Generating Web Site Traffic:
An Empirical Analysis of Web Site Visitation Behavior

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INTRODUCTION

Billions of dollars are spent promoting brands every year, and Internet brands, in particular, are (or at least at one time, were) competing against each other feverishly to establish brand recognition and consumer awareness. Table 1 shows the amounts of money spent in the first half of 2000 supporting Internet sites. While the vast majority of it is in offline media, millions are being spent online as well. Other than advertising, commonly used communications vehicles consist of public relations to stimulate word-of-mouth, sales promotions and partnerships directing consumers to Web sites, direct e-mail, and a variety of other methods. However, little is known about how different communications devices affect both Web site usage and the quality of the brand name. In this "Internet age," marketers and dot-commers alike would like to know, "What gets people to visit my site, and how can I get them to keep coming back and using my site?" As researchers, we are interested in exploring the process by which this new medium attracts its audience.

In this paper, we attempt to empirically determine what are the factors that drive traffic and brand equity in the Internet space. Even in 2002 with the Internet bubble seeming to burst, many companies are still turning to the web to interact with current customers and reach new markets. These companies need to know if the traditional theories linking advertising, store visits, and sales are still supported as they move online, using the technology-based Internet as a primary marketplace.

To aid us in this endeavor, we turn towards some of the competing hierarchical models detailing the process by which advertising influences consumer behavior and purchase decisions (Vakratsas and Ambler 1999). Though researchers have debated

within the literature which models apply to which purchase situations and how these models change from product-type choice situations to brand-choice situations, empirical work that would document the validity of these theories in practice is relatively scarce. The original Lavidge and Steiner (1961) hierarchical model, the FCB grid, and the Rossiter Percy Grid are some examples of the widespread attempt by academic and marketing practitioners alike to clarify the stages that consumers go through during the purchase process: from high involvement products to low-involvement products (e.g. homes vs. facial tissues) and from highly informational searches to more affective/emotional acquisitions (e.g. computers vs. perfume). To understand the driving forces behind consumers' choice of which Web sites to visit on the Internet, and also to assess the relative effects of the communications channels which initiate this visitation, we attempt to empirically determine which hierarchical model most accurately portrays this consumer choice process

Throughout the literature on advertising hierarchies, three stages have been almost universally acknowledged: thinking, feeling, and doing. Our cross-sectional study of about ninety Internet firms addresses the issue of how consumers choose which Web sites to visit and which sites they prefer, as well as the cognitive, affective, and conative mechanisms that constitute this process. Using a unique data set combined from several different sources that monitor the activities of Internet companies, we are able to operationalize measures for each of these commonly denominated stages and then to test how, indeed, consumers on the Internet do progress through these three distinct stages. In this study, we use *awareness* to signal the beginning of the thought process: we assume consumers can only evaluate Internet sites of which they are aware. Then we use

a measure of *brand equity* to assess the underlying preferences, feelings and thoughts of consumers toward each web site. Finally, we measure *visits* as an index of conative action. In the course of this analysis, we also investigate the comparative success of the online, offline, and public relations dollars these companies spend to promote their existence and advance their brand equity.

BACKGROUND LITERATURE

Although industry and academic interest in the Internet and how websites can both attract and keep visitors is quite high, there has been little comprehensive research to-date investigating these questions. An examination of the literature reviewed by Barwise, Elberse and Hammond (2001) in their wide-ranging and inclusive survey paper on marketing implications for the Internet, indicates that many authors have currently chosen to focus on *either* one aspect of how people are drawn to Internet sites such as online advertisements and branding, or one type of site, such as clothing retailers. What we propose to do in our paper is to link this research together into one model as we investigate how different types of Internet sites can effectively communicate their existence and brand, as well as draw consumers to their pages.

Previous Internet marketing studies have looked at the most effective means of advertising in generating actual web visits. Bellizzi (2000) found that traditional advertising methods (print, direct mail, etc.) are very effective in generating both interested consumer leads and website visitors. The authors conclude that it would be a mistake for online businesses to rely completely on online advertising to create awareness and site visitation. Investigating the new phenomenon of online banner ads, Briggs and

Holli (1997) found that these ads do not need to generate click-through response to affect brand loyalty and brand equity of the advertised brand. Also investigating the perceived responses to different traditional and non-traditional advertising sources, Leong et al. (1998) surveyed business managers to find out that they perceived and used the web for advertising that conveyed information and precipitated action and response. One question our study seeks to empirically answer is how all these advertising media work in combination, not just individually, to generate web site traffic. In addition we can to empirically validate the managerial perceptions that web advertising, in comparison to the more traditional media advertising outlets (TV, print, etc.), is better at stimulating web visits.

Other researchers have examined how the changing technology of the Internet will affect future brand-building. Adamic and Huberman (2000) found that branding was highly significant on the web as a few sites dominated hundreds of others in the quest for Internet traffic. They described the Internet as being characteristic of winner-take-all markets where only a few sites will really matter and survive. The research of Danaher et al. (2000) confirmed this research with their finding that brand loyalty for high market share brands was significantly greater online than in traditional retail environments. As Internet-focused research emerges that suggests the increasing significance of brands and branding strategy, we believe it is important to ascertain the underpinnings of brand equity in the Internet environment.

To examine the relationship and interactions between three key cornerstones of Internet success -- advertising, site traffic, and brand equity -- as established by previous research, we decided to turn towards the “hierarchy of effects” theories of advertising.

Marketing researchers, who have long sought to understand how advertising effects and influences consumers, have developed a substantial body of theoretical and some empirical literature dedicated to this objective. Lavidge and Steiner (1961) were the first to establish the foundations for the model now commonly known as the "hierarchy of effects" or "persuasive" model (Vakratsas and Ambler 1999). In their seminal paper, they detailed the steps, or hierarchy, that they believed consumers progressed through to translate advertising into purchase behavior (see Figure 1). They divided six hypothesized stages into three behavioral dimensions: cognitive, affective, and conative. The *cognitive* domain encompasses all the thought processes that a consumer has about a certain product or brand; the *affective* domain addresses the emotions and attitudes which a consumer possesses or displays towards a product or brand, while the *conative* dimension denotes the motives that a consumer has and the behavioral actions he performs with respect to a product or brand.

