

DETERMINANTS OF REACH AND LOYALTY — A STUDY OF WEBSITE PERFORMANCE AND IMPLICATIONS FOR WEBSITE DESIGN

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ABSTRACT

For many organizations the corporate website has emerged as the primary vehicle for inter-organizational and intra-organizational information exchange, as well as for sales and promotion activities. The performance of websites in terms of the extent to which they can attract and retain traffic, strongly influences the volume of business transacted on them. Identification of factors that influence website performance is therefore necessary, for appropriately focusing website development efforts toward specific design parameters and including relevant performance-influencing features within the website. Although studies have described different characteristics related to websites, a systematic and comprehensive identification of antecedents to website performance is missing. This paper is based on an empirical study of the performance of 190 websites. It identifies seven factors that influence two different measures of website performance, the Reach and Loyalty. Information content, usability, ease-of-navigation and security are significant predictors of Reach. Ease-of-navigation, customization, security and availability are determinants of Loyalty. The paper explains these results and uses them to suggest guidelines for website design.

Keywords: website reach, website loyalty, website design, website characteristics

1: INTRODUCTION

The past few years have seen an exponential growth in the number of websites. The World Wide Web had 70 million websites in 2005, and 100 million websites as of December 2006¹. This increase in the number of websites is largely because more and more organizations are using the Internet as a business channel [50]. For these organizations, the website has emerged as the primary vehicle for advertising, sales and service related activities as well as for inter-organizational and intra-organizational information exchange [20].

As organizations try out new ways of selling and communicating over the Internet, it is becoming increasingly apparent that the performance of their websites in terms of the extent to which they can attract and retain traffic, strongly influences the volume of business transacted on them. Therefore it is important for orga-

nizations to identify factors that influence website performance. This is necessary, for appropriately focusing website development efforts toward specific parameters and including relevant performance-influencing features within the website. Appropriate website design ultimately enables organizations accomplish their e-commerce activities with greater success [29, 54]. Analysis of website performance in terms of design criterion and related factors is therefore an important area of enquiry [49].

Studies have described different characteristics related to websites such as information quality and quantity [3], user trust [17], user satisfaction [32] and website quality [21]. Some of these characteristics have been shown to influence website performance and user satisfaction with websites. However, there are very few studies that systematically and comprehensively identify antecedents to website performance and analyze the relative importance of different factors from the point of view of website design.

In this paper we identify and analyze antecedent factors that influence two different measures of website performance, the website reach and the website loyalty. Our findings are based on an analysis of the performance of 190 websites. The results show that there are broadly seven factors that influence the extent to which a website can attract and retain traffic. Each factor however, is not equally important for website performance, and some factors are more important than others.

The rest of the paper is structured as follows. Section 2 describes the literature in terms of website characteristics and website performance measures, specifically website loyalty and website reach. Section 3 describes the research design and methodology. Section 4 details the data analysis and results. Section 5 describes the managerial and design implications of the results. Section 6 concludes with contributions of this research and possibilities for future research.

2: LITERATURE SURVEY

2.1. Website Characteristics

Websites have a number of important characteristics. They include content and organization of information, the ease with which the website can be used and technical characteristics.

The content of the information should be relevant to the purpose of the website [11,7], easy to understand [30], useful [51, 22] and current [6, 44]. The organization of the information [26] describes aspects related to how the information is arranged on the website. These include the general layout and the number and effectiveness of hyperlinks [1,45].

The ease with which the website can be used, referred to as usability [13, 34] or ease of use [14], describes properties and features that facilitate effective performance of tasks associated

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1. The figures are available from Netcraft (www.netcraft.com), a company that monitors and reports information on different aspects of the Internet such as websites, protocols, security and vendors.

with it. For instance, search engines and shopping carts make it easy for users to interact with websites. Graphics and multimedia make the website interesting, visually appealing and easy to use [55]. The ease with which a website can be used enables users to satisfactorily accomplish their purpose and goals related to the website, in a specified context [2].

