ABSTRACT

There has been little empirical investigation of a relationship between website usage (Web Metrics) and website content. The overall aim of the study reported in this article is to build on empirical evidence about a relationship, by achieving new insights from New Zealand business culture. The key purpose of the present paper is to learn whether metrics measures are related to website features. An online survey was used to gather data from businesses that have an eCommerce website. The results from this study indicate such relation exists with each metric is related to specific functions. For example, website stickiness is a measure of time spent by customers on the website, the findings pointed out that as a result of advertising promotions, visitors stay longer whenever there are new promotions. These indications prompt the seller to carefully monitor their website traffic for a possible downturn and remedy the situation prior to its occurrence.

1. INTRODUCTION

Online businesses are now able to process large amounts of information which can then be available in the form of assistance for consumers’ purchases of goods, as well as information services. Additionally, online technologies improve a business’s immediacy and responsiveness which strengthen customer relationships while broadening its coverage in the marketplace (Kauffman and Walden 2001; Ngai and Wat 2002). According to Zhu and Kraemer (2003), businesses invest to build their websites to reflect their strategic initiative to use the web to deal with customers. However, when a website is used to sell products/services online, it serves as a communication channel for bidirectional information transfer and communication, a platform for transacting, an interface for providing customer service, and a facilitation for marketing initiatives. The website therefore is created with a mix of these features (informational, transactional, service, and promotional) in order to create awareness, generate traffic, and drive sales (Constantinides 2002; Turban and Gehrke 2000) Such features are intended to communicate an organisational image and product branding, to support access to information and knowledge, to support sales and to enhance customer service (Fitzpatrick 2000). The business, however, needs to deal with whether the aforementioned features (informational, transactional, customer service and promotional) appeals to visitors. If it is not optimal, an adjustment may be needed, such as adding or deleting attributes of these features.

Building and providing a website for customers does not guarantee customer usage of the website. Businesses need to promote their website. Customers will need to find website relevant to their needs and tends to stay if the website meet their requirements. Hence, businesses should be involved with activities such as informing visitors to the site, in order to increase users’ experiences that could influence purchase intention. Such effort from the business is required to make their website visible, usable and maintained (Fitzpatrick 2000; Thelwall 2001).

With such involvement and features that could be included in a website, researchers and practitioners are struggling to determine how to relate website features and business involvement to website usage by customers. Online businesses, however, are now able to process large amounts of information about visitors to their website. A number of metrics have been developed based on analyzing such information which could be available to website owners. These metrics enable owners not only to understand the visitors’ navigational pattern on the website but also they act as a means of capturing the effectiveness of any included features in the website (Schaupp et al. 2006).

The key research question that motivates this current work is whether the website content in terms of its features and the effort of the business are associated with website usage in terms of the visitors’ behaviours on the website.

To answer this, we propose a set of metrics for both website features and the business involvement. We then collected data to validate these metrics and
Further examine the association between them and website usage metrics.

The remainder of this paper is organised as follows. Initially we will discuss the background and previous work in this area. We then present the theoretical perspectives. This is followed by the conceptual framework and hypotheses, which is followed by research methods and design. We then present the empirical results. Discussion and conclusions sum up the paper.

2. BACKGROUND AND PREVIOUS WORK

A website is created with a number of design elements which contribute towards the overall function of the website (Song and Zahedi 2001). Each website has a purpose defined by its owner. There have been a number of attempts by researchers to identify and categorize website elements and link it with the purpose of the site.

Forrester Research (1996) defines three types of websites: A promotional site that advertises a company’s products and services; a content site provides updated news, weather, or entertainment; and a transactional site which provides interactive shopping, banking, or customer service.

Ho (1997) classified the business purposes of a commercial website into three categories: informational, transactional, and promotional; and that sites create value for their visitors in four ways: timely, custom, logistic, and sensational. These give a framework resulting in 12 possible features (purpose–value combinations) a site could offer. Data were aggregated to determine the extent of the technology used for industries, countries, and regions; but were of little help for individual sites.

In another effort, Adams and Deans (2000) identified three criteria: communicational, transactional, and relationship, to analyse marketing websites within Australian and New Zealand online businesses. They found that companies followed different objectives for their website according to the criteria chosen.