Assael and Day (1968) provided one of the first empirical studies to refute criticisms (Palda 1966) that the delineated stages might be simultaneous and not sequential. Using detailed survey data spanning over two years, the authors tested several models on three product categories to determine the effects of awareness, attitudes, and usage, on market share. While many of their regressions were inconclusive, they did find that overall, attitude was a better predictor of market share than were either awareness or usage. For a couple of the smaller, more volatile brands, however, market share was the better predictor of attitude than vise versa. This suggested that there might not be a uniform process through which advertising influences sales; hence the hierarchy might differ among product categories, and even among brands.

Their findings justify an examination into which hierarchy might best describe Internet Web site behavior. Internet businesses are a new and quickly growing sector of the economy, and it is important to understand similarities and differences in consumers' behavior between this medium and the traditional product categories.

Similarly, Aaker and Day (1971) tested a version of the traditional persuasive model (Figure 2, panel A) against a competing hypothesis of the communication process (Figure 2, Panel B) as proposed by hierarchy of effects critics. The major difference between the persuasive model and the alternative was that attitude formation, instead of preceding purchase, was conjectured to follow behavior. The authors detailed several key reasons that critics proposed a low-involvement model of Think-Do-Feel as an alternative to the traditional Think-Feel-Do model. The most relevant are: 1) Cognitive Dissonance theory (Festinger 1957) demonstrated quite convincingly that often people infer their opinions from their behavior as opposed to only acting consistently with their attitudes; 2) many advertising messages are received under conditions of low-involvement, which leads to a change in cognition (awareness) but not attitude, that can still can increase purchase or trial probabilities (Krugman 1965); and 3) many products are perceived as low-risk and these products might not require the same attitude formation and involvement suggested by the traditional hierarchy of effects before purchase, as higher-risk or more expensive products would. The results from their examination into the instant coffee market indicated that neither the Think-Feel-Do nor Think-Do-Feel hierarchies accurately capture consumer processes. The authors offered a new hierarchy instead that represents a Think/Feel-Do-Feel model. A later individual-level choice-based study by Winer (1989) confirmed Aaker et al.'s findings that purchase

does influence preference, the reverse of what the traditional persuasive model would imply.

Once empirical papers established that the traditional persuasive model did not consistently model the route through which advertising impacted market share, marketers began to question that model and search for other options. One unified alternative, the "FCB grid," (Vaughn, 1979) suggested that consumers use different hierarchical processes for high-involvement versus low-involvement products, and a thinking versus feeling (or left brain versus right brain) approach to product consideration; the high-involvement/thinking quadrant would lead to a traditional persuasive (Think-Feel-Do) process whereas moving towards the lower involvement quadrant might produce a Think-Do-Feel process, switching at the lowest involvement level to a Do-Think-Feel process.

These previous studies that have tested the proposed three-stage hierarchies have used sales as measurement of the conative dimension. In the context of Web sites, however, sales is not necessarily the appropriate ultimate measure of the success of a communications program. Many of the sites examined in our data analysis do not sell any products; a number of Internet sites exist primarily to provide informational content to the viewer. These sites continue to advertise for a higher share of "eyeballs," nonetheless, making their desired outcome of advertising, increased visits, not increased sales. Internet e-tailers also use advertising to pursue higher revenues, since visits to these firms' Web sites are a necessary precursor and thus should be highly correlated with these firms' measures of success, customers and sales. While for many of the sites we examine, site visitation leads directly to higher site advertising revenues, we do acknowledge that for the e-tailers in our data, high visitation levels, while necessary, are

not a sufficient measure of site success. Thus, our analysis illuminates the influences leading to site visitation while recognizing that this might not be necessarily correlated with site success in all Internet domains. What our analyses purport to measure, therefore, is the route through which advertising influences both site visits and preference, and the effectiveness of different advertising media in furthering this goal.

The special feature of the Internet that makes this market quite different from traditional product categories is that unlike grocery stores, consumers are not confronted with all their options at the point-of-purchase or visitation. On the Internet, consumers cannot view all their options and can only reach a Web site through links, online advertisements, or typing in the Web site address that requires awareness. The only exception to this story occurs when people inadvertently click on a banner or pop-up ad and are routed to an unfamiliar website. Half of the FCB grid as well as other hierarchies such as dissonance-attribution (Ray 1973) suggest that purchase or "Do" can take place before "Think." While we believe awareness (the Think stage) -- whether developed through advertising, experience, or word-of-mouth -- normally takes place before visits can occur[1], some commercial studies have found a significant number of accidental mouse clickthroughs. In addition, there may be very little information processing that actually occurs before a clickthrough indicating a virtual "tie" between "Doing" and "Thinking." We use a no-involvement (Do-Think-Feel) model which imitates the mental processes a consumer might go through after an accidental click or split second decision leading to a Web site visitation.

[1] Although Rossiter, Percy, and Donovan (1991) suggest through their grid, the Rossiter-Percy grid, that brand awareness should be separated from cognition, unlike in the FCB grid, we believe it is logical to assume that the awareness stage can be incorporated into the cognition or think part of the FCB grid.

Thus, to understand which hierarchy accurately captures Web site visitation behavior and drivers, we test a persuasive hierarchy, a low-involvement hierarchy, and a no-involvement model on our Internet data.

CONCEPTUAL MODEL

As explained above, a variety of site visitation routes are accounted for in our model. While we test our model on the aggregate level, it is important to note that it is an individual level model; we are striving to understand and model how a single consumer passes through the stages of awareness, cognition and conation with Internet web sites.

We continue the direction of the individual choice models of Aaker and Day (1971) and Winer (1989) by incorporating several exogenous variables into our analysis in addition to advertising and price. We also examine the possibility, unlike previous models of either hierarchy, that advertising directly affects behavior as well as awareness and preference. Through the creation of online banner advertising, an individual can click through to a Web site by only passing briefly, or sometimes not at all, through the awareness stage. Our proposed tests of the Internet site visitation process are shown in Figure 3.

