

Internet Presence, Website Analytics, and E-Retailor Financial Performance

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ABSTRACT

By stitching together fragmented research streams, this study theoretically developed the Internet Presence construct and tested its effects on website analytics and e-retailer profitability. An empirical model was developed and tested through structural equation modeling technique using a sample of 100 online retailers randomly selected from an online database of the top 5,000 retailers. The results suggest that social media presence and diversity in internet traffic positively affect website analytics which in turn affect financial performance.

JEL Classification : M150, M160, M190

Keywords: Internet presence, website analytics, online retailers, financial performance, Webometrics

INTRODUCTION

In an increasingly competitive digital economy, a strong internet presence has been considered to be a key component for most business operations (Stuart and Jones 2004; Heinze and Hu 2006; Nam, Barnett *et al.* 2014). The wide spread use and availability of the Internet has seen organizations use websites as a means of achieving a number of strategic objectives (Heinze and Hu 2006). These include the creation of a worldwide electronic presence, extended market reach, new business opportunities, improved customer service, and the generation of online sales (Teo and Tan 1998). The use of an online presence to extend the market reach of organizations can provide business with a mechanism to increase financial returns through increased sales and improved operational performance.

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To date, a significant amount of research has been published on the general topic of electronic commerce (Hoffman DL 2000; Liu and Arnett 2000; Kauffman and Walden 2001; Liao, Palvia *et al.* 2006; Yang, Shi *et al.* 2014). Within this area of research, many studies have attempted to define internet presence by incorporating a range of factors such as websites (Zhang and Gisela 2001; Devaraj, Fan *et al.* 2002; Liang and Lai 2002; Torkzadeh and Dhillon 2002; Barnes and Vidgen 2003; Loiacono, Watson *et al.* 2007); hyperlinks (Park and Thelwall 2003; Vaughan 2003; Nam and Barnett 2011; Kim and Nam 2012; Nam, Barnett *et al.* 2014); domains (Nikkel 2004; Fangfei Wang 2006); search engines (Brin and Page 1998; Yalçın and Köse 2010; Wilkinson and Thelwall 2013); and social media (Chen, Fay *et al.* 2011; Constantinides 2014). While each construct forms a key component behind how internet presence is defined, there has been little empirical evidence to suggest that a complete definitive account has been given. In this paper, we mark an important step in helping to overcome this apparent oversight by empirically examining all of the factors that define internet presence and their impact on website analytics (defined as including: website ranking, bounce rate, page views, and the amount of time spent on a website) and the financial performance of purely internet based retailers. An empirical model was developed and tested through structural equation modeling (SEM) technique using a sample of 100 online retailers randomly selected from an online database of the top 5,000 US based retailers.

In order to accomplish this objective, the paper consists of five sections including this introduction. In section two we provide an assessment of the literature that is related to the factors associated with the internet presence of corporations. Section three documents our research model, methodology and associated hypotheses. In Section four, the results of the study are explained. Finally, in Section five we present our findings and draw a number of relevant conclusions, we also suggest some ideas for further research.

REVIEW OF LITERATURE

Literature on online presence points to a variety of factors including having a corporate website presence (Barnes and Vidgen, 2003), the ways in which hyperlinks are structured (Park and Thelwall, 2003), domains (Nikkel, 2004), search engines (Brin and Page, 1998), as well as having a social media presence (Chen, Fat *et al.* 2011). More importantly, research also suggests that having an internet presence, in a variety of forms, is strongly associated with a firm's online visibility and performance (Harrison, Mykytyn *et al.* 1997; Meehta and Shah 2001; Grandon and Pearson 2004; Nasco, Toledo *et al.* 2008; Grandón, Nasco *et al.* 2011; Haag-Schmitt 2012; Haag-Schmitt and Booker 2013). Studies by (Loader, Hague *et al.* 2000; Pigg and Crank 2004; Oztok, Zingaro *et al.* 2013; Öztok, Zingaro *et al.* 2015) have helped to develop the theoretical viewpoint that having an internet presence provides firms with a means of social capital and social presence. While initially aimed at face-to-face human interaction, the theory of social presence has evolved in a manner that can be viewed as the way individuals represents themselves in their online environment. By viewing firms as individuals operating in an online social plane one can argue that social presence theory is indeed relevant to this research and as such forms a theoretical base. Nonetheless, the concept