Transforming business features into an online arena has been proven to bring benefits to a business (Hoffman and Novak 1996; Zhu and Kraemer 2003). In a business model that underlies eCommerce a combination of different website attributes is needed to influence its visitor’s buying decisions. A business can communicate its image and advertise its products and services to many people and can get feedback directly from customers. Website attributes however are intended to appeal to the website visitors. These attributes replace the offline purchasing process and therefore must include an online substitute for visitors to achieve their visit objective(s). These objectives according to Krawczyk et al. (2007) are informational, transactional, and relational. Indeed, websites for eCommerce need to include functionalities to share information, facilitate transactions, and improve customer service (Zhu and Kraemer 2003).

Informational functions are basic features of a website and a vital part of the purchasing process (Kent 1998). An effective website must provide contact information for customers not only to address their possible queries but also to communicate trust that a genuine business exists. Up-to-date and useful information on the site is one of the most basic tests of a website (Kent 1998). A website that contains out-dated information and little information of value to potential customers is likely to lead customers to a competitor who offers better information (Kent 1998). In other words, sites engage visitors because they offer information about their company, product and, more importantly, it is up-to-date and of value to their customers.

Transactional capabilities are another important feature of a website, as visitors sometimes come for the purpose of purchasing a product. Many visitors find the ability of a business to offer options of ordering, payment, and delivery appealing (Chakraborty et al. 2002; Huizingh et al. 2007; Quelch and Klein 1996).

Fry et al. (2004) suggested advising small businesses to have a website with business objective(s) with a level of facility appropriate to the business needs. Facilities are the features on a website such as company information, mail order and payment facilities.

Website features that address customer services can vary from general descriptions to interactive dialogues individually tailored to customers’ specific requests (Piccoli et al. 2004). Piccoli et al. (2004) concluded that businesses providing general information and basic transaction support are able to justify their web expenditure more than those that employ complex functionalities beyond basic services; but also found that customers’ interactions with the website and personalisation are convenient and effective. However, responding regularly and promptly to individual customers is one of the keys for visitors to return to the website (Kent 1998).

Santos (2003) suggested that high service quality can potentially increase the attractiveness, hit rate, customer retention, stickiness, and positive word-of-mouth reputation, which can maximize the online competitive advantages of eCommerce.

Promoting products or services on the website is another aspect that can be communicated to customers. Websites that feature price-base promotion (discounts, special offers and rebates) and non-price promotion (what’s new) attract visitors’ attention and increase their intention to transact (Song and Zahedi 2001). Lee and Brandyberry (2003) also noted that website information should include new products or special offers, and the company’s contact information. This is because special offers and new products could help customers reach the latest/special products in a few clicks and the company’s contact information would effectively enhance the customer’s trust of the website.
Past studies (Pujani and Xu 2005; Sellitto et al. 2003; Zhang et al. 1999), suggest web features play an important role in attracting users and they stay longer, while (Zhu 2004) verified that website capabilities are positively related to financial returns. Finally, a website is designed to facilitate resources to customers seeking more information, provide services according to their needs, and offer payment and delivery options (Song and Zahedi 2001). Consequently, the ability of the website to provide these features is viewed as one that has influenced its usage.

Owners however need to understand that simply having their business functions (features) on the website does not mean that anybody will visit the website; they have to fulfill a quality control role. This requires owners to make their online presence accessible, usable and maintained (Thelwall 2001). A website that is easy to find, easy to navigate, and easy to read will have more visitors.

Based on their findings, Dholakia and Rego (1998) suggested that businesses should invest in publicising their websites by advertising it in various online directories and commercial search engines as well as creating links from other related sites and pages to their home pages. This will maximise the site hit rate and through that means, returns for a specific set of resources. Businesses that conduct an effective advertising campaign are able to attract more users to their websites; users become customers when advertising is combined with other website features, resulting in a positive customer experience (Saeed et al. 2002).

Drèze and Zafryden (2004) have investigated visibility and its impact on Internet traffic. They concluded that visibility is a precursor to website traffic and suggested that visibility can be enhanced through visibility measurements such as placement of links on other websites.

One of the major categories surveyed by Turban and Gehrke (2000) when investigating the major determinant of an effective website was customer focus. They grouped twelve variables of relative importance according to the number of citations in the literature. Promoting the business’s website has been found the most important since it is important to direct visitors to the site (Turban and Gehrke 2000). The website should be easy to find and appear as close to the top of a search result as possible. The higher the rank in the search engine the greater the proportion of consumer traffic. Hence, search engine optimisation has become an important marketing concern and is dependent on how well the website is designed and laid out (Krishnamurthy 2003).