The basic influencers of awareness are word-of-mouth, non-Internet presence measures, and advertising. Word-of-mouth represents the awareness of Internet sites that comes from the "buzz" around a site and not any company-sponsored advertising; it captures the effects of personal communications and non-advertisement mentions in newspapers, magazines, and other popular media. The number of visits in a previous period is one major component of word-of-mouth and should influence awareness since

these visitors have already been to site and have the opportunity to tell friends and neighbors about it. Similarly, if companies have a "bricks and mortar" presence, as well as an Internet site, we believe that increased awareness is likely to result from the additional brand familiarity and increased contact due to passing a store (i.e., Barnesandnoble.com and Borders.com), or recognizing it in non-Internet situations (i.e., ESPN.com, CNN.com); additionally previous research has indicated that multi-channel businesses outperform Internet only businesses (Vishwanath and Mulvin 2001). The advertising component is from both online (banner ads) and offline paid media. Finally, in the "Do-Think-Feel" hierarchy, visits affect awareness.

While many of the early advertising papers referred to the preference stage as a feeling or affective state, we operationalize this stage as brand equity. We acknowledge that brand equity incorporates some cognitive thoughts, relevance, perceived quality, etc., in addition to its primary feeling-driven or affect motivation. We use brand equity as our preference measure, however, since it is one of the primary end goals and drivers of many of these Internet companies' ad campaigns. We believe that site quality, site loyalty, advertising, and whether a not a site is publicly traded will influence people's attitudes towards that Web site. For quality, we feel that consumers are more likely to develop favorable attitudes towards Internet sites that they perceive as being more user-friendly and easier to navigate. Similarly, we feel that the more a consumer uses a site and ventures in-depth into its content, the more familiarity and positive affect they are likely to feel towards that site. Additionally, we hypothesize that there is more consumer confidence and good feelings developed toward firms that have taken their company public, especially if consumers equate going public with good firms and success. Again,

both offline and online advertising can have a direct impact on the affect stage depending on the kind of advertising employed. Finally, in both the "Think-Feel-Do" and "Do-Think-Feel" hierarchies, awareness will impact affect. In the "Think-Do-Feel" low-involvement model, site visits will impact affect.

For the site visitation drivers, besides awareness and affect, we hypothesize that there are three possible methods by which consumers can access sites on the Web: they can type in the exact html address, they can click on an online banner ad, or they can be directed to click through to a certain site by another site on the Web. We account for the first behavior through the awareness construct, since consumers cannot type in sites they do not know. We account for the second behavior through inclusion of online advertising in the visits equation. To incorporate the last behavior into our visits equation, we provide a measure of the number of links on other sites on the Internet to each site studied. While this is a limited measure since we do not know the visitation levels of the sites that link to our sites[2], it does provide at least a baseline level that indicates a web site's prominence elsewhere on the Internet.

MODEL SPECIFICATION AND ESTIMATION

Traditional Persuasive (Think-Feel-Do) Model

We operationalize the conceptual model of the traditional persuasive hierarchy of effects model for individual consumers shown in Figure 3 in the following way:

[2] We thank one of our reviewers for pointing out that a more accurate measure would be links=number of links*visitation of site with link, since it is preferable to have 10 links to popular sites with 10,000 monthly visitors than it is to have 100 links to sites that only attract 100 visitors per month. However, an interaction

(1) $AWARENESS = \alpha_0 + \alpha_1 ONLINE + \alpha_2 OFFLINE + \alpha_3 PRBUZZ + \alpha_4 WOM(visits_{t-1}) + \alpha_5 BRICKS + \varepsilon$

(2) $BRANDEQ = \beta_0 + \beta_1 ONLINE + \beta_2 OFFLINE + \beta_3 AWARENESS + \beta_4 QUALITY + \beta_5 PGVIEW + \beta_6 PUBLIC + \varepsilon$

(3) $VISITS = \delta_0 + \delta_1 ONLINE + \delta_2 OFFLINE + \delta_3 BRANDEQ + \delta_4 LINKS + \varepsilon$

where the variables are defined as:

ONLINE/OFFLINE: the advertising dollars spent on each type of communications media for the past three quarters (9 months) prior to awareness/visits/brand equity measurement.

PRBUZZ: a measure of the mentions an Internet firm receives in the mass media.

BRICKS: an indicator of whether or not a firm has a "bricks and mortar," as well as Internet presence.

$WOM(visits_{t-1})$: a measure representing current word-of-mouth from lagged visits.

PGVIEW: the average number of pages viewed on a Web site, a measure of the interest and attention consumers display towards different Web sites.

PUBLIC: an indicator of whether or not a firm is publicly traded.

LINKS: the number of links to a site from all other Internet sites.

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of links with visits would be spuriously correlated with the dependent variable vists, so we do not include it

Given that higher values of awareness, brand equity, and visits are all favorable indications for an Internet company, we would expect that all α, β, and δs would be positively valued.

Alternative Low-Involvement (Think-Do-Feel) Model

In this alternative model, the awareness equation remains the same, but the order and included variables of the brand equity and visits equations are changed. The three equations are as follows:

$$(4)\ \text{AWARENESS} = \alpha_0 + \alpha_1\text{ONLINE} + \alpha_2\text{OFFLINE} + \alpha_3\text{PRBUZZ} + \alpha_4\text{WOM}(\text{visits}_{t-1}) + \alpha_5\text{BRICKS} + \varepsilon$$

$$(5)\ \text{VISITS} = \beta_0 + \beta_1\text{ONLINE} + \beta_2\text{OFFLINE} + \beta_3\text{AWARENESS} + \beta_4\text{LINKS} + \varepsilon$$

$$(6)\ \text{BRANDEQ} = \delta_0 + \delta_1\text{ONLINE} + \delta_2\text{OFFLINE} + \delta_3\text{VISITS} + \delta_4\text{QUALITY} + \delta_5\text{PGVIEW}_t + \delta_6\text{PUBLIC} + \varepsilon$$

where the variables are as described above. Once again, as above, we would expect that all α, β, and δs would be positively valued.

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in the model.