of internet presence is nonetheless still fragmented and in need of further empirical study. In this study, we streamline all the fragmented factors associated with internet presence and suggest a more comprehensive multidimensional internet presence construct and test its effects on website analytics and financial performance of an online retailer (Figure 1). Internet presence is theorized as a multidimensional construct encompassing—search engine visibility, social media presence, the level of incoming internet traffic to a retailer’s website (in-links) and its diversity (domain names), and the number of web mentions a retailer’s name receives over the Internet. We hypothesize that internet presence affects website analytics (e.g., ranking, bounce rate, page views, and daily time spent on website) (Nikolaeva 2003) which in turn affects an online retailer’s financial performance. While website analytics can be determined by a number of factors including website design, content, information, and system quality (Paul Alpar 2001; Benbunan-Fich and Fich 2004; Turner 2010; Plaza 2011). The financial performance of a firm is the result of an interplay between a variety of factors including, environmental, strategic, technological, social, intellectual, and financial capital (Zahra and Pearce 1989; Capon, Farley *et al.* 1990; Stanwick and Stanwick 1998; King and Lenox 2001; Ming-Chin, Shu-Ju *et al.* 2005). In this study, however, we attempt to ascertain the effects of internet presence on website analytics and the financial performance of online retailers. An online retailers’ financial performance (e.g., sales revenues) heavily depends on its Internet presence as a means of attracting and retaining customers (Devaraj, Fan *et al.* 2002; Torkzadeh and Dhillon 2002; Barnes and Vidgen 2003; Cao, Zhang *et al.* 2005; Liao, Palvia *et al.* 2006; Welling and White 2006; Lahuerta Otero, Muñoz Gallego *et al.* 2014). Hence an organization’s internet presence and website analytics form the core of a successful online retailing operation (Nikolaeva 2003). Online presence or visibly (e.g., search engine ranking and social media presence) is eventually translated into a retailer’s website analytics. Having an internet presence through a website acts as an important mechanism from which a purchase decision is likely to take place and where website analytics play a crucial role in analyzing a firm’s performance (Harrison, Mykytyn *et al.* 1997; Meehta and Shah 2001; Grandon and Pearson 2004; Nasco, Toledo *et al.* 2008; Grandón, Nasco *et al.* 2011; Haag-Schmitt 2012; Haag-Schmitt and Booker 2013). For example, the pathways a customer takes to arrive at the retailer website (e.g., through search engine or social media sites) and the time he/she spends on site is crucial in making a purchase (Haig 2001; Wang, Lui *et al.* 2008; Yan and Dai 2009). In the next section of the study, each of the factors associated with internet presence is discussed in more detail and the relevant hypotheses developed (see Figure 2 for a detailing of the research model).

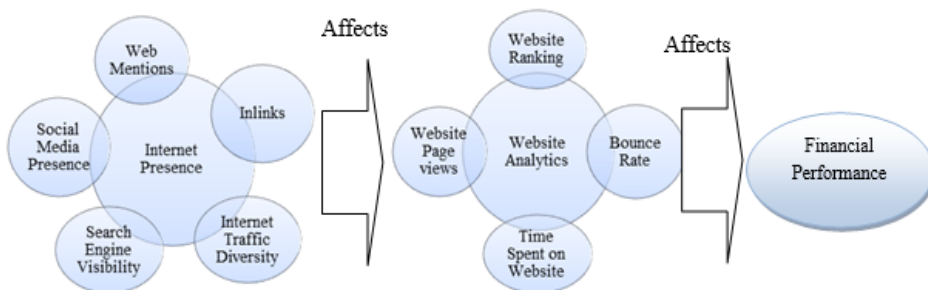


Figure 1: Conceptual framework: Internet presence, website analytics, and profitability

Website Analytics

Through the internet, company websites have become both an essential communicational tool (Sullivan 1999; Stuart and Jones 2004; Capriotti and Moreno 2007) and an effective means of establishing a strong corporate identity (Heinze and Hu 2006). In this instance, corporate websites have been used as tools for public relations (White and Raman 1999; Hill and White 2000; Kent, Taylor *et al.* 2003) and to help show organizations as being socially responsible (Bondy, Matten *et al.* 2004; Wanderley, Lucian *et al.* 2008; Nam, Barnett *et al.* 2014). Websites have also become an important factor in helping to define the characteristics of an organization or more specifically an online retailer's internet presence. In simple words, web analytics is the analysis of the website data for the purposes of making sound business decisions, the likes of which can ultimately impact the financial performance of an organizations. In this study, four website analytics are considered: website ranking, bounce rate, page views, and the amount of time spent on a website (these are defined in the methodology section). Measuring website traffic and analyzing user navigation is a common procedure for any organization and the website provider they subscribe to. The monitored items vary from simple statistics ("How many visitors we have per day?"), ("Where are these users coming from?"), ("How long are they spending on our website?") through to much more complex and comprehensive analysis of the navigation behavior of website visitors such as ("Are search engine visits more effective than referring site entries?") or ("Why do some web shop visitors collect many products in their shopping cart and then quit before checkout?") (Pakkala, Presser *et al.* 2012). One means from which some of these questions can be addressed has been through the use of Google analytics, which has been the focus on scientific evaluation as a web analytics tool (Hasan, Morris *et al.* 2009; Plaza 2009; Plaza 2011; Pakkala, Presser *et al.* 2012). The use of this free and easy to use tool provides individuals and organizations with a range of statistical site usage information including the number of: visitors, page views, pages viewed per visit, the bounce rate, average time of the site and the percentage of new visitors (Plaza 2011). Users also compare the behavior of visitors who were referred from search engines, from referring sites and emails, and direct visits, and thus gain insight into how to improve the site's content and design (Plaza 2009). This tool provides organizations with the ability to not only monitor the development of their internet presence but it also allows them to better under who their customers may be. From a business perspective, this leads to the development of more productive organizational and marketing strategies which can ultimately enhance their overall profitability and performance outcomes. There is a strong causal link between the concept of website analytics and the ability for an online retailer to improve its financial performance in several ways. Firstly, if an organization is able to achieve a high website ranking on a search engine they are able to bring more human traffic to their website which in turn allows them to achieve higher economic returns (Weideman 2009). Secondly, the length of time a website user spends on an online retailer's checkout and sales pages can also influence a firm's financial performance. Finally, it makes sense that the higher the number of page views a website receives then there would be a higher likelihood of achieving stronger financial gains as a consequence.

