one might use the methodology we presented to investigate the best incentives to trigger “send-to-a-friend” behaviors, and to study the stages most affected by the nature of these incentives. Researchers interested in brand equity might also find value in this methodology to study whether or not old and reputable companies are more likely to effectively leverage their consumers’ personal networks, or if new, less-known firms are equally capable of triggering such behaviors; and what are the stages most likely affected by superior brand equity. For instance, does the value of a respectable brand lie more in its ability to generate interest more easily, or can it also increase the likelihood of final decision? Also, Bearden (1989) has suggested that some people are more susceptible to interpersonal influence than others, although this trait has not always been found to be significant (Bone 1995). If studied through the lens of multi-stage models, we might find that susceptibility to interpersonal influence significantly influences only certain stages, but does not turn out to be significant when only the final outcome is measured.

Another fruitful arena would be to replicate this study in parallel in different countries or over time. We expect that cultural differences in dimensions such as trust, intimacy, or social power

should affect differently the roles of each of these factors in the WOM process, and hence demonstrate how cultural differences affect the antecedents of influence of a WOM communication. Such replication would enlighten our understanding of ERM in an international context. Combined with longitudinal studies, such research could unearth both inherent cultural differences as well as the evolution of the processes that underlay ERM.

To conclude, this study, motivated by the challenges facing ERM, is an attempt to help disentangle the influence of WOM, and the antecedents of such influence, at different stages of the decision-making process. Multi-stage models offer a rich perspective to study this phenomenon, and this work demonstrates that WOM works much more subtly than previously reported. We believe that our conceptualization and our use of new internet research methodologies will make further contributions to our understanding of WOM and how it can be leveraged in the future.

Table 1 – Examples of Successful Electronic Referral Campaigns

Product or service	Summary
Hotmail	<p><i>Free Web-based email service.</i> The line “Get Your Private, Free Email at http://www.hotmail.com” was included in each outgoing email sent from a Hotmail account. Launched in July 1996, 12 million users signed-up within 2 years. The marketing budget over the same period of time was only \$500,000.</p>
ICQ	<p><i>Free Instant Messaging service (“I seek you”).</i> In order to communicate with each other, all users have to have ICQ installed on their machine, thus creating positive network externalities (an incentive to induce one’s friends to use the service.) ICQ offered an option, embedded in the software, to invite one’s friends automatically. Launched in 1996, ICQ had 12 million users by 1997; its mother company Mirabilis was bought for \$287 million by AOL one year later.</p>
Dancing Baby	<p><i>Promotional freebie.</i> In 1996, the company Kinetix in San Francisco sent the “Dancing Baby” animation as a free sample bundled with a software package. Eventually it decorated numerous Web sites, appeared on television programs and ad campaigns and inspired T-shirts and musical recordings. The Dancing Baby even became a guest star on the TV series “Ally McBeal.” Today, Google still references about 30,000 Dancing Baby Web pages.</p>
Unleashing the ideavirus	<p><i>Book.</i> In 2001, Seth Godin’s book was made available for free on his website (http://www.ideavirus.com). Visitors could send the complete electronic version of the book to friends for free, who eventually purchased the paper-version for convenience. The latter reached the 5th rank of Amazon.com’s bestsellers.</p>
PayPal	<p><i>Peer-to-peer electronic payment service.</i> Consumers received \$10 for signing-up with the service, and a few more dollars for each new member they referred. PayPal acquired more than 3 million users in its first nine months of operation.</p>
The Blair Witch Project	<p><i>Movie.</i> “The Blair Witch Project” movie generated \$138 million in income (for a production budget of about \$60,000), and a big part of its success relied on a well-orchestrated online “buzz” launched one year before the movie itself (the movie’s website received 300 million hits.)</p>
Recommend-It	<p><i>Viral marketing solutions.</i> Marketing companies also offer specific solutions to their clients to facilitate and promote electronic relationship marketing: Recommend-It’s referral service, for instance, reports 140,000 Web sites using their built-in, “send-to-a-friend” solutions.</p>

Table 2 – Model Results and Parameter Estimates

	Unaware	Awareness	Interest	Evaluation	Decision	Unaware	Decision
	Receive e-mail n=1116	⇒ Open e-mail n=825 Model 1	⇒ Visit website n=488 Model 2	⇒ Begin survey n=402 Model 3	⇒ Complete survey n=304 Model 4	Receive e-mail n=1116	⇒ Complete survey n=304 Model 5
Tie strength		H₁ .172 **	-.073	.077	-.037		.024
Perceptual affinity		.048	H₂ .322 ***	-.201	-.013		.144
Demographic similarity		H₃ -.188 ***	-.134 **	-.266 **	-.206 **		-.279 ***
Source expertise		.021	H₄ .010	H₅ -.028	H₆ .058		.034
Intercept		.987 ***	.591 ***	1.112 ***	1.021 ***		-1.041 ***
- 2 Log likelihood		1264.0	1087.8	445.1	440.7		1279.0
Cox & Snell R²		.015	.033	.019	.014		.023
Nagelkerke R²		.022	.045	.031	.021		.033
Hosmer & Lemeshow p-value ⁽¹⁾		.137	.833	.270	.252		.320

(1) Based on a Chi-square test for dichotomous dependent variables. Small p-values indicate a lack of fit of the model.