Alternative No-Involvement (Do-Think-Feel) Model

In this alternative model, the visits equation becomes the first equation and offline advertising influence is removed since inadvertent mouse clicks are never the result of offline advertising. The awareness and brand equity equations remain the same except that the lagged visits in the awareness equation is the visits from the first equation, it is no longer an exogenous word-of-mouth variable. The three equations are as follows:

$$(7)\ \text{VISITS} = \alpha_0 + \alpha_1\text{ONLINE} + \alpha_2\text{LINKS} + \varepsilon$$

$$(8)\ \text{AWARENESS} = \beta_0 + \beta_1\text{ONLINE} + \beta_2\text{OFFLINE} + \beta_3\text{PRBUZZ} + \beta_4\text{VISITS}_t + \beta_5\text{BRICKS} + \varepsilon$$

$$(9)\ \text{BRANDEQ} = \delta_0 + \delta_1\text{ONLINE} + \delta_2\text{OFFLINE} + \delta_3\text{AWARENESS} + \delta_4\text{QUALITY} + \delta_5\text{PGVIEW}_t + \delta_6\text{PUBLIC} + \varepsilon$$

where the variables are as described above. Once again, as above, we would expect that all α, β, and δs would be positively valued.

Model Estimation

To test these models, we analyzed each sets of three equations simultaneously using three-stage-least squares (3SLS) estimation. We feel 3SLS is appropriate since the process we are modeling is a causal hierarchy where each stage that a consumer passes through influences the next and that the error terms between the three equations are

correlated. If the factors above indeed describe the data, 3SLS will provide more efficient estimates. In the case that regressions or errors are not at all related, this generalized least squares procedure will produce the same estimates as OLS.

DATA

Our data set contained eighty-eight Internet companies spanning a broad spectrum of Internet company types: search engines, specialized interest sites, retail e-commerce sites and business-to-business e-commerce sites (for a complete listing see Table 2). The time period, t, we are examining in our analysis, is September 1999. The variables were compiled from several different sources. This allowed us to avoid any spuriously high significance between visits and awareness or visits and attitudes due only to measurement techniques. (Assael and Day, 1968) We briefly discuss each regression variable in Table 3.

Although the most significantly examined variables were collected in 1999, for the purposes of this research, two of our measures, quality and links, were collected in 2000 and therefore do not match in terms of time period. We assume that there are few significant changes from 1999 to 2000 in Web site quality and number of links and that when this does occur, it is not correlated with any of our other variables and can thus be captured in our error term.

EMPIRICAL RESULTS

All Sites

A comparison of the results for all three hierarchy specifications for all 88 Web sites is shown in Table 4. The models were compared using three different criteria: system fit (R^2 and MSE) and a predictive test using a calibration and holdout sample (two-thirds vs. one-third of the 88 sites). As can be seen, the low-involvement hierarchical model performs significantly better than the persuasive or no-involvement model on all measures. Similarly, graphs of predicted versus actual site visits for all models support the fact that the low-involvement model appears to do a better job of prediction overall. Thus, an individual's Internet browsing behavior is best captured by a process involving awareness then action (visits) and finally affect (brand equity). For this reason we give the detailed results of the low-involvement model only (Table 5).

The most significant factor in building awareness is the word-of-mouth generated from lagged visits. Clearly, people tell other people about Web sites they like and this word-of-mouth encourages individuals to test out new sites. Interestingly, offline advertising has a moderately ($p<.10$) positive effect on awareness as well. Thus, overall, the widely-criticized amounts of money companies were spending on advertising appears to be money well-spent. Other less significant factors in building awareness are word-of-mouth from lagged public relations ($PRBUZZ_{t-1}$) and the existence of an offline presence (BRICKS). The latter is perhaps intuitive, but supports the natural advantage offline companies have on the Web. The elasticities (evaluated at the means) are quite small, indicating that awareness is inelastic to the exogenous variables.

The results from the visits equation shows a very strong impact of awareness, the preceding variable in the "Think-Do-Feel" hierarchy, both in terms of the significance of the coefficient and the size of the elasticity. This supports the notion that Web visitors require a solid awareness base prior to visiting a site. Links from other sites are also very important in this equation. Thus, partnerships and paid sponsorships that create these links appear to be sound investments. Perhaps surprisingly, online advertising is also a strong contributor to site visits despite low clickthrough rates. Offline advertising has a more moderate direct impact on site visits relative to awareness which is intuitively correct.

While site visits from the previous equation has an important impact on brand equity, no other variables seemed to be helpful. These results are consistent with the findings of Deighton et al. (1994) who find that repeat purchasing and brand preference in mature frequently purchased product categories is determined primarily by previous usage and not, as might be indicated by framing effects, further ongoing advertising to current users. Our model results lead us to believe, thus, that Web site visitation behavior has some similarities with mature frequently purchased product categories where advertising is more helpful in building awareness and driving usage but is significantly outweighed by use-experience which is the primary driver of preference and how consumers choose their loyalties on the Internet.

Several conclusions can be drawn from this analysis. First, based on the fact that the low-involvement model is most consistent with the data, the importance of spending marketing funds to build awareness is underscored. Second, the strong effect of word-of-mouth in the awareness equations highlights the importance of getting people to the Web

site. This "gets the ball rolling" in terms of building awareness that subsequently feeds into further visits and ultimately into brand equity. Third, it appears that investments companies have made in online and offline advertising, public relations, and partnerships have had an impact on Web visit behavior. Awareness can be built with offline advertising and public relations and by companies with an offline presence. Online advertising and links from other sites strongly affect site visits. Finally, results from the model show that brand equity is built over time through site visits and not directly from either offline or online advertising. Therefore, a message from these results is that marketing funds are better spent building awareness and site visits and not directly on brand building. This is obviously contrary to the feelings of many Internet company executives who spent a considerable amount of money and time worrying about building a brand name. Our model indicates that this can happen but only through awareness and site visits, that is, over time from experience and strong site usage.