Technical properties of the website include security, access speed and accessibility. Security is implemented by provisions for user authentication and secure transactions [12, 31, 25]. Access speed determines how fast the website can deliver and display web pages [40]. Website accessibility or availability [23, 53] are important for continued and sustained use of the website by browsers. Accessibility and access speed depend on the technical reliability of the underlying infrastructural platform [35].

2.2. Website Performance- Reach and Loyalty

Website performance metrics are indicators of whether or not the website is successful. They are measured by tracking different traffic parameters associated with the website. The most common parameter relates to the frequency of use of the website, that is, how many people are using the website [4]. This is a fairly simple and straightforward measure of the reach of the website in terms of the number of distinct users who use it. The reach of a website is an important aspect of performance because it measures the extent to which the website is known and accessed by different people. Website Reach can be measured by measuring the number of unique visitors to a website and has been used in previous studies on websites (see for example, [19]).

Another parameter that determines website performance is the Website Loyalty [33, 46]. Website Loyalty is defined as the likelihood of repeated visits by the same individual [5]. The likelihood of return can be measured by measuring the number of repeat visits that a customer makes to the website.

Existing studies fall into two broad categories. Some of them [42] have described different characteristics that are important for websites. Others have explored the influence of one or some website characteristics on different aspects of website performance [39]. In this study we have first attempted to **comprehensively** identify different website characteristics. Second, we have empirically explored the influence of **all** of these factors on Website Reach and Website Loyalty. Based on the literature findings, we expect to find the presence of the above factors, and their positive influence on website performance. Given that we have attempted a comprehensive study, we also expect to find some additional factors that influence website reach and website loyalty.

3: RESEARCH METHOD

3.1. Survey Instrument and Pretest

The website characteristics described in Section 2 were used to develop a survey questionnaire. Each item in the questionnaire described a specific website characteristic and was measured as a five-point Likert Scale. For instance, a question representing the information content was designed as “The information on the website is correct”, and was assessed from 1 to 5. We first administered the questionnaire to six IS/E-Commerce researchers to pre-test for content validity [24, 52]. Based on their feedback we modified the questionnaire.

3.2. Website Selection and Evaluation

We selected 190 websites for the study. The websites were drawn from five important categories [50, 56] that included Portals and Search Engines, Retail, Entertainment, News and Information and Financial Services. For selecting the websites, we looked at the Nielsen NetRatings database. NetRatings is a widely used database that provides data about website traffic patterns such as the number of hits, number of unique visits, the number of repeat visits etc., to a website. Websites are ranked on different parameters such as the number of hits. We selected the top 38 websites in each of these five categories, based on the average monthly hits on each website. This enabled us to study the characteristics of the “exemplar” websites.

Following the choice of the websites, we asked two IS/E-Commerce researchers to independently evaluate the website characteristics, using the items in the questionnaire. Each evaluator browsed through each website and performed some functions relevant to it. Then he answered each question/item on the questionnaire on a scale of 1 to 5, depending on his assessment evaluation of the particular website for the specific item. The questionnaire items for the different characteristics have been listed in Section 4.3. Each evaluator used the same computer in a university laboratory. This was done to ensure uniformity in computing infrastructure and networking facilities available to both evaluators, and guard against differences in their evaluation arising from of these reasons.

3.3 Measurement of Website Performance: Website Reach and Website Loyalty

Next, we measured the two website performance measures that formed the dependent variables for our study- Website Reach and Website Loyalty. We obtained these parameters for each of the websites selected in 3.2, from the Nielsen NetRatings database. The Website Reach, denoted in this study by REACH, was measured by the total **number of unique visitors** (or the unique audience for each website), who visited the website at least once in the specified period. Persons visiting the same website more than one time in the reporting period were only counted once. The second factor, website loyalty, denoted in this study by LOYALTY, was measured by considering the **views per person**, or the average number of visits each unique visitor made to the website. To arrive at the REACH and LOYALTY figures for each website, we first obtained the average monthly values of REACH and LOYALTY, for twelve months from January 2004 to December 2004. We then averaged these monthly values to arrive at the overall average of REACH and LOYALTY for this twelve-month period, for each website.