Parameter estimates of the 5 Logit models linking recipients' responses to characteristics of the sender-recipient relationships and to the source expertise. Parameters significant at $p < .05$ are in bold. Cells pertaining to our 6 hypotheses are boxed. Inputs of the models are mean-centered and standardized. Statistical significance: * $p < .10$, ** $p < .05$, *** $p < .01$.

Table 3 – Single-Stage vs. Multistage Model Comparisons of Results, Highlighting Qualitative Differences in Conclusions

Factors	Conclusions based on single-stage model	Conclusions based on four-stage model
TIE STRENGTH	No influence	Strong influence: Facilitates awareness
PERCEPTUAL AFFINITY	No influence	Strong influence: Generates interest
DEMOGRAPHIC SIMILARITY	Strong negative influence	Strong negative influence
SOURCE EXPERTISE	No influence	No influence

Table 4 – Model Results and Parameter Estimates with Interactions

	Unaware	Awareness	Interest	Evaluation	Decision	Unaware	Decision
	Receive e-mail n=1116	⇒ Open e-mail n=825 Model 1	⇒ Visit website n=488 Model 2	⇒ Begin survey n=402 Model 3	⇒ Complete survey n=304 Model 4	Receive e-mail n=1116	⇒ Complete survey n=304 Model 5
Tie strength		H ₁ .160 *	-.054	.086	-.154		-.005
Perceptual affinity		.056	H ₂ .329 ***	-.191	.003		.139
Demographic similarity		H ₃ -.204 ***	-.164 **	-.294 **	-.253 **		-.302 ***
Source expertise		.011	H ₄ .019	H ₅ -.049	H ₆ .065		.047
Strength * Affinity		.030	-.023	.021	-.101		-.065
Strength * Similarity		.025	.031	.139	.007		.050
Strength * Expertise		.000	-.102	-.099	.131		-.030
Affinity * Similarity		-.124	.261 **	.110	-.057		.078
Affinity * Expertise		.004	.173 *	.012	-.274 *		.031
Similarity * Expertise		-.123 *	-.132 *	-.083	.193 *		-.060
Intercept		.985 ***	.317 ***	1.542 ***	1.206 ***		-.969 ***

Parameter estimates of the 5 Logit models with all possible two-way interactions. Parameters significant at $p < .05$ are in bold. Cells pertaining to our 6 hypotheses are boxed. Inputs of the models are mean-centered and standardized.

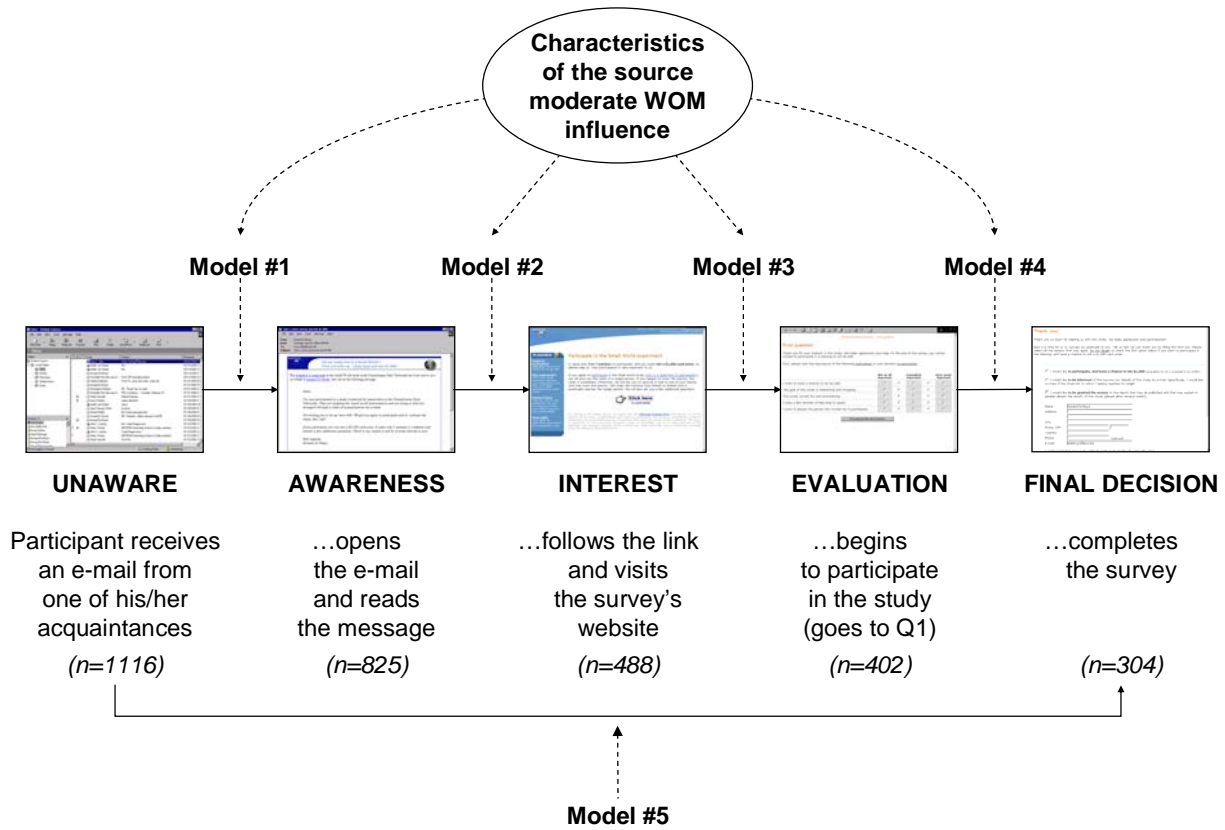
Statistical significance: * $p < .10$, ** $p < .05$, *** $p < .01$.