Information Sites Only

Because of the heterogeneity of the sample of sites, we also estimated the models on the subsample of 34 information-only sites. This allowed us to isolate the sites whose revenue production primarily relied on their ability to generate audience traffic on their website, unlike some of the sites in our data which could potentially get substantial revenue from a few, but very interested, buyers[3]. We found that once again, the low-involvement ("Think-Do-Feel") model clearly dominated the other two hierarchies and produced results similar to the results for all sites.[4] The primary differences between this

[3] We thank one of our reviewers for pointing out this potential bias and solution in our data set.
[4] Results available from the authors upon request.

sample and the full sample was that for the information sites, word-of-mouth was the only significant determinant of awareness, yet offline advertising became a much more significant driver of website visitation. These findings suggest that perhaps consumers are more open to trial of new brands or website for their information content than they would be generally on the Internet; advertising and "bricks and mortar" presence were no longer as crucial as simple word-of-mouth effects in this category.

Retail Sites Only

We also estimated the models on the subsample of 45 retail sites. Our hypothesis is that due to the more involved nature of buying rather than simple information seeking, the results would be more favorable to the traditional "Think-Feel-Do" process. As can be seen from Table 6, not only does this happen but all the models including the no-involvement model ("Do-Think-Feel") perform quite similarly on this sample.[5] Although the persuasive model has the highest MSE, all models have the same system-wide R^2 and comparable graphs of predicted versus actual visits. We do not show the parameter estimates as they differ between model formulations and are therefore difficult to synthesize.

The similarities between the three models for e-commerce sites imply that there might be a fundamental difference in how consumers approach these types of sites. While for all sites the low-involvement dominated the other two, for retail-only sites no model is clearly superior. This leads us to make several conjectures. First, the no-involvement model might be modeling a separate segment within customers that is more prevalent in the retail setting since those types of sites are more likely to use banner type

advertising. Secondly, within the purposeful visits, denoted by the awareness (Think stage) first, when, as in the FCB grid, consumers move from low-involvement to high-involvement processing, the order in which they pass through the three stages change. We believe that the persuasive and low-involvement models might seem equally appropriate for retail sites because consumers are shifting more cognitive resources to considering which Web sites to purchase from than they did for which Web sites to visit only. The parallel results, thus, might capture the transition as consumers move from a Think-Do-Feel model to the higher-involvement Think-Feel-Do framework. Lastly, it also plausible that the model for e-commerce sites is more similar to the revised recursive model proposed by Aaker and Day (1971), where the affect-development and behavior steps are continually reinforcing each other, than it is to the persuasive or low-involvement hierarchies.

CONCLUSION

We conclude that after examining the performance of the persuasive hierarchy model, the low-involvement hierarchy, and the no-involvement model, the low-involvement hierarchy best models the process through which advertising affects awareness, site visitation and brand equity on the Internet. Specifically, offline advertising appears to increase site visitation through its significant influence on consumer awareness, while online advertising directly leads to increased Web site traffic. Though advertising can increase brand equity through its affect on site usage and awareness, neither online nor offline advertising clearly contributed to the immediate

[5] Due to the small sample size of retail sites, we could not perform any holdout predictive testing.

development of brand equity for Internet firms. Thus, the emphasis on advertising spending for Web sites should be on awareness and traffic-building and not on brand building. The latter results from the former.

Other marketing spending besides advertising was also found to be effective for both awareness and site visits. Specifically, investments in partnerships and public relations were found to be effective in building awareness and site visits.

The main message about brand equity for Web sites is that it must be built over time rather than created instantaneously with heavy spending. The factor in our model affecting equity is site visits. This implies that the marketing activities including advertising, publicity, and partnerships eventually pay off in increased brand equity, but only through awareness and site visits. Thus, equity is positively affected by building a solid foundation over a period of time. This has been the experience of the myriad number of Internet companies that spent millions on TV and other media focusing on image and other elements of equity only to find that the money did not generate traffic and ultimately, sales. Interestingly, many experienced Internet executives like Mark Andreesen (developer of Netscape and founder of Loudcloud) have been quoted in the media saying just this.

As stated earlier, the Internet market is distinguished from many other product markets because of its high reliance on informed consumers. When consumers shop for many other product categories, they see the product in front of them before they decide to choose it. On the Internet, however, consumers rarely are allowed to select from an entire universe of appropriate Web sites; rather, they must select one that is known to them, or is prompted by another Internet Web site on their screen. While we cannot

evaluate the nature of the advertising referred to in this study, we can advocate strongly that, based on these results, Internet advertising should focus primarily on inducing the customer to visit the Web site and not on building a favorable impression. Web site loyalty and brand equity appear to develop chiefly through experience and usage, and not through positive advertising messages. Future research should focus on the types of advertising messages and communications vehicles that promote consistent brand/site name recall as well as encourage site interest and visitation.

REFERENCES

AAKER, D.A., and G.S. DAY. "A Recursive Model of Communication Processes." In *Multivariate Analysis in Marketing: Theory and Applications.* Wadsworth Publishing Company, 1971.

ADAMIC, L.A, and B.A. HUBERMAN. "The Nature of Markets in the World Wide Web." *Quarterly Journal of Electronic Commerce* 1 2 (2000): 5-12

ASSAEL, H., and G.S. DAY. "Attitudes and Awareness as Predictors of Market Share," *Journal of Advertising Research* 8 (December 1968): 3-12.

BARWISE, P., A. ELBERSE, and K. HAMMOND. "Marketing and the Internet," *Working Paper* (October 2001), 1-75 *http://www.marketingandtheinternet.com*

BELLIZZI, A.J. "Drawing Prospects to E-Commerce Websites." *Journal of Advertising Research* 1 (January-April 2000): 43-53

BRIGGS, R., and N. HOLLIS. "Advertising on the Web: Is There Response Before Click-Through?" *Journal of Advertising Research* 2 (March-April 1997): 33-45

DANAHER, J.P., I.W. WILSON, and R.DAVIS. "Consumer Brand Loyalty in a Virtual Shopping Environment." *Working Paper* (2000): 1-42

DEIGHTON, J., C.M. Henderson, and S.A. Neslin. "The Effects of Advertising on Brand Switching and Repeat Purchasing." *Journal of Marketing Research* 1 (February 1994): 28-43

FESTINGER, L. *A theory of cognitive dissonance.* Stanford, CA: Stanford University Press, 1957.