H1: Website analytics positively affects an online retails financial performance

Internet Traffic

Internet traffic is considered as having two distinct dimensions. Firstly, the level of incoming internet traffic (in the form of in-links) to a retailer's website. Secondly, the diversity in type of incoming traffic that exists. This is represented by the number of different internet domains that are attracted by a retailer's website. We explain both of these dimensions below in detail.

In links

In-links are the incoming hyperlinks or links that are directed towards a website. Hyperlinks can be referred to as being in-links, i.e. hyperlinks originating in other websites (Björneborn and Ingwersen 2004) or out-links which refer to the links out of a website (Björneborn 2001). The concept of co-link also exists. In regards to this study, our focus will be on in-links, as we are only interested in the traffic that is being brought to a particular website. Corporations and online retailers are able to build an internet presence through their online relationships with customers and other businesses. One way in which they are able to do so, is through the use of hyperlinks. Hyperlinks are defined by (Park 2003: 49) as “a technological capability that enables one specific website (or webpage) to link with another” with the in-link component of this referring to the traffic that flows into a specific website. However, hyperlinks provide other more symbolic means than a simple technical connection between two websites (Park 2003; Kim and Nam 2012). As (Garrido 2003) argued, a website is an official and unique entity representing an organization itself. Therefore, a hyperlink embedded in an organizational website can be considered to be an official act of communication between two organizations, representing not only a reasonable approximation of a social relationship (Jackson 1997), but also providing a symbolic meaning of validating or endorsing the linked organization (Vreelnd 2000). In conjunction with this, the links that exist between two organizations reflect a sense a sense of validation, trust, bonding, authority, and legitimacy (Vreelnd 2000; Park 2003; Nam, Barnett *et al.* 2014). The in-link component of hyperlinks has a direct impact on website analytics as both the quality and number of in-links a corporate website has the higher the page rank and page views a website can generate. High quality in-links can also result in users spending more time on a particular webpage because the content shown is more relevant to the needs of the viewer. In this instance, in-links can also act as a means of achieving stronger economic returns by attracting customers to an online retailer from other more dominant websites within the connected social network.

Internet Traffic Diversity

It is not only the number of in-links that are important; the diversity of the incoming internet traffic (in the form of in-links) to an information source is also very crucial (Khan and Sokha, 2014). In terms of the online impact of an information source, the internet traffic coming from a single domain (e.g., a .com domain) does have wider impact when comparing it to the traffic coming from a diverse range of internet domains (Khan and Sokha, 2014). In this study, the issue of incoming internet traffic diversity was measured by examining the number of diverse

domains attracted by an online retailer website. A domain name represents the web address by which an organization can be found on the internet. They are descriptive markers with corresponding numerical addresses called Internet protocol (IP) addresses (Koç, Jamakovic *et al.* 2012; Baasanjav 2014). For example, the domain *bbc.com* can instead be viewed as an IP address of 152.123.255.19. The types of domains that can be reflected in the diversity of web traffic an organization receives can be referred as coming from either Top Level Domains (TLD) which is overseen by the Internet Corporation for Assigned Names and Numbers (ICANN) and Secondary top level domains (STLD). Top-level domain names are divided into generic top level domain names (gTLD) such as .com, .edu, .gov, .mil, .net, .org, .int, .asia, .africa and country code top level domain (ccTLD) names assigned to certain countries and territories such as .cn (China), .in (India), .ru (Russia), .nz (New Zealand), .uk (United Kingdom) and .sa (Saudi Arabia). According to a 2012 study by Verisign, there were more than 233 million registrations across all top-level domains (TLDs) and 94.9 million registrations across all country code top-level domains (ccTLDs) in 2012 (Baasanjav 2014). The STLDs refers to the country coded second-level domains. In this instance, second-level domains are country coded and restricted by categorizing them as being either .co.nz (a company in New Zealand) or .org.nz (an organization in New Zealand or .com.au (a company in Australia) or .org.au (an organization in Australia). The unique domains reflect not only the diversity of traffic that a particular online retailer attracts but also a tool that acts as a means of reaching and maintaining communication with customers. The volume of internet traffic that a website generates can also have an influence on a range of factors, including a websites Google or Alexa page ranking, the number of page views it receives as well as the length of time a user spends on a particular website, the likes of which can all impact on the financial performance of an online retailer.

H2: The level of incoming internet traffic (no. of in-links and diversity in the domains) positively affects an online retails website analytics.