Figure 1 – The Multi-Stage Model and Summary of Hypotheses

	WOM	→ Awareness	→ Interest	→ Evaluation	→ Final decision
Tie strength	↑ H1				
Perceptual affinity		↑ H2			
Demographic similarity	↕ H3	↕ H3	↕ H3	↕ H3	
Source expertise		↑ H4	↑ H5	↑ H6	

Our theoretical model posits that (i) each transitional probability of the multi-stage decision-making process is influenced by characteristics of the source, and that (ii) certain characteristics play a greater role in early stages, while others have more influence later. We posit that tie strength will exclusively influence awareness (H₁); perceptual affinity will only increase interest (H₂); demographic similarity will have a general positive (resp. negative) influence at each stage of the decision-making process if the WOM communication relates to ‘personal’ (resp. ‘impersonal’) products or services (H₃); and source expertise will positively influence interest (H₄), evaluation (H₅) and final decision (H₆).

Figure 2 – Study Design and Related Models



The study was designed as a funnel of 4 consecutive decisions, namely the decisions made by the respondents (i) to open the email received from one of their acquaintances and become aware of the existence of the study, (ii) to show some interest in the survey by following the link in the email and visiting the survey's website, (iii) to look at the first page of the survey and consider its completion, and (iv) to complete the survey (final decision). We fit a separate Logit model to each of these four steps. A fifth, benchmark model directly links the reception of the email to the completion of the survey

APPENDIX: SURVEY ITEMS

Tie Strength (Frenzen and Davis 1990)

- There are some people in our daily lives with whom we are willing to share personal confidences. How likely would you be to share personal confidences with John? (*1=not at all likely, 7=very much likely*)
- There are some persons in our daily lives with whom we would gladly spend a free afternoon socializing. There are others with whom we would rather not spend our free time. How likely would you be to spend some free time socializing with John? (*1=not at all likely, 7=very much likely*)
- How likely would you be to perform a LARGE favor for John? (*1=not at all likely, 7=very much likely*)
- In your opinion, how likely would John be to perform a LARGE favor for you? (*1=not at all likely, 7=very much likely*)
- On a scale of 1 to 7, please rate your closeness to John. (*1=not at all close, 7=extraordinary close*)

Perceptual Affinity (Gilly et al. 1998; Wolfinbarger and Gilly 1993)

- Considering your outlook on life, how similar are you and John? (*1=not at all similar, 7=extremely similar*)
- Considering your likes and dislikes, how similar are you and John? (*1=not at all similar, 7=extremely similar*)
- Considering your values and experiences, how similar are you and John? (*1=not at all similar, 7=extremely similar*)
- To the best of your knowledge, how similar are John's tastes in products compared to yours? (*1=not at all similar, 7=extremely similar*)

Demographic Similarity

- What is your sex? What is John's sex? (*male, female*)
- How much younger or older are you compared to John? (*1=I am much younger, 4=same age, 7=I am much older*)
- How similar are the occupations that you and John have? (*1=not at all similar, 7=Extremely similar*)
- Do you and John have the same level of education (e.g., high school diploma, technical or career college degree, bachelor's degree, master's degree, doctorate)? (*1=yes, 2=more or less, 3=no*)

Source Expertise

- I am very knowledgeable about the internet. (*yes, kind of, no*)
- I often influence other people in their usage or opinions about the internet. (*yes, kind of, no*)
- My friends see me as a good source of information about the internet. (*yes, kind of, no*)

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