The two measures, number **of unique visitors** and **views per person** together described the overall success of each website in terms of the number of people who visited the website, and the extent to which they were loyal to it and were likely to make repeat visits.

4: DATA ANALYSIS AND RESULTS

4.1. Inter-Rater Reliability

The first step was to check for agreement amongst the two raters, in their evaluation of the websites. For this, we used the inter-rater reliability as a measure of the extent to which the two

Table 1: Factor Loadings and Reliability

Survey Item	Factor 1 INFOCON	Factor 2 ENAV	Factor 3 USAB	Factor 4 CUSTOMIZATION	Factor 5 DPSEED	Factor 6 SECURITY	Factor 7 AVAILABLE
Cronbach-Alpha	0.91	0.83	0.88	0.87	0.82	0.79	0.61
Minimum, Maximum	2.35, 4.80	2.80, 4.60	1.80, 4.50	2.67, 4.50	1.50, 4.75	0.50, 4.75	3.00, 4.83
Mean, Standard Deviation	4.1, 0.32	4.07, 0.24	3.23, 0.54	4.03, 0.28	3.36, 0.69	2.60, 1.30	4.33, 0.24
INFO1	.777						
INFO2	.755						
INFO3	.710						
INFO4	.689						
INFO5	.688						
INFO6	.637						
INFO7	.624						
INFO8	.593						
INFO9	.582						
INFO10	.545						
NAV1		.778					
NAV2		.714					
NAV3		.705					
NAV4		.645					
NAV5		.612					
USAB1			.856				
USAB2			.785				
USAB3			.699				
USAB4			.694				
USAB5			.667				
SPD1					.839		
SPD2					.802		
SPD3					.742		
CUST1				.808			
CUST2				.786			
CUST3				.745			
SEC1						.820	
SEC2						.759	
SEC3						.750	
SEC4						.830	
AV1							.718
AV2							.545
AV3							.512

raters agreed in their ratings. Inter-rater reliability is a statistical measure that assesses the consistency of evaluation from two or more independent evaluators or raters [9, 18]. It is measured by the value of the weighted Kappa coefficient. The acceptable range for weighted Kappa at 95% confidence interval is between 0.617 and 0.644 [18]. We tested the Inter-rater reliability for the two sets of evaluations. The weighted Kappa was 0.63. Therefore the weighted Kappa was high, which indicated a high level of agreement between the two raters. We therefore considered the mean values of the two sets of evaluations for each website as the values of the evaluation items for that website.

4.2. Factor analysis of website characteristics

The next step was to identify the distinct factors determining website reach and loyalty. We conducted a factor analysis (with Varimax Rotation) test across the 190 websites. The factor analysis results have been described in Table 1. Rows 3 and 4 of the table show some descriptive parameters for each of the factors. **Seven** distinct factors emerged from the items in the questionnaire, each representing a distinct website characteristic. The reliability, assessed through the Cronbach Alpha, was greater than 0.7 for all but one of the factors. For the remaining factor, the reliability was 0.61. All the reliability values are greater than that suggested by Nunnally [36], which is 0.6.

4.3. Factor Descriptions

A detailed look at the factors is useful, for identifying relevant design parameters that can be expected to influence the performance and success of websites. In this section we describe and analyze different aspects of each of the factors.

Factor 1 was a combination of the following items.

- INFO1 The range of information (variety of topics) is high
- INFO2 The information is applicable to the website's activities
- INFO3 The information is detailed
- INFO4 The information is current
- INFO5 The information is accurate
- INFO6 It is easy to locate the information
- INFO7 The information is useful
- INFO8 The information is systematically organized
- INFO9 The meaning of the information is clear
- INFO10 The layout of the information is easy to understand

Factor 1 described the nature of the content of the information on the website- its relevance, level of detail, clarity, usefulness and accuracy. We called this factor "Information Content" (INFOCON).