Search Engine Visibility

A key component of internet presence is the ranking that corporate websites receive on internet search engines¹ like Google or Bing. Search engines are a complex distribution of computing systems that are connected together to efficiently search and return results to users (Wilkinson and Thelwall 2013). The web pages that are located through a search engine reflect the workings of one program called a spider, crawler, or bot, which crawls all known pages for relevant results (Lewandowski 2008; Yalçın and Köse 2010). Traditionally, website rankings related to either the ways in which the initial user query matched the content of a particular page or the counts to estimate the importance of pages (Brin and Page 1998). However, more recently the technological capabilities of search engines have allowed for more customized results (Teevan, Dumais *et al.* 2005). In order help strengthen a corporation's internet presence, efforts are made to increase the page rank of a particular website. Page rank is defined by (Upstill, Craswell *et al.* 2003: 1) as “the hyperlink-recommendation algorithm used by Google to measure page “importance and quality” and is an important component of Google’s ranking algorithm (Brin

¹ A search engine is defined by the Oxford dictionary as a “program that searches for and identifies items in a database that correspond to keywords or characters specified by the user, used especially for finding particular sites on the World Wide Web”.

and Page 1998). The ranking algorithm relies on keyword density and frequency, hyperlink structure, and click through rate data as implicit feedback for better ranking algorithms (Brin and Page 1998; Gandal 2001; Joachims 2002). However, in recent times search engines also looked to incorporate social media content as part of their ranking and returned results (Zheng Xiang, Wöber *et al.* 2008; Ghose, Ipeirotis *et al.* 2012; Pan 2015). By using Google Toolbar and Google Directory, users are able to identify the page rank of a particular website on a scale of 0 to 10, indicating the importance that Google allocates to the page. When a directory category is viewed, the importance of rankings become apparent with pages listed in descending order and with a page rank indicator located next to each page, to inform the user about whether the web page is considered to be a high-quality site worth going to (Upstill, Craswell *et al.* 2003). Given the economic opportunities the competition for the top spots on SERPs of mainline search engines (like Google, Yahoo! and Bing) by firms is ferocious, and many companies are investing large amounts of money with SEO companies to ensure that they remain on top or close to the top of the rankings. Previous research by (Pan, Hembrooke *et al.* 2007) has indicated that users pay closer attention to the top results on search engines, a finding that is significant when organizations are looking to develop search engine strategies that endeavor to develop their online presence and increase the economic profitability of their business. In conjunction with page rankings is the issue of search engine optimization (SEO). An effective SEO strategy can improve a website's ranking in the organic results section on a Search Engine Result Page (SERP) (Pan 2015), which enhances an organization's online visibility and website analytics. The ranking of SERPS is of importance to website owners. This is even more so when the website is commercial by nature, i.e. selling products or services for example. High rankings on SERPs imply more human traffic, which in some cases helps to convert more paying clients and as a consequence of this leads to a higher return on investment for the business (Weideman 2009). Having a high ranking on a search engine result has a direct impact on a company's online visibility (Drèze and Zufryden 2004). Being more visible can enhance the websites analytical performance which leads to increased page views and a higher overall ranking. A higher SERP can also direct users to a website that are of more strategic interest to an organization, which can lead to longer periods of time spent on the website and lower bounce rates as a consequence.

H3: Search engine ranking positively affects an online retails website analytics

Social media presence

Social media is the media we use to be social (Safko 2012). It can be defined as “a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user-generated content” (Kaplan and Haenlein 2010)(p. 61). An online retailer's internet presence can be enhanced by the use of social media including social network sites (e.g., Facebook fan page), blogs and microblogs (e.g., Twitter handler), wikis, and content communities (e.g., YouTube). Due to their popularity businesses such as Apple, Coke Cola, Starbucks, and McDonalds are using social media and social networking sites to increase their internet presence through the development of brand promotion activities and building stronger consumer brand relationships (Chen, Fay *et al.* 2011;

Constantinides 2014). In this instance, the relationship focused and multi-way communication, conversion and collaboration attributes of social communities such as Facebook, Twitter, and LinkedIn are being used as a means of helping achieve a stronger online presence (Tuten and Solomon 2012). This presence is also represented by the consumer feedback businesses now enjoy through their Facebook and Twitter accounts, for Coke Cola currently has more than 88 million likes on its Facebook page while coffee shop giant Starbucks has some 37 million likes. A growing internet presence also reflects significant increases in the levels of social business activities that businesses now conduct. In a study conducted by McKinsey (2012), it was reported that being social has created as much as \$1.3 trillion in value in the four business sectors it examined (consumer package goods, consumer financial services, professional services and advanced manufacturing) (Kiron, Palmer *et al.* 2013). While at Dell, its Twitter account has a micro blogging social media tool that allows sending out short, text-based posts of 140 characters or less, has generated \$1 million in incremental revenue due to sales alerts (Kaplan and Haenlein 2010). Social media's ability to address customer service issues can also draw consumers to websites which can lead to increases in hit counts and more time being spent on a website. Social media's innate ability to generate strong consumer relationships can also impact website analytics from a bounce rate perspective. If consumers develop a stronger affiliation to a particular retailer brand they may be more likely to view a wider range of an online retailer's service options which from a website analytics perspective lead them to spend more time on the website. Social media can also stimulate additional forms of communication about a particular retailer which can increase the number of page views a website receives. Greater exposure in this regard also helps to strengthen the relationship a website has with other online businesses which can lead to a greater number of in-links which improves not only a site's ranking but also its financial performance.

H4: Social media presence positively affects an online retailers website analytics.