KRUGMAN, H.E. "The Impact of Television Advertising: Learning Without Involvement." *Public Opinion Quarterly* 29 3 (1965):349-56.

LAVIDGE, R.J., and G.A. STEINER. "A Model for Predictive Measurement of Advertising Effectiveness." *Journal of Marketing* 25 (October 1961): 59-62.

LEONG, E.K.F., X. HUANG, and P.J. STANNERS. "Comparing the Effectiveness of the Web Site with Traditional Media." *Journal of Advertising Research* (September-October 1998): 44-49

PALDA, K.S. "The Hypothesis of a Hierarchy of Effects: A Partial Evaluation." *Journal of Marketing Research* 3 (February 1966): 13-25.

RAY, M.L. "Mareting Communication and the Hierarchy-of-effects." *Sage Annual Review of Communication Research* F. Kline, ed, 1973.

ROSSITER, J.R., L. PERCY, and R.J. DONOVAN. “A Better Advertising Planning Grid.” *Journal of Advertising Research* 31 5 (1991): 11-21.

VAKRATSAS, D., and T. AMBLER. “How Advertising Works: What Do We Really Know?” *Journal of Marketing* 63 1(1999): 26-43.

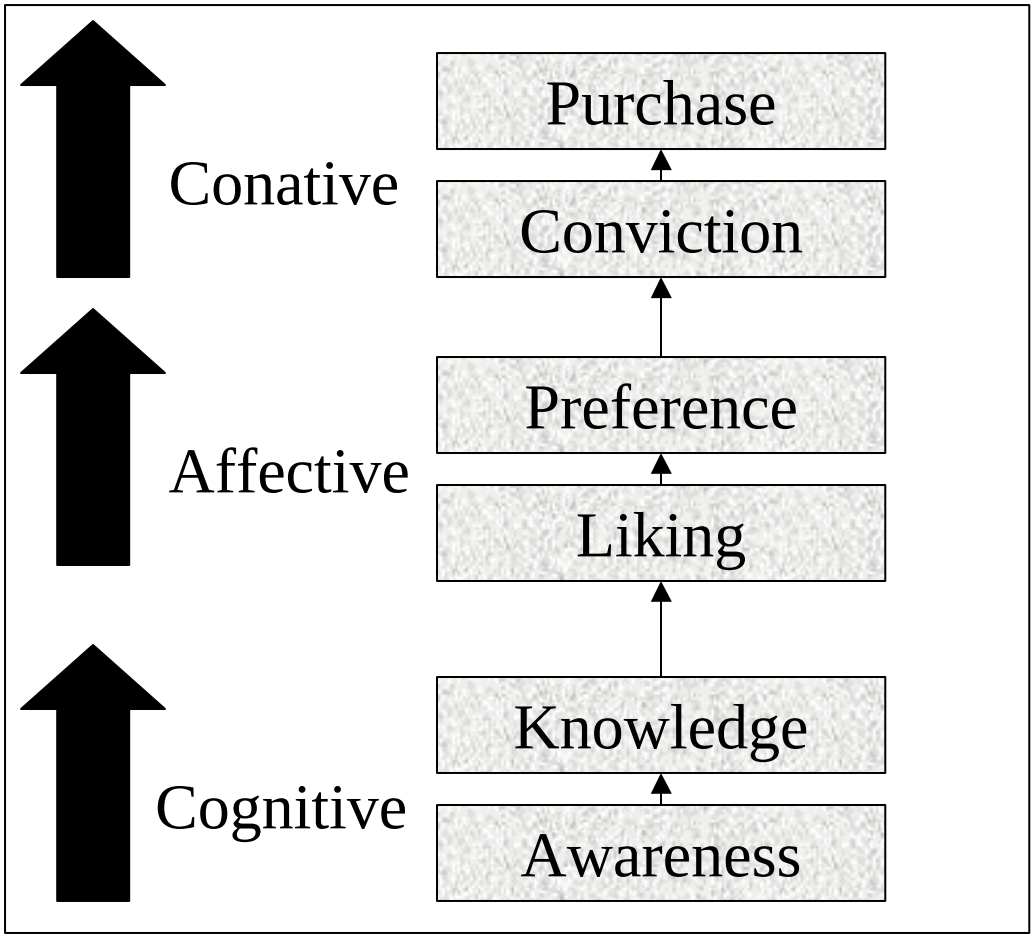
VAUGHN, R. “How Advertising Works: A Planning Model.” *Journal of Advertising Research* 20 5 (1980): 27-33.

VISHWANATH, V., and G. MULVIN. “Multi-Channels: The Real Winners in the B2C Internet Wars.” *Business Strategy Review* 12 1(2001):25-33

WINER, R.S. “A Multi-Stage Model of Choice Incorporating Reference Prices.” *Marketing Letters* 1 (December 1989): 27-36.