One of the primary functions of almost all websites is to provide information. In this context, INFOCON described characteristics related to the quality and nature of the information on the website, and was somewhat similar to what has been described as "Information Content" [37]. In addition, it also included other information-related parameters such as the adequacy and depth of information, how easily the information can be located, and how well-organized and well-arranged it is. These additional parameters provided a more detailed picture of the content/information properties of websites.

Factor 2 is represented by the following items.

- NAV1 There are meaningful hyperlinks
- NAV2 The description of the links on the website is clear
- NAV3 The links are consistent
- NAV4 The arrangement of the different links is easy to understand
- NAV5 The use of redundant hyperlinks makes it easy to navigate the website

Factor 2 represented characteristics that help users navigate the website better. These included the layout of the different components and elements of the website, such as hyperlinks and tabs, as well as ways in which these elements were arranged. We called this factor "Ease of Navigation" (ENAV). ENAV described characteristics that enhance the navigability of the website. In addition to including some of the aspects described in Section 2, it also focused on the aspect of the consistency of links. This aspect is an important part of navigability because the presence of dead links, for example, is one of the most frequent problems with websites [27].

Factor 3 captured features described by the following five items.

- USAB1 The website is entertaining (its fun to use)
- USAB2 The website is exciting and interesting
- USAB3 The website is easy to use.
- USAB4 The use of multimedia is effective for my tasks at the website.
- USAB5 The website has an attractive layout.

From the above items, it is clear that Factor 3 represented a website characteristic related to the ease of use or the usability of the website. We named this factor "Usability" or USAB.

USAB included usability related characteristics in existing literature such the extent to which a website is easy to use, challenging, visually appealing and fun. USAB also covered aspects such as how attractive and well laid out the website is and to what extent it uses multimedia. Given the rapid advances in multimedia technologies and the increase in active audio and video website content, the effective use of multimedia forms a significant aspect of website usability.

Factor 4 was composed of three items as described below.

- CUST1 The website has personalization characteristics
- CUST2 The website offers customized information
- CUST3 The website has provisions for designing customized products

Factor 4 described the extent to which a website can be customized to user needs. We named it CUSTOMIZATION.

The ability of websites to present information tailored to individual requirements has become significant as a result of the increase in B2C transactions. As customers buy goods from different "stores" on the web, there are more and more websites that they use and have to remember the details of. Users may find a high value of CUSTOMIZATION easy and convenient. The property of CUSTOMIZATION is therefore a critical element and can considerably influence the performance of the website.

Factor 5 was composed of the following three items.

- SPD1 The speed of display between pages is high.
- SPD2 There is very little time between my actions (of requesting for something from the website) and the responses (having the response displayed on my computer).
- SPD3 The rate at which the information is displayed is fast.

The above items referred to the extent to which the website is technically superior in terms of small download delays and high downloading speeds. We named this factor “Download Speed” or DSPEED. DSPEED was dependent on the website infrastructure and referred to the time taken for the website to load. Given the increasing use of multimedia, and the growing complexity of application software and business logic in web application development, this characteristic is an important aspect of website design.

Factor 6 consisted of the following items.

- SEC1 The website has provisions for user authentication
- SEC2 The website has provisions for a secure monetary transaction (for instance, Verisign)
- SEC3 The website has an information policy
- SEC4 The company to which the website belongs has a well-known brand

The above items described the extent to which the website could be characterized as “safe” and had provisions for executing secure transactions. This factor was called SECURITY.

Factor 7 consisted of the following three terms.

- AV1 It is easy to read off the contents of the website.
- AV2 The website is well — maintained so that the information is easy to acquire (no dead links, for example).
- AV3 The website is available (that is, it is up)

These items described website capabilities that made content available to users in a form that was easy to acquire and understand. In other words, they described the extent to which a website was easily available to users. We therefore named this factor AVAILABLE.