Web mentions

Web mentions are the number of mentions a term or phrase receives over the web (Thelwall and Sud 2011). In this study, web mentions is measured as the number of mentions an online retailer's name receives over the web. A web mention is a text based mention in a web page, typically of a document title or person's name. They can be found by normal search engine queries, in which a typical phrase search may be used but additional terms may be added to reduce spurious matches (Thelwall and Sud 2011). Web mentions were first extensively tested for journal articles (Vaughan and Shaw 2003). They have also been applied to identify online citations of journal articles in more specialized contexts: online presentations (Thelwall and Kousha 2008), online course syllabuses (Kousha & Thelwall 2008), and (Google) books (Kousha and Thelwall 2009). Web mentions have also been assessed as a similarity metric for organizations (Thelwall and Sud 2011). In a study conducted by (Vaughan and You 2010) a list of 50 top WiMax or Long Term Evolution telecommunications companies were examined to identify patterns of similarity by finding how often pairs of companies were mentioned on the same page. The results from their study showed that co-word data could potentially be used to supplement or replace co-link data with Google Blog seeming to be a better source than

Google for co-word data collection (Vaughan and You 2010). A similar study was conducted by (Thelwall and Sud 2011) in which (web) organization title mentions are used as a metric for measuring the online impact of an organizational. The results of which highlight the importance of organizational web mentions as a means on measuring online corporate impact. From a website analytics perspective, web mentions can have a direct effect on all of the aspects included in our model. For example, a high number of web mentions will help users identify a certain retailer more clearly which can lead to both increases in the number of page views a website receives and also the length of time spent on the website. Web mentions can also help to arouse interest in a retail brand which can stimulate more online communication through social media and the networking of websites through in-links. This can lead to a reduction in bounces rates as well as an improvement in the overall ranking of the website.

H5: The number of web mentions positively affects an online retails Website Analytics

RESEARCH METHODOLOGY

Sample and Data Collection

For this study, an initial sample of 200 online retailers was randomly selected from an online database of the top 5,000 US based retailers. The list of the retailers was compiled in 2014 by Inc. magazines, a USA based company focused on growing companies (the list is available here: <http://www.inc.com/inc5000/list/2014>). The random number generator provided by the www.random.org was used to generate 200 random numbers which were used to draw the sample from the online retailer database. Out of the 200 randomly select retailers, the sample units with missing data on more than two variables (explained below) were eliminated from the analysis leaving only 100 retailers in the sample. Following this process, data on the internet presence, website analytics, and financial performance of 100 retailers was collected as explained below.

Retail specific data—Data about financial performance (i.e., revenues), size of the retailers (in terms of no. of employees), foundation date which referred to the establishment of the company, and type of industry were harvested from the Inc. database. A brief review of the sample data shows that of the 100 online retailers that were included in the study the average revenue for 2013 of those sampled was \$68.61 million, while the average growth rate during the 3-year period 2010-2013 was very high at 572.78% (a more detailed description of the retail specific data is found in the results section).

Internet presence—internet presence of a retailer was measured through incoming Internet Traffic, Web Mentions, Social Media Presence, and Search Engine Ranking. The incoming *Internet Traffic* to a retailer website was measured as the number of in-links and number of top level domain (TLD) attracted by the website. In-links are the links attracted by a website and details the amount of traffic directed towards a retailer’s website. The TLD attracted by a retailer’s website can provide data on the diversity of traffic directed toward a retailer’s website. For example, the incoming internet traffic to a retailer’s website is considered more diverse, if

it is coming from a diverse range of TLDs (e.g., .com, .net, .org, .int, .asia). *Web Mention* was measured as the number of mentions of a retailer's full name over the Internet. The number of mentions of a term over the Internet can be considered as a proxy for popularity. The number of in-links, TLDs, and web mentions were collected using the Webometrics Analyst tool (Thelwall 2009). Webometrics Analytics is a well-established tool for measuring different aspects of the World Wide Web like web sites, web pages, words in web pages, hyperlinks, and web search engine results (Thelwall 2009). Data on *Social Media Presence* was manually harvested with the help of three research assistants. Social Media Presence data included, the number of Facebook likes received by a retailer, the Number of Twitter tweets posted by a retailer, the number Twitter followers a retailer has, and the number of times a retailer is listed as favorites by the twitter users, the number of YouTube views received by retailer YouTube channel, and the number of YouTube subscribers a retailer's YouTube Channel has. *Search Engine Ranking* (for the Google search engine only) for a retailer's website was obtained using Chrome Open SEO state (www.chromefans.org) tool. Chrome Open SEO ranks a website between 1 (highest score) and 10 (lowest score) based on its position in the Google search engine which is determined based on hundreds of factors.

Website Analytics—the website analytics of a retailer's website were measured through *Daily-Page-Views*, *Time-on-Website*, *Website Ranking*, and *Bounce Rate* obtained using Amazon's website analytics tool: www.alexa.com. According to [alexa.com](http://www.alexa.com), *Daily Page-Views* per visitor captures daily unique page views per visitor on the site; the *Bounce Rate* is the percentage of visits to the site that consist of a single page-view, and the *Daily Time-on-Website* measures the daily time in terms of minutes a visitor spends on the site. *Website Ranking* shows the popularity of a website and is calculated based on the average daily visitors to this site and the number of page-views on the website over the past three months. Before testing the model all the data collected was standardized.