In Auger’s empirical surveys conducted in an Small and Medium Enterprise (SME) context (Auger 2005), she found that design sophistication is associated with a greater number of visitors but not with overall performance. In addition, it was found that sophisticated technologies like Java applets and GIF animations increased website usage (Dholakia and Rego 1998).

Online customers, however, lack the advantage of face-to-face judgments that can influence the sale. They have a higher level of uncertainty and are more hesitant in making a purchase (Davies et al. 1995). Instead, they must find an environment conducive to activities which reduce the risk of purchasing. They need to be confident with the content of the website and that the online owner is standing behind the product and will be responsive if problems occur (Song and Zahedi 2001). Security and privacy features have been found to drive the trustworthiness of the website which in turn leads to improved purchase intention (Belanger et al. 2002).

Successful online businesses have implemented technologies that allow them to tailor the shopping experience of individual customers (Hodges 1997; Lii et al. 2004). This is defined as the abilities of customers to personalise the information to their special needs. The creation of “user accounts” is found to be an indicator of eCommerce success (Sharkey et al. 2007). However, having a user account entails gathering data about customers which is a user concern and is also subject to legal regulations in most countries (Kobsa 2007).

A website should be kept up-to-date as outdated information tends to be a primary factor of site defection and loss of business. Dholakia and Rego (1998) found that frequent updates increase website use.

3. THEORETICAL PERSPECTIVES

While the purpose of this research is to predict the website usage metrics by the features included in a website, and since it is difficult to know what to include in a website, a theoretical framework is needed to guide this research. A website for eCommerce is a transactional one as it sells products/services online which can be then regarded as a sales channel, communication channel and a marketing channel (Adam and Deans 2000) for which the theory of communication may be applied (Coughlan et al. 2007; DeLone and McLean 2003). Based on the conceptual framework of communication effectiveness within eCommerce developed by Coughlan et al (2007) we follow their argument of using the communication theory to arrive to our research framework.

The classic model of communication, source-channel-receiver, by Shannon and Weaver (1949) offers a general theory for sending and receiving messages through a channel and a way of analysing communication problems. The model consisted of a sender (a source of information), a transmission medium (with noise and distortion), and a receiver (whose goal is to reconstruct the sender’s message). The communication is said to be successful when the receiver captures the intended message sent by the sender and is more effective when the meaning
conveyed to the receiver leads to the desired conduct expected by the sender.

Mason (1978), used the communication model of Shannon and Weaver (1949) to conceptualise the performance of a communication channel and suggested a framework exhibiting three criteria each of which is necessary but not sufficient to capture the changes in performance:

- Technical: how accurately the message is transferred to the receiver?
- Semantic: how precisely the receiver receives the intended message?
- Effectiveness: how effective is the received meaning by the customer in leading to the desired behaviour?

These criteria have been defined with respect to the receiver. However, since these criteria are a measure of the impact on the individual and on the organisation it is possible to define them from the sender perspective.

Considering the website as a communication channel, the features exhibited in the website are the messages communicated to the users. How precisely the user receives these intended messages represents the semantic criteria in the communication theory of Shannon and Weaver (1949) as identified by Mason (1978). However, from the owner’s perspective these messages represent attributes need to be communicated to customers, how a business weaves website attributes (features) to create online offering that contributes to a business’s overall eCommerce effectiveness (Zhu 2004).

Analysing the effectiveness of these features provides some insight into the business’s online offering. The business, however, needs to deal with whether the aforementioned feature goals and capabilities (informational, transactional, customer service and promotional) appeal to visitors. If it is not optimal, an adjustment may be needed, such as adding or deleting some of their online offering elements. However, poor sales may result from other problems which deal with the online offering’s effectiveness. Complete understanding requires looking at other areas which increase users’ experiences that could influence purchase intention. According to the communication theory of Shannon and Weaver (1949) as identified by Mason (1978), this is achieved by the technical criteria “how accurate the message is received by the recipient”. The technical aspect of the website is covered in the “how” element of the website and is referred to as the business involvement.

4. CONCEPTUAL FRAMEWORK AND HYPOTHESES

The discussion above leads us to believe that the effectiveness of a website may be predicted by both website features and business involvement. This is illustrated by the conceptual framework shown in Figure 1.