SECURITY and AVAILABLE can be expected to influence users’ confidence with the website, and like DSPEED, were dependent on the IT infrastructure. Given the rise in the amount of sensitive information (such as bank transactions for example) exchanged over the Internet and the increasing amounts of personal information (such as credit card numbers and social security numbers for example) being stored on web-servers and database servers, SECURITY is an important predictor of users’ trust in a websites [49].

4.4. Determinants of Website Reach and Loyalty

Once we identified the factors, the next step was to study the pattern of relationships between these factors (which formed the independent variables in our study), with the Website Reach and Website Loyalty (which formed the dependent variables). Regression analysis was used to examine the relationships between the dependent and independent variables. We framed the following two equations.

$$REACH = a_0 + a_1 * INFOCON + a_2 * ENAV + a_3 * USAB + a_4 * DSPEED + a_5 * CUSTOMIZATION + a_6 * SECURITY + a_7 * AVAILABLE$$

$$LOYALTY = b_0 + b_1 * INFOCON + b_2 * ENAV + b_3 * USAB + b_4 * DSPEED + b_5 * CUSTOMIZATION + b_6 * SECURITY + b_7 * AVAILABLE$$

Where a_0 and b_0 are the constants, and $a_1, a_2, b_1, b_2, \dots$ are the coefficients for each factor. Given the definitions of the factors as described in Section 4.3., we expected the factors to positively influence REACH and LOYALTY.

Table 2: Regression Results — Determinants of Website Reach

REACH Equation		
R square = .16, F- Ratio = 8.6 **		
		Standardized Beta Coefficient and t - values
Information Content	INFOCON	0.361 and 2.13 **
Ease of Navigation	ENAV	0.661 and 2.46 *
Usability	USAB	0.413 and 1.89 *
Download Speed	DSPEED	-0.093 and -0.8
Customization	CUSTOMIZATION	-0.007 and -0.07
Security	SECURITY	0.082 and 1.77 *
Availability	AVAILABLE	-0.015 and -0.06
Intercept		-3.769 and -2.75**

* Significant at .05 level

** Significant at .01 level

Table 2 shows the results of the REACH equation. INFOCON, USAB, ENAV and SECURITY were significant predictors of website Reach. The R square value was .16, with an F-Ratio of 8.6, significant at the .003 level.

The results show that INFOCON, ENAV, USAB and SECURITY are significant predictors of Website Reach. That is, the quality of the information content, the ease with which navigation can be achieved, the usability and the extent to which the website is perceived as secure, determine the reach of the website.

On the other hand we found that AVAILABLE, DSPEED and CUSTOMIZATION were not significant factors in predicting website reach. The finding regarding AVAILABLE is important because it illustrates the fact that with increased reliability of infrastructure, the availability of websites in general is almost taken for granted, that is, people expect that a website would be available. It is therefore a “hygiene” factor whose existence is expected and hence is not a significant criterion for website Reach.

Second, it is significant that CUSTOMIZATION did not emerge as an effective predictor of Website Reach. This could be because the perceived value of customization features, such as the “one-click” feature for example, becomes apparent only when repeated visits are made to the website. The first visit (which is what is measured by the Website Reach) is therefore not influenced significantly by customization features. Hence, CUSTOMIZATION is possibly not a significant factor in predicting REACH.

Third, both evaluators used the same facilities and were connected to the Internet through a high speed local area network. The network has a very low downtime and for the most part is fast. It is therefore probable that all the websites downloaded very fast and there was no perceptual difference in the download speeds. This could be probably why DSPEED did not emerge as a significant factor

Table 3 shows the results from the regression of the LOYALTY equation. ENAV, CUSTOMIZATION, SECURITY and AVAILABLE had significant correlations with LOYALTY. The R square value was .16, with an F-Ratio of 5.9, significant at the .0001 level.