Figure 1

The Original Lavidge-Steiner Persuasive Hierarchy



Traditional Hierarchy-of-effects Hypothesis

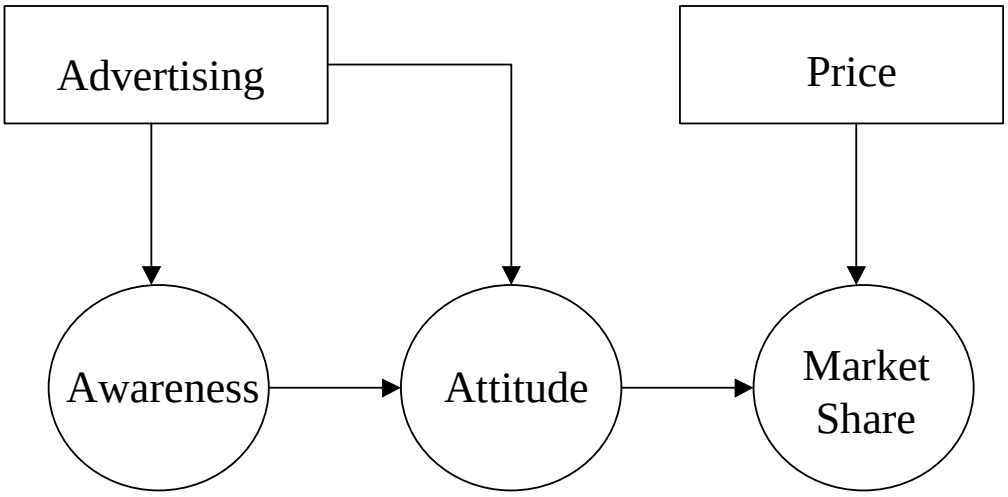


Figure 2: Panel A

Alternative Hierarchy-of-effects Hypothesis

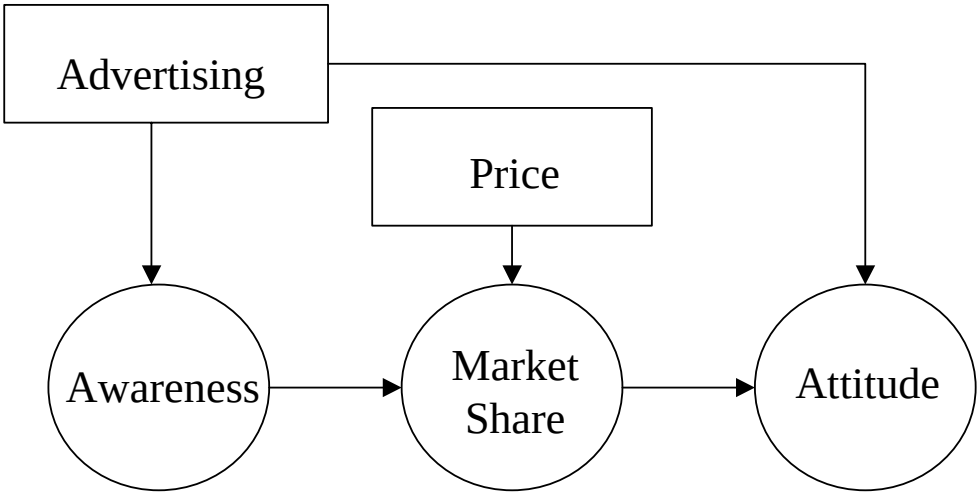


Figure 2: Panel B

Tested Internet Hierarchy-of-effects Hypotheses

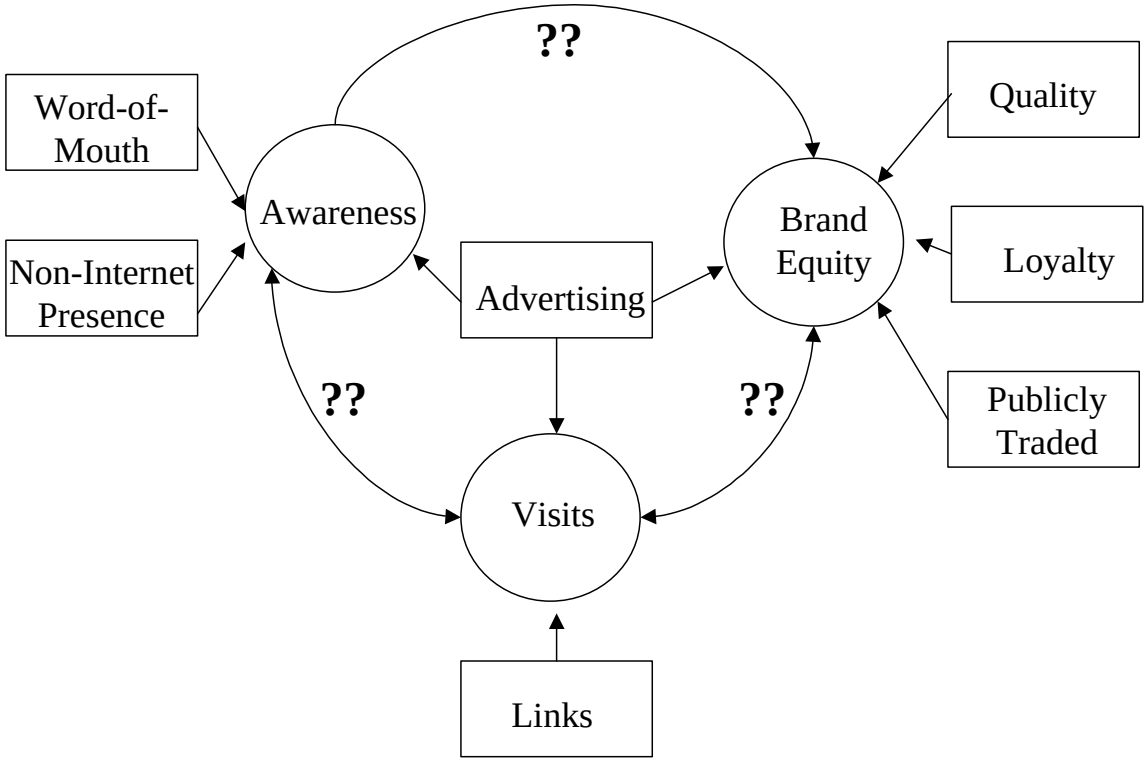


Figure 3

Table 1

Online and Offline Advertising Spending:
January-June 2000 (000's)

COMPANY	ONLINE	OFFLINE	TOTAL
MICROSOFT	$13,690	$149,235	$162,925
AMERITRADE	7,659	83,991	91,650
DATEK ONLINE	2,894	66,051	68,945
GEN'L ELECTRIC	3,093	55,032	58,125
E-TRADE	3,201	54,366	57,567
PRICELINE.COM	200	51,406	51,606
AOL	4,860	48,000	52,860
FMR CORP.	5,495	40,110	45,605
MORGAN STANLEY	2,015	35,712	37,727
IWON	0	32,636	32,636

Source: *Advertising Age*, September 25, 2000, p.26.