RESULTS AND DISCUSSION

Descriptive Statistics

This study analyzed a sample of 100 online retailers randomly selected from an online database of the top 5,000 US based retailers. A descriptive review of these retailers included in the sample showed that these companies contained on average 166 employees and had a turnover in 2013 of \$68.61 million, an increase of 572.78% on 2010. The firms were classified by operational activity with the leading sectors including advertising and marketing sector (12.5%), IT services (10.5%), business products and services (8%) and health (7.5%). The average year a company was founded was 2001. In terms of their respective social media presences, of those firms that were represented in this capacity they had on average 4,548 Facebook likes, 2,078 Twitter followers, and 672 YouTube Subscribers.

Assessment of measurement model

To test the reliability and validity of the constructs used in the study; we employed the structural equation modeling (SEM). Since, some constructs were latent in nature, the WrapPLS (partial least square) software package (Kock 2013) was used for data analysis. PLS is an ideal method to analyze SEM models with latent constructs. PLS analysis was performed in two steps. The first step involved a test of the measurement model—an estimation of internal consistency or composite reliability, and determination of the convergent and discriminant validity of the instrument; and second steps is carried out to assess the structural model through SEM.

Reliability and Validity Test

The Instrument reliability and validity statistics are shown in Table 1 and Table 2. *Composite reliability* values were within the recommended threshold of 0.70 (Nunnally 1978); the average variance extracted (AVE) values were also well above the accepted level of 0.50 (Fornell 1981); except for the Website Analytics construct which was slightly lower. However, the *discriminant validity* of the all the constructs is sound. A satisfactory *discriminant validity* is established when the AVE of the construct are greater than the variance shared between the construct and other constructs in the model. As shown in Table 2, the square roots of the AVEs were greater than the off-diagonal elements in their corresponding row and column in all cases. Loading and cross-loadings provided in Table 3 confirms *convergent validity* of the scale i.e., all the items were highly loaded (Loading > 0.50) for their associated constructs, while the factor loadings for each item and its respective construct were also highly significant ($p < 0.001$). Two items, *Website Ranking* and *Bounce Rate*, were not able to be properly loaded on their associated construct (i.e., Website Analytics) and as a result they were eliminated from the analysis.

Table 1: Constructs reliability statistics

Construct	Composite Reliability	Cronbach's Alpha	AVE
Search Engine Ranking (SER)	1.00	1.00	1.0
Social Media Presence (SMP)	0.82	0.74	0.44
Internet Traffic (IT)	0.92	0.83	0.85
Web Mentions (WM)	1.00	1.00	1.00
Website Analytics (WA)	0.86	0.70	0.75
Financial Performance (FP)	1.00	1.00	1.00

Table 2: Correlations among constructs

Construct	SER	SMP	IT	WM	WA	FP
Search Engine Ranking	1.00					
Social Media Presence	0.34	0.67				
Internet Traffic	0.49	0.42	0.92			
Web Mentions	0.10	0.25	0.34	1.00		
Website Analytics	0.24	0.17	0.27	0.00	0.87	
Financial Performance	0.16	-0.04	0.12	-0.16	0.01	1.00

Table 3: Loadings and cross loadings

	ESR	SMP	IT	WM	WA	FP	P-value
Search Engine Ranking	1.00	0.00	0.00	0.00	0.00	0.00	<0.001
Facebook Likes	-0.28	0.82	0.48	-0.08	-0.34	-0.02	<0.001
Twitter Followers	0.40	0.83	-0.33	0.19	-0.05	0.05	<0.001
Twitter Favorites	0.01	0.86	0.18	0.02	-0.50	-0.07	<0.001
Twitter Tweets	0.54	0.83	-0.23	0.06	-0.31	-0.08	<0.001
YouTube Likes	-0.39	0.73	-0.03	-0.10	0.68	0.05	<0.001
YouTube Subscribers	-0.40	0.78	-0.04	-0.13	0.63	0.06	<0.001
In-links	0.01	-0.11	0.80	-0.01	0.05	-0.06	<0.001
Internet Traffic Diversity	-0.01	0.12	0.77	0.01	-0.06	0.07	<0.001
Web Mentions	0.00	0.00	0.00	1.00	0.00	0.00	<0.001
Page Views	0.19	-0.20	0.04	-0.01	0.94	-0.08	<0.001
Daily Time on Website	-0.15	0.16	-0.03	0.01	0.91	0.07	<0.001
Financial Performance	0.00	0.00	0.00	0.00	0.00	1.00	<0.001

Assessment of the Structural Model

The structural model was tested through SEM in two steps. During the first step of the structural model testing, the independent variables were regressed on the dependent variables without the effect of moderating variables (Figure 1). In the second step, two moderating variables (size and age of the retailers) were introduced into the model (Figure 2). The model provides a good explanatory fit for the data as indicated by several Goodness of Fit (GoF) statistics as shown in Table 4.

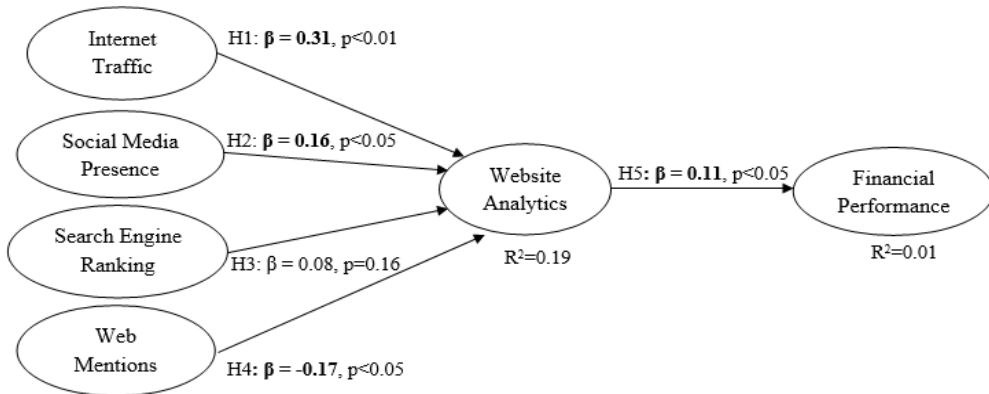


Figure 2: Proposed model without moderator effects.