For the equation related to LOYALTY, our study suggests that ENAV, CUSTOMIZATION, SECURITY and AVAILABLE are

significant predictors of website Loyalty. Hence the better the navigability and customization features of websites, the greater the customer loyalty that it generates. Also websites that are secure and available are likely to attract repeat visits. On the other hand, the results show that INFOCON, DSPEED and USAB are not significant predictors of website Loyalty.

It is interesting to note that both AVAILABLE and CUSTOMIZATION, which were not significant predictors of REACH, are significant predictors for LOYALTY. This is so because whereas one-time website availability is sufficient for the first visit, it is necessary that for developing long term customer loyalty and for encouraging repeat visits, websites be largely available over a sustained period of time. Hence AVAILABLE is a significant predictor of website loyalty. Similarly CUSTOMIZATION, which signifies the extent to which the website can be customized for individual visitors, is a property that becomes more important with repeat visits. Therefore it is expected that websites with better customization capabilities will attract repeat visits and generate more loyalty. Hence CUSTOMIZATION emerged as a significant predictor of website Loyalty.

Also interesting is the fact that USAB did not emerge as an important predictor of loyalty. In this context, Nielsen [34] suggests that most visitors visit websites with specific goals and objectives in mind, and with repeat visits, their familiarity with the website grows. That is, after interaction with a website over a prolonged period of time, usability becomes less of an issue, than ease of navigation and the ability to customize. Hence websites which can be navigated easily and can present information in a customized manner would be more likely to attract repeat visits. In other words, visitors would be willing to forego the benefits of usability and settle for less usability, if the website was easy to navigate and had customization features.

The absence of DSPEED as a significant factor can be explained in a similar manner as before. Since the machines that were used have access to high speed internet access over a high speed LAN, it is probable that all the websites downloaded very fast and there was no perceptual difference in the download speeds.

Given the results and significance levels in tables 4 and 5, we

Table 3: Regression Results — Determinants of Website Loyalty

LOYALTY Equation		
R square = .16, F- Ratio = 5.2 ****		
		Standardized Beta Coefficient and t - values
Information Content	INFOCON	-0.146 and -1.23
Ease of Navigation	ENAV	0.515 and 2.75**
Usability	USAB	0.047 and 0.57
Download Speed	DSPEED	0.045 and 0.29
Customization	CUSTOMIZATION	0.152 and 2.45 *
Security	SECURITY	0.162 and 5.06****
Availability	AVAILABLE	-0.356 and -1.9*
Intercept		0.550 and 0.58

* Significant at .05 level

** Significant at .01level

**** Significant at .0001 level

conclude that the overall model was significant in predicting the values of both the dependent variables, in terms of the independent variables.

5. DISCUSSIONS

5.1. Managerial Implications: Guidelines for Website Design

The results of this study have a number of implications for website design. We think that all the factors that emerged from the factors analysis are important characteristics, because they describe distinct and significant aspects of websites. They also point to different aspects that need to be considered when designing websites. Some aspects of these factors have been described in existing studies while other aspects are new, as explained in Section 4.3.

Of the seven factors that have emerged from this study, all except DSPEED are significant predictors of either website Reach or website Loyalty or both. In this sense this study has pointed to a **comprehensive** set of website characteristics, which influence these two aspects of website performance. The most important characteristic for website design as far as Website Reach is concerned, is related to the **content of the information** and the manner in which it is arranged. The range and variety of information posted on websites has increased dramatically, from simple, relatively static web pages to dynamic, multimedia based content. In the case of media websites for instance, text based content is almost always accompanied by audio and visual content. All of this content needs to be selected, arranged and presented in a manner that the user finds useful and that does not overwhelm the user. Moreover, the amount of information on the Internet is increasing exponentially. In this situation, finding the right or useful information is becoming increasingly difficult, and “information overload” is a factor that has been known to be detrimental to website design. For example, in the case of search engines, the precision and relevance of search results is an important determinant of the success of the website. It is widely accepted for example, [28] that Google’s phenomenal success is because of its ability to generate search results with relevant information.