Table 2

List of Internet Companies Used

About.com	Compuserve	Infospace.com	Salon.com
Altavista	Datek	Inktomi	Search.com
Amazon.com	Discover Brokerage	iVillage.com	Sega.com
America Online	Doubleclick	Lycos	Snap.com
Ameritrade	Drugstore.com	Mapquest	SonicNet
Angelfire	E*Trade	Microwarehouse	Stamps.com
Ask Jeeves	Earthlink	Mindspring	The Motley Fool
@Home	Ebay	Monster.com	Theglobe.com
Auto-by-tel.com	Efax	MP3.com	TheStreet.com
BabyCenter	Egreetings	MSN.com	Ticketmaster.com
Barnesandnoble.com	ESPN.com	MTVonline	Time.com
Beyond.com	Etoys	Netgrocer	Toysrus.com
Blue Mountain Arts	Excite	Netscape	Tripod
Buy.com	GamePlayer.Com	Network Solutions	uBid
Carpoint	Gamespot.com	Onsale.com	USAToday.com
Cdnow.com	Geocities	Outpost.com	Verio
Charlesschwab.com	Go Network	Peapod	WebCrawler
CheckFree	Go2Net	PlanetRX	WebTV
CitySearch.com	Headhunter.net	Priceline.com	Webvan
Clickrewards	Hotbot.com	Prodigy Internet	Women.com
CNET	Hotmail	Real Networks	Xoom.com
CNN.com	HotWired	Saba	Yahoo

Table 3
List of Model Variables Used

Variable	Short Name	Description	Data Source
Advertising	Online, Offline	The spending by each Internet company on a variety of online and offline media for the 9 months preceding the endogenous variables' measurement. The offline media included radio, television, cable, outdoor media, newspapers, and magazines.	Competitive Media Reporting
Average Pages Viewed	Pgview	Indicates the average number of pages viewed by visitors to each Web site. Provides a relative measure of the loyalty and attention of site users by giving the depth of interest they displayed at the site.	Media Metrix Panel[6]
Average Web Site Quality	Quality	We collected and averaged different measures of quality from each Web site. Measures included, but were not limited to, ease-of-use, display of information, search capabilities, ease-of-download, as well as technical support and login speed/ease (if applicable).	Two independent undergraduate judges unaware of the purpose of this study.
Awareness	Awareness	Average familiarity of Internet users on a nine-point scale.	Landor Associates[7]
Brand Equity	Brandeq	Weighted compilation of many measures of Web site attractiveness -- distinctiveness, relevance, familiarity, and personal appeal.	Landor Associates
Links to Internet Web Site	Links	Average number of links from any other location on the Internet to an Internet company's Web site	Google, Internet search engine
Non-Internet Presence	Bricks	Indicator variable representing whether these Internet companies have stores or same-branded businesses that are not Internet-based.	
Publicly Traded Companies	Public	Indicator variable representing whether these Internet companies or their parent companies were publicly traded companies on the NASDAQ or DOW as of August 31, 1999.	
Public Relations Mentions	PRbuzz	Number of mentions in the top five of six nationally relevant[8] publications. This provides an additional word-of-mouth measure that reflects the relative amount that the average Web user might have heard in the proceeding month about the Internet companies studied.	
Web Site Visits	Visits	Number of visits in thousands that a Web site received over the course of a month.	Media Metrix Panel
Word of Mouth	WOM	Represents the word-of-mouth effects taking place due to a site's previous visitation level. It is the number of visits in thousands that a Web site received over the past month and is equivalent to $Visits_{t-1}$.	Media Metrix Panel

[6] Media Metrix randomly selects Web users from across the country for their panel and installs Web-monitoring software onto their computers, at home and at work, to measure the relative popularity of hundreds of Web sites.
[7] A consulting firm specializing in measuring brand equity that conducted a brand equity study from a random sample of over 6,700 respondents in the summer of 1999.
[8] These publications were determined by *Business Week* in a ranking of Hottest Tech Media: The Influencers (June 2000).

Table 4

Measures of Fit: All Sites

Model Hierarchy	***Systemwide R^2***	***System Weighted MSE***	***Predictive MSE***
Persuasive Hierarchy (Think-Feel-Do)	.56	3.56	71E6
Low-Involvement Hierarchy (Think-Do-Feel)	.66	.89	61E6
No-Involvement Hierarchy (Do-Think-Feel)	.55	3.42	81E6

Table 5
Empirical Results: Low-Involvement Hierarchy, All Sites

For All Internet Sites:	Think-Do-Feel	Elasticities
Dependent Var: $AWARENESS_t$		
$ONLINE_{(t,t-9)}$	-2.2E-6	
	(4.6E-6)	
$OFFLINE_{(t,t-9)}$	3.4E-6**	.03
	(2.0E-6)	
$PRBUZZ_{t-1}$	1.36*	.02
	(.88)	
$WOM(visits_{t-1})$	.02***	.14
	(.004)	
BRICKS	74.0*	.01
	(51.04)	
Dependent Var: $VISITS_t$		
$ONLINE_{(t,t-9)}$	.02E-2***	.14
	(.01E-2)	
$OFFLINE_{(t,t-9)}$	-.08E-3*	-.10
	(.05E-3)	
$AWARE_t$	19.54***	2.71
	(4.24)	
LINKS	.02***	.17
	(.005)	
Dependent Var: $BRANDEQ_t$		
$ONLINE_{(t,t-9)}$	-.04E-6	
	(.09E-6)	
$OFFLINE_{(t,t-9)}$	.05E-6	
	(.04E-6)	
$VISITS_t$	.06E-2***	.28
	(.007E-2)	
QUALITY	.17	
$PGVIEW_t$	.02	
	(.02)	
$PUBLIC_t$	.06	
	(.81)	
Systemwide R^2	.66	
System Weighted MSE	.89	
Predictive MSE	61E6	

***p<.05, **p<.10, *p<.15

Table 6

Measures of Fit: Retail Sites only

Model Hierarchy	***Systemwide R^2***	***System Weighted MSE***
Persuasive Hierarchy (Think-Feel-Do)	.71	4.04
Low-Involvement Hierarchy (Think-Do-Feel)	.70	.9
No-Involvement Hierarchy (Do-Think-Feel)	.72	3.75