In this framework, two sets of independent variables – Website features and business involvement - are jointly associated with usage measures. As discussed later, website usage are those metrics available to owners reflecting the customers’ behaviors on the website. These are

- Website relevance
- Website stickiness
- Navigation behaviour tracking
- Customer profile

Therefore, we have the following Hypotheses:

Hypothesis 1. Features of a website and Business Involvement are jointly and positively associated with website Relevance.

Hypothesis 2. Features of a website and Business Involvement are jointly and positively associated with website Stickiness.

Hypothesis 3. Features of a website and Business Involvement are jointly and positively associated with website Navigational Tracking.

Hypothesis 4. Features of a website and Business Involvement are jointly and positively associated with Customer Profile

5. RESEARCH METHOD AND DESIGN

The Intended population for this study was online businesses within New Zealand.

A list of 1093 websites across industries formed the sample for this study. This research employed an online survey sent out by email to businesses engaged in eCommerce. A total of 1093 emails were sent out, and 344 responded giving a
31.47% response rate. This is considered reasonable for the growing field of eCommerce (Couper 2000; Sheehan and McMillan 1999).

The study used perceptual measures to capture data on three concepts: website features, business involvement, and website metrics.

5.1 Website Features

Online business conducts its business functions through its website. Business functions are represented by website features that are used to create awareness, generate traffic, and drive sales (Turban and Gehrke 2000; Constantinides 2002). This has been conceptualised to consist of the following four dimensions.

5.2 Informational features

The provision of information targeting customers or any interested visitors is the primary purpose of all commercial websites (Barua et al. 2001; Chakraborty et al. 2002; Chen and Wells 1999; Gonza‘lez and Palacios 2004; Huizingh et al. 2007; Molla and Licker 2001; Palmer 2002; Zhu 2004). Informational features provide insight into the background of the company, deliver information about its product/service and present information to enhance customer service (Elliot et al. 2000; Molla and Licker 2001). Therefore, in order to enable potential customers to make an informed decision to purchase a product or a service, businesses need to provide information as part of their proposition. This includes: contact details, company information and functions, product knowledge enhancement (e.g. detailed product description, picture of the product) and other customers’ comments/ratings/testimonials (Elliot et al 2000; Song and Zahedi 2001).

5.3 Transactional features

Previous studies have used different scale items to describe the transactional functionalities of a website according to the purpose of their study. (Barua et al. 2001; Deans and Adam 2000; Huizingh et al. 2007; Krawczyk et al. 2007; Molla and Licker 2001; Teo and Pian 2004; Thelwall 2001; Zhu and Kraemer 2003). In a website, transactional features to facilitate transaction online are part of the value package driven to customers. These include the ability of a website to place and accept orders, track order and delivery status, make and receive payments, and access and update accounts.

5.4 Website features that address customer services

These can vary from general descriptions to interactive dialogues individually tailored to the customer’s specific request (Piccoli et al. 2004). Such features are intended to positively impact on relationships with customers, provide sales support, enhance customers’ knowledge, facilitate resources to customers seeking more information, customize their mix according to their needs, and provide policies on issues such as security and returns (Elliot et al 2000; Song and Zahedi 2001).

5.5 Promotional features

These include aspects that can be communicated to customers to promote products/services (sales promotion) within the site which can be enhanced through customized services such as loyalty schemes (Elliot et al 2000). Other techniques for sales promotion within the website include price-base promotion (discounts, special offers and rebates) and non-price promotion (new products, sampling, and product trial). This is to attract visitors’ attention and increase their intention to transact (Gomory et al. 1999; Song and Zahedi 2001). Also, users will return to the site to check out the latest of these promotions.

In previous research features decided the type of website and the goal to be achieved, for example informational website it mainly provides information to its visitors (Deans and Adam 2000; Elliot et al 2000). In the current study, however, we are dealing with websites that have the main purpose is to sell products/services online and therefore all features may help to influence visitors’ behaviour on the website.

5.6 Business Involvement

We define business involvement as the effort of the business to keep the website maintained and up-to-date. While website features exemplify the business functions that introduce value to customers, businesses still need to be engaged with the quality of their new channel (website) to make sure that it is suitable for their target customers (Fitzpatrick 2000; Kim et al. 2003; Lii et al. 2004; Thelwall 2001). Such action compliments business functions (website feature) and, as suggested by Thelwall (2001), this action is investigated in terms of website being visible, usable, and maintained.