The sophistication of B2C e-commerce has increased remarkably. From “two-dimensional” brochure ware which was communicated through static pictures, websites such as www.landsend.com and www.apartments.com for example, have animated three dimensional multimedia features to display different products and services. Given this increase in the complexity of product catalogs available on the web, it is necessary that the website remains essentially easy and convenient to use, and users can accomplish their tasks effectively. Hence the importance of the **ease of navigation** and **usability** criterion, as suggested by our results. Website designers should keep in mind that the more complex, varied and involved the information and information presentation techniques, the more critical it is to make the website appear simple, essential and useful to use. In a similar manner, **customization** is important for retaining the interest and loyalty of visitors and making sure that their interaction is easy and convenient. Personalization tools therefore are important elements of website design.

The **availability** and **download speed** are related to the infrastructural characteristics of the website. Even though the download speed did not emerge as a significant predictor of either Website Reach or Website Loyalty, it is important for website de-

signers to keep in mind that users expect web pages to download as fast as possible [16], and that adding a lot of active elements to the website, for example, can affect the speed and influence website performance. Likewise, inadequate infrastructure in terms of server capacity can impair the availability of the website. Hence design issues such as redundant processing power, effective load balancing and appropriate configuration of database and application servers are important in this context.

Finally, **security** of internet commerce in general and of websites in particular is an important subject for both academic research [41] and for practitioner related policy decisions [43]. As the Internet becomes an important part of all of our business and in many cases our social activities, the confidentiality of the information transacted through web pages can only increase. So would the gravity of the repercussions in case that information is lost, modified, stolen or compromised in any way. Website designers therefore need to keep in mind that security is potentially one of the most important issues in the design of websites.

5.2. Contributions and Future Research

The current literature makes available, through separate studies, different website characteristics and their general relationship with website performance parameters. The primary contribution of this study is that it has **comprehensively** identified and analyzed the influence of seven different website characteristics on two important website performance measures: website Reach and website Loyalty. One of the strengths of the study is that the measures of the dependent variables, Website Reach and Website Loyalty, have been assessed separately from the measures of the independent variables, that is, the website characteristics. The former was measured through an external database while the process of evaluation used to determine the latter was carried out on the basis of the questionnaire. Hence the study avoids problems of common variance which might exist in studies where the same questionnaire and subjects are used to evaluate website performance as well as characteristics (as in [56] for example).

The study can be extended in a number of ways. First, the different factors that emerged from the study can be used for carrying out studies to measure their relative influences on the customer satisfaction with different websites. Customer satisfaction [38, 8] is a perceptual measure of how satisfied customers are, with a particular website, and can be considered another measure of website performance. Secondly, this study can be extended by conducting separate studies on websites in different domains. It may very well be that different factors are not equally important in their influence on website reach and loyalty, for websites in different domains. Third, we have considered 190 websites and have analyzed website traffic data for a period of 12 months. More extensive data collection over a longer period of time and over a larger number websites, would lead to a more comprehensive analysis and possibly to more robust findings.

Two considerations should be taken into account while interpreting the findings. First, since we considered the top websites by number of hits, the Website Reach might not vary too much across websites. Second, characteristics of the websites that we examined might have changed, over the one-year period for which Website Reach and Website Loyalty data were considered. However, since we considered the well-known and “successful” websites, it can be assumed that the characteristics would not change significantly over a one year period.

6. CONCLUSION

Websites provide the key interface for the use of the Internet. The appropriate design of websites is of utmost importance in influencing website traffic, and hence for increasing the likelihood that the website will be used effectively to fulfill desired functions. This paper provides pointers to key website design elements and explains their influence on reach and loyalty. Hence it adds significantly to the larger research question of how website traffic should be maximized, in order to increase revenues from e-commerce operations. From a practical point of view, the paper offers managerial guidelines for the design of websites.

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