Internet Traffic had a significant positive effect on Website Analytics with $\beta=0.31$ and significant at the $p<0.01$; supporting the hypothesis H1. This implies that as the incoming Internet traffic (inform of no. of in-links and diversity in Internet domains) to a retailer website increases, the website analytics (Daily views and time spent on the website by users) of retailer’s website increases proportionally.

As expected, Social Media Presence had a moderately significant positive effect on Website Analytics with $\beta=0.16$ and significant at the $p<0.05$. This supports the hypothesis H3 and implies that as the social media presence (inform of likes, tweets, and views) of retailer increases, the website analytics of retailer’s website increases proportionally.

Surprisingly, Web Mentions had a significant negative effect on Website Analytics with $\beta=-0.16$ and significant at the $p<0.05$, thus rejecting the hypothesis H4. This implies that as the web mentions of a retailer’s name increases, the website analytics of a retailer’s website decreases proportionally. Similarly, Search Engine Ranking does not have a statistically significant effect on Website Analytics.

Website analytics had a relatively weak positive effect on Financial Performance with $\beta=0.11$ and significant at the $p<0.05$, thus supporting the hypothesis H5. However, the relationship between Website Analytics and Financial Performance was positively moderated by the size of the retailer ($\beta=0.30$; $p<0.01$). This implies that as the size of a retailer (inform of no. of employees) increases; the effects of Website Analytics on Financial Performance (measured in terms of total revenue) increases proportionally. In other words, retailers that are a larger size are more likely to financial benefit from website analytics. Retailer age does not play any moderating role between the relationship of Website Analytics and Financial Performance.

Overall, the Internet Presence of a retailer accounted for 19% of the variance in Website Analytics and Website Analytics accounted for 11% of the variance in Financial Performance of an online retailer.

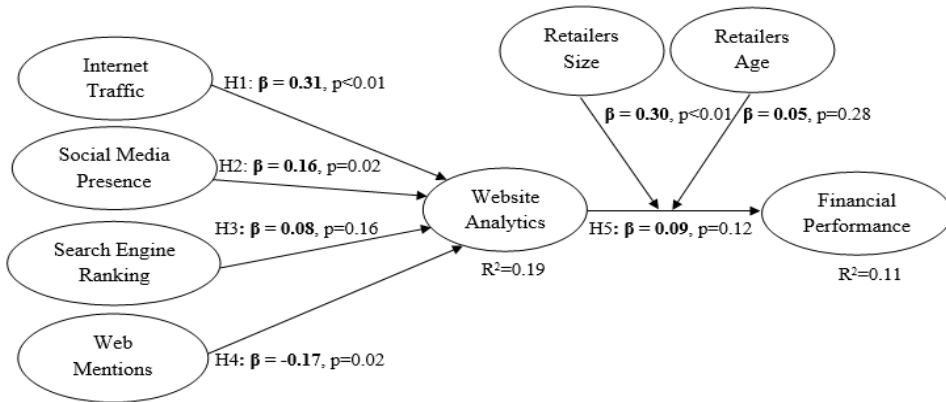


Figure 3: Proposed model with moderator effects

Table 4: Model goodness to fit statistics

Statistics	Value	Acceptance level
Average block VIF	1.3	acceptable if ≤ 5 , ideally ≤ 3.3
Average full collinearity VIF	1.3	acceptable if ≤ 5 , ideally ≤ 3.3
Tenenhaus Goodness of Fit	0.3	small ≥ 0.1 , medium ≥ 0.25 , large ≥ 0.36
Sympson's paradox ratio	1.0	acceptable if ≥ 0.7 , ideally = 1
R-squared contribution ratio	1.0	acceptable if ≥ 0.9 , ideally = 1
Statistical suppression ratio	1.0	acceptable if ≥ 0.7
Nonlinear bivariate causality direction ratio	0.9	acceptable if ≥ 0.7

In the context of this study, using a post-hoc analysis, the observed value of the power analysis (0.982, $p=0.05$) suggests that the model has sufficient statistical power to detect the relevant significant levels.

DISCUSSION

In this study, we tried to theoretically develop the Internet Presence construct by empirically testing its effects on website analytics and the profitability of e-retailers. In this instance internet presence is considered to contain multidimensional properties that encompass—search engine visibility, social media presence, internet traffic, and web mentions. Using an empirical model that was tested using the SEM technique the results provide a number of interesting points for discussion.