5.7 Visibility

Visibility includes aspects that can be communicated to customers to inform them about the site. According to Constantinides (2002), a website is the prime product of the brand online and customers should be directed to the company’s Internet exposure before going to their detailed online offering. Indeed, one of the primary objectives of a new website is to attract a variety of customers to visit their new Internet exposure. In order to attract new customers and keep existing ones, businesses need to provide external informational events (Andreassen and Lindestad 1998) since the “build and they will come” model is insufficient to generate traffic (Aaker 2002). Successful online businesses need a highly visible website which can be viewed as a predictor to website traffic (Drèze and Zufryden 2004). Park and Kim (2003) termed this activity as “site awareness” and define it as the ability of a buyer to recognise or recall that a site is a member of a certain service category and found to affect relational benefit. Although difficult, businesses see driving traffic to their site as
most important (Hoffman and Novak 1996). One of the major categories surveyed by Turban and Gehmke (2000) investigating the major determinant of an effective website is customer focus. They grouped 12 variables of relative importance according to their number of citations in the literature. Promoting the business’s website has been found to be the most important since it is vital to direct visitors to the site (Turban and Gehmke 2000). In relation to this, the website should be easy to find and appear as close to the top of a search result as possible. The higher the rank in the search engine, the greater the proportion of consumer traffic visits to the site, which should lead to more purchases. Hence, search engine optimization has become an important marketing concern and is dependent on how well the website is designed and laid out (Krishnamurthy 2003). Other online techniques to market the site include reciprocating links with other websites, use of banner ads in other portal sites, use of Meta tags and registering with main search engines. This will increase visibility of the site, acquire customers (Drèze and Zufryden 2004) and retain them (Gomory et al 1999; Thelwall 2001). Offline marketing is another aspect to increase visibility of the site to attract customers to it. This can be achieved by different means such as using different media.

5.8 Usability
Selling online requires the business to offset the absence of face-to-face customer interaction with the business. The ease of use and the friendly design of the website are well known features that businesses need to adhere to (Fisher et al. 2007). While such measures are taken from the customer experience, owners still need to provide quality measures that make their website usable. For example, customers need security assurance to be able to carry on conducting a transaction or intuitive navigation to find what they need from the website (Elliot et al. 2000).

5.9 Maintainability
A website designed for eCommerce has the additional requirement of the content needing to be up to date and comprehensive (Elliot et al 2000). Many website owners who maintain websites carefully monitor the pattern of requesting files or pages from their website (Glommen and Barrelet 2002). According to Fisher et al. (2007), businesses that regularly monitor their website and update contents are trustworthy and build the business’s image. Trust (Belanger et al 2002) and image (Melnik and Alm 2002) indicate quality and increase eCommerce growth. In-house maintenance, however, as opposed to an external contractor, could eliminate high cost and inconvenience (Thelwall 2001). Businesses monitor their website to offset the absence of face-to-face contact and to benefit from the online presence (Chesney and Darby 2005).

5.10 Website Usage
According to DeLone and McLean (2003), website usage measures everything from a visit to a website to navigation within the site, to information retrieval, to execution of a transaction. The literature refers to these measures as web analytics and different metrics have been developed to measure different data collected from visitors’ interaction with the website. Such data can be aggregated over many visitors allowing businesses to continually improve their website performance (Schonberg et al. 2000). With the web being a business channel (Inan 2002), businesses need to relate measures to different business specific activities or events relating to the website, such as a marketing campaign or functional changes to the website (Phippen et al. 2004). While there are a large number of metrics currently in use, we compiled all possible metrics and used a panel (five PhD student and 5 academics) to classify them to a common set of metrics, bearing in mind the context and the purpose of the study, resulting in four metrics regardless of the tool being used. For example, “pageviews” is a widely used metric and refers to the numbers of pages being viewed by website visitors. A website performs well if all pages have been viewed. This is referred to as website relevance (Phippen 2004) and it captures the navigation pattern of use within the website. These comprehensive set of metrics capture the extent that the company retrieves information about its visitors in terms of numbers, navigation patterns within the site, and the visitor’s profile. They are:

- Website relevance: This is how much a website is relevant to the visitor. A website performs well if all pages have been viewed by all visitors to your website.
- Website stickiness: This is the effectiveness of the content in holding the visitor’s attention i.e. visitors are finding what they expect to find as soon as they arrive on the website. This is measured by the time duration visitors spent on the website: A website performs well if visitors spend more time on the website than the average time needed for a customer to make a purchase.
- Navigation behaviour tracking: This is ability to track the path that visitors take through a website. A website performs well if the majority of visitors follow an orderly and logical path through your website.
- Customer profile: This is measured by the demography of the visitors. A website performs well if the visitors to the website match a desired profile for customers.