This research contributes to literature in multiple disciplines and has important implications for academic researchers. Our research supports the findings of (Luo, Zhang *et al.* 2013) by revealing empirical knowledge concerning social media as a leading indicator in predicting business performance. The results from this study showed that social media presence (e.g., Facebook likes, tweets, flowers, and YouTube views) affect website analytics in a positive manner which in turn affects financial performance. This is a significant finding as it highlights the importance of social media to today's corporate business. Our results divulge new insights on the predictive value of social media metrics beyond sales. The strong predictive relationship between social media and firm performance demonstrates that firms should no longer treat social media as a cost. Rather, social media metrics can be a significant leading indicator of firm performance, justifying the importance of investing in social media and new IT initiatives to transform an organization. In this sense, our study adds to the information systems literature in studying IT productivity and the impact of IT intangible assets (Brynjolfsson, Hitt *et al.* 2002; Gao and Hitt 2012) on business performance. Social media investment is an indispensable asset for firms and organizations not only in terms of short-term performance, but also for long-term budget allocations for business strategies and IT support in a social media platform. Our findings suggest that social media, as a growing indispensable part of the IT asset base, has important productivity benefits inherently connected to firm performance and the establishment of an internet presence. While these results don't suggest companies should abandon investments in online search and traffic, they should be aware of the relative larger power of social media in predicting firm future equity value. Thus, managers must better prioritize and allocate appropriately the IT budgets among various social media platforms according to their abilities to predict and affect the financial value of a business. By actively utilizing social media's communicative and marketable attributes companies are able to increase both their internet presence but also the financial capabilities of their online store. These findings support the views of Tuten and Solomon (2012) in which they noted that the communicative attributes of social communities such as Facebook, Twitter, and LinkedIn can be utilized in a manner that helps to achieve a stronger online corporate identity (Tuten and Solomon 2012).

Furthermore, this study also found that internet traffic had a significant positive effect on website analytics and the financial performance of the firm. These findings are in line with some

finance and marketing studies (Luo 2009; Zhu and Zhang 2010; Tirunillai and Tellis 2012) have shown that web traffic and user generated online content have a significant relationship with firm financial performance. Our research extends this stream of research by showing that social media is a much stronger indicator of firm financial return than has previously been suggested. This is important because social media provides corporate managers with a more accurate measurement of customer attention and product performance as well as prospects of firm performance in the social digital age. These results demonstrate the need for corporations to boost the volume of traffic that comes to their website. In order to do so, companies have been using a range of measures including strategic corporate relationships through hyperlinks (Vaughan and Yang 2013), social media networking (Hall, Zain *et al.* 2013) and strategic online advertising (Ilfeld and Winer 2002). This is the first study to show the association between social media presence website analytics and its relationship with financial performance. In this instance, firms should monitor and respond quickly to negative media posts by taking corrective actions to mitigate the potential adverse effects on future performance.

A surprising result from the study was the impact that web mentions had on website analytics. In this instance, the results showed that web mentions actually has a significant negative effect on website analytics which is contrary to the findings of (Da, Engelberg *et al.* 2011; Preis, Moat *et al.* 2013). This implies that as the web mentions of a retailer's name increases, the level of website ranking, page views and time spent on the website decreases at a proportionate rate. This suggests that companies don't necessarily need to adopt mass market advertising strategies in order to attract greater numbers of users or improve the ranking of their website. Although, the importance of advertising as a means of facilitating economic activities is a crucial component of business (Ting *et al.* 2015). Nonetheless, online retailers may need to embrace more strategic means and utilize their brand names in a more creative manner. To achieve this successfully more needs to be taken to better understand the browsing habits of selected target consumers.

The result regarding the relationship between website analytics and financial performance was positive. However, the effect of website analytics is strongly moderated by the size of the online retailers. In other words, as the size of a retailer, by way of its number of employees, increases, the effects of website analytics financial performance, as measured by total revenue increases proportionally. This shows that the size of a firm is very important in being able to determine the financial performance of an online retailer. From an organizational perspective, firms must develop and implement strategies that allow them to entice and retain large numbers of users to their website through social media and creative marketing initiatives.

This study has successfully developed an internet presence and website analytics model that articulates which constructs influence firm performance. However, despite unveiling a number of important findings, the study was limited by the fact that metrics used to measure website analytics are based on third-party estimates which are vulnerable to technical and methodological weaknesses (Benbunan-Fich and Fich 2004). Also, due to data unavailability the model constructed in this study does not include any advertising expenses for each of the individual firms included in the study. Future studies could look to include such information to ascertain whether any correlation exists between advertising spending and better search engine, social media, and web mention presence. Also the sample size itself should be

addressed in future studies so as to overcome potential common method bias issues. As part of this the experiment's design should include explicit measures to reduce potential biases across constructs, and especially between independent and dependent variables (Ketokivi and Schroeder, 2004). Finally, in addition to this, a future financial performance study based around a larger data set could utilize an alternative methodological structure in which a formative metric approach (Baxter, 2009) could be adopted. This would allow future research to potentially better conceptualize the constructs included in the study.

CONCLUSIONS

By stitching together fragmented research streams, this study theoretically developed the Internet Presence construct and empirically tested its effects on website analytics and the financial profitability of 100 randomly selected on-line US retailers. By using the SEM technique, the study found that social media presence and internet traffic had a positive effect on website analytics while web mentions were surprisingly found to have a negative impact. The results also showed a strong positive relationship between website analytics and financial performance which was significant, although this was strongly influenced by the size of the online retailer.

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