Measures for these concepts were collected from previous literature that discusses the different facets of features and metrics. Respondents were asked to rate the importance of each feature/metric and then rate their perceived success of that particular attribute. The resulting composite measure (importance x perceived success) is referred to as an effective performance measure (Gupta and Govindarajan 1984). The survey asked the respondents whether they were actively involved in monitoring their website. If they were not actively monitoring the site the survey was terminated.
Those that responded that they did monitor their website were presented with a set of four metrics required to complete the survey. 230 participants indicated that they monitored their website of which 225 responses were usable ones.

5.11 Validity of the Instrumentation

Once the data was collected, the instrument was subjected to comprehensive tests of reliability and validity before proceeding to test the hypotheses of the study. While reliability determines the extent to which a measure is free from random error components, validity is concerned with the extent to which a measure reflects only the desired constructs without contamination from other systematically varying constructs (Hair et al. 1998). Reliability was evaluated by composite construct reliability (CCR) and Average Variance Extracted (AVE). The CCR of all latent constructs exceeded the benchmark of 0.7 recommended by Hair et al (1998), all loadings are above the cutoff value of 0.5 (Gefen et al. 2000), and AVE above 0.5.

In addition to the reliability test, validity in terms of content and construct of the scale is also of concern. Content validity refers to the degree of the indicators reflecting the concept. The items used in this study were extracted from previous research followed by checks, pre-tests with both business managers and academics.

Construct validity is inferred by providing evidence of both convergent and discriminant validity. While the convergent validity assesses the degree to which a measure correlates highly with other measures designed to measure the same construct (Churchill 1979), discriminant validity assesses the degree to which conceptually similar concepts are distinct (Hair et al 1998).

6. EMPIRICAL RESULTS

Having established validity, we proceed to test our hypotheses proposed earlier. The model specifies the relationship between website usage metrics and a set of explanatory variables, including website features and business involvement for a given sample. Hence the basic relationship may be specified as follows;

\[
DV = f (WF, BI, \varepsilon) \quad \ldots \ldots \ldots \ldots \ldots \ldots \ldots (1)
\]

Where WF stands for website features, BI denotes business involvement activities, and DV (dependent variable) denotes the website usage metrics.

As shown in Table 1, website usage is significantly predicted by website features and business involvement activities. Overall variance in independent variables explains the variance in the dependent variable. Website usage is a function of the independent variables such as website features (P = 0.00) and involvement (P = 0.00). The value of adjusted \(R^2\) for the overall model is 0.45. This indicates that 45 percent of the variation in the usage is affected by features and involvement.

To test the hypotheses, the dependent variable will be replaced in turn by each of the four usage metrics. For example, the regression equation for website relevance is:

\[
\text{Website Relevance} = \alpha + \sum \beta_iWF_i + \sum \beta_jBI_j + \varepsilon \quad \ldots \ldots \ldots \ldots \ldots \ldots \ldots (2)
\]

Where WF\(_i\) are the four features identified earlier, BI\(_j\) are the three business activities, \(\beta_i\)'s are the coefficients, \(\alpha\) is the constant, and \(\varepsilon\) is the residual term that captures the net effect of all unspecified factors

6.1 Website Relevance

To test the hypothesis 1, the regression model is specified as equation (2)

As shown in Table 2, website relevance is significantly predicted by website features and business involvement activities. Website relevance is a function of website features (P = 0.047) and involvement (P = 0.00). The value of adjusted \(R^2\) for the overall model is 0.27. This indicates that 27 percent of the variation in the relevance is affected by features and involvement. However, Table 2 shows only informational attributes are related to website relevance along with the business involvement of visibility and maintainability. Moreover, the transactional attribute is found to be statistically significant, but showed opposite relationships. Recalling the definition of the relevance metric as a pageviews measure, it indicates that higher pageviews is related the dynamics of the information presented in the website. This means that visitors browse the website for informational purposes as a result of website promotion as long as the website is up-todate.

<table>
<thead>
<tr>
<th>Table 1. Overall Model Regression Results</th>
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<tbody>
<tr>
<td>Constructs/Factors</td>
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<tr>
<td>Features</td>
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<td>Involvement</td>
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<table>
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<tr>
<th>Table 2. Regression Results on Relevance</th>
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<tr>
<td>Constructs/Factors</td>
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<td>Features</td>
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<td>Involvement</td>
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<td>Informational</td>
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<tr>
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<tr>
<td>Service</td>
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<tr>
<td>Promotional</td>
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<tr>
<td>Visibility</td>
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<td>Usability</td>
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</table>
Maintainability 0.192 0.015

Note. Two regressions are reported; the first one used the overall features and involvement, while the second one replaced each with their factors in the regression.

6.2 Website Stickiness

To test the hypothesis 2, the regression model is specified as equation (3)

Website Stickiness = \alpha + \sum \beta_i WF_i + \sum \beta_j BI_j + \epsilon \quad (3)

As shown in Table 3, website stickiness is significantly predicted by website features, business involvement and explains 29% of the variation. However, only promotional attributes are related to website stickiness along with the business involvement of visibility and maintainability. This means that as a result of advertising promotions, visitors stay longer whenever there are new promotions.

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Beta</th>
<th>Sig</th>
<th>Overall model Sig.</th>
<th>Adj. R Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Features</td>
<td>0.180</td>
<td>0.036</td>
<td>0.000</td>
<td>0.29</td>
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<tr>
<td>Involvement</td>
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<td>0.000</td>
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<td>0.000</td>
<td>0.31</td>
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<td>Transactional</td>
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<td>0.301</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service</td>
<td>0.051</td>
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<tr>
<td>Promotional</td>
<td>0.226</td>
<td>0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visibility</td>
<td>0.262</td>
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<td>Usability</td>
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<td>0.479</td>
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<td>Maintainability</td>
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</tbody>
</table>

Note. Two regressions are reported; the first one used the overall features and involvement, while the second one replaced each with their factors in the regression.

6.3 Navigational tracking

To test the hypothesis 3, the regression model is specified as equation (4)

Navigational tracking = \alpha + \sum \beta_i WF_i + \sum \beta_j BI_j + \epsilon \quad (4)

As shown in Table 4, navigational tracking is significantly predicted by website features, business involvement and explains 23% of the variation. More specifically, only visibility has impacted the navigational tracking metric. In other words, promoting the website can be seen in the rise of the navigational pattern of the website. If owners need to examine whether their website visitors follow a navigational pattern, then they need to check that at the time of promoting their website.

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Beta</th>
<th>Sig</th>
<th>Overall model Sig.</th>
<th>Adj. R Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Features</td>
<td>0.232</td>
<td>0.010</td>
<td>0.000</td>
<td>0.23</td>
</tr>
<tr>
<td>Involvement</td>
<td>0.292</td>
<td>0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informational</td>
<td>0.103</td>
<td>0.002</td>
<td>0.000</td>
<td>0.21</td>
</tr>
<tr>
<td>Transactional</td>
<td>0.059</td>
<td>0.381</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service</td>
<td>0.051</td>
<td>0.616</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Promotional</td>
<td>0.085</td>
<td>0.286</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visibility</td>
<td>0.165</td>
<td>0.026</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usability</td>
<td>0.067</td>
<td>0.474</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintainability</td>
<td>0.119</td>
<td>0.156</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Two regressions are reported; the first one used the overall features and involvement, while the second one replaced each with their factors in the regression.

6.4 Customer Profile

To test the hypothesis 4, the regression model is specified as equation (5)

Customer Profile = \alpha + \sum \beta_i WF_i + \sum \beta_j BI_j + \epsilon \quad (5)

As shown in Table 5, customer profile is significantly predicted by website features, business involvement and explains 25% of the variation. However, only informational attributes are related to customer profile along with the business involvement of visibility and quality. This means that the visitors match the profile of the customers at the website through promoting the website, the information it provides and the quality of the website (users account, security, etc).

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Beta</th>
<th>Sig</th>
<th>Overall model Sig.</th>
<th>Adj. R Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Features</td>
<td>0.281</td>
<td>0.002</td>
<td>0.000</td>
<td>0.25</td>
</tr>
<tr>
<td>Involvement</td>
<td>0.266</td>
<td>0.003</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informational</td>
<td>0.197</td>
<td>0.018</td>
<td>0.000</td>
<td>0.26</td>
</tr>
<tr>
<td>Transactional</td>
<td>0.001</td>
<td>0.864</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service</td>
<td>0.081</td>
<td>0.416</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Promotional</td>
<td>0.058</td>
<td>0.485</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visibility</td>
<td>0.148</td>
<td>0.039</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usability</td>
<td>0.223</td>
<td>0.015</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintainability</td>
<td>-0.056</td>
<td>0.967</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Two regressions are reported; the first one used the overall features and involvement, while the second one replaced each with their factors in the regression.

7. DISCUSSION AND CONCLUSION

This study examined the relationship between a website metrics and its activities. Specifically, this study was concerned with two important activities on the website, features presented in the website, and the business involvement activity, and their relationship with four metrics.
The approach in achieving this objective has been to draw on theory of communications, and to develop and test a theory for management of websites for eCommerce. The research model used here was based on the work of (Coughlan et al. 2007), who built their model on the work of Shannon and Weaver (1949) and Mason (1978). Thus, the various factors in the conceptual model fall into the different categories of technical level, semantic level and effectiveness level. The conceptual model shown in Figure 1 elucidates various website features along with the business involvement are related to website usage.

This study is groundbreaking because it investigated such relationship using empirical methods. Although concepts in this study have been investigated in previous research studies, few have yet addressed the specific topic of factors which are closely correlated with website usage metrics. Particularly, the relationship between website activities (e.g., features and business involvement) and website usage metrics is poorly understood but highly required.

The results show that website metrics is influenced by both activities. However, each metric in the website usage is found to be predicted by certain features and influence by certain business activities. Such linkage, however, fills in the research gap in websites designed for eCommerce purposes.

The findings on these relationships give a better understanding of the website usage metrics and its related attributes in the websites. Also, the lack of positive relationship between the usage metrics and other attributes such as the transactional and service attributes of the website prompt the owners to look for alternative metrics that can be linked to these important features.

Another interesting finding involved a close correlation between website features and business involvement activities. This finding may be interpreted as the importance of both activities in engaging visitors with a website that sells products/services.

These results have important implications for both theory and practice. From a theoretical perspective, these results lend additional support to measuring the usage metrics in terms of website content features. This study also empirically quantifies the relationships between website metrics and website attributes.

For practitioners, website metrics trigger for weakness or strength and therefore monitoring these metrics suggest what action needs to be taken.

This study is not without its limitations. However, limitations of current research provide the foundation for other research to extend the understanding of the factors leading to website usage. The following limitations need to be considered when using the research findings:

This study is based on the website owner perceptions on the performance of their website in the due attributes used for this study. There may be a potential response bias with the owners being as the informant. For example, sales support as a scale item in the website service features conveys how successful a website is in providing support based on the owner’s experience. Respondents tend to be more positive in their viewpoint. While this has been dealt with in the technique used to ask the question, possible biases associated with self-reporting by owners must be considered when interpreting the results of this study.

Another limitation of the study is due to the data collection method. The study adopted a survey where data was acquired only at one point in time. While this method has been widely-used in similar studies, it is by no means an ideal method of data collection. For example, this might not be favourable to seasonal businesses where usage is more likely at certain time of the year. Therefore, findings should be used in the high season for such businesses.

A subsequent strength of this study lies in its foundation for future research. While this study has provided validated empirical results on the relationships between website activities and usage metrics from a website sample in New Zealand, a potential avenue of future research is replication of this study across a selected sample of international websites would provide additional empirical support for theoretical studies in this area.

Another area for further inquiry is the use of objective measures for the web metrics utilized in this study. This study used perceptual (subjective) measures for the website usages. Although subjective results are correlated with objective ones and the perceptual measures are important for generating insights into how owners perceive and value their websites. It is also believed that objective measures for website metrics, such as actual page view, and length of time spent on the website could yield a better insight of the sought relationships.

To conclude, this study has managed to empirically define a relationship between four website usage metrics and website attributes. This enables practitioners to relate metrics to the functionality of their website with more meaningful interpretation. On the other hand, academics might find concepts and measures used in this study as the basis for their research.

8. REFERENCES


