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Determining the performance of website-based relationship marketing

Kerstin Schäfer [a], Tyge-F. Kummer [b,*]

[a] Institute of Information Systems, School of Business and Economics, Humboldt-Universität zu Berlin, Spandauer Str. 1, 10178 Berlin, Germany
[b] Griffith Business School, Building G06, Gold Coast Campus, Griffith University, Parklands Drive, Southport, QLD 4222, Australia

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ABSTRACT

Company websites are an important instrument for relationship marketing activities. We present a methodological framework that aligns website performance assessment and marketing intelligence for evaluating the performance of relationship marketing activities. In this context, we develop an extended web mining approach that integrates managerial perspectives in the analyst's investigation of the customer-website interaction based on historical clickstream data.

This approach enables quantification of the moderating effect of a website's structure and content regarding website-based relationship marketing. The applicability of our approach is demonstrated by clickstream data of 477,471 visitor sessions on a software developer's website. The results provide detailed insights into the usage behavior on a website and the mechanisms to enhance e-commerce efficiency via website optimization.

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1. Introduction

Today's companies use their websites as windows through which much of the world will see it (Winter, Saunders, & Hart, 2003). In contrast to traditional e-commerce sites or portals, modern corporate websites provide a broad range of information about themselves, their products and related services to the public (Stuart & Jones, 2004). As a result, the online presence becomes the most important communication channel a company possesses; determining how effective it supports this communication function is crucial in the overall webpage evaluation (Weinberg, Parise, & Guinan, 2007).

Several approaches have been introduced to improve web performance covering models based on web mining and click stream analysis (Cho, Kim, & Kim, 2002; Chou, Li, Chen, & Wua, 2010; Kalczynski, Senecal, & Nantel, 2006; Kim & Yum, 2011), web-based marketing (Tsai, Chou, & Leu, 2011; Wang, Wang, & Farn, 2009) as well as online effectiveness and website evaluation (Chou & Cheng, 2012; Kim, Kwon, & Chang, 2011). Due to its practical importance, this issue is for example also addressed by popular evaluation instruments such as the Web Effectiveness Index, which helps investigating how a corporate website reacts on global communication trends and how it performs against its peers by quantifying the serving potential for different public target groups (BowenCraggs, 2011). Although such performance indicators are beneficial for companies, they often exclude direct business related measurements, because they cannot quantify website performance in their serving character for the customer value (Financial Times/Bowen Craggs, 2011). But this is of utmost importance, as besides benchmarking among peers, companies need to assess customer value first for achieving a competitive advantage (Woodruff, 1997).

Business relevant measures can be included by referring to the company's applied relationship marketing strategies (RMS), which aim at establishing, developing, and maintaining successful relational exchanges with its customers (Morgan & Hunt, 1994). These strategies are directly reflected in online performance, as the Internet also became the most important communication channel for a company's RM effort (Srinivasan & Moorman, 2005). The evaluation of such RM effectiveness is based on customer behavior and allows increasing a company's return of RM investment by offering demand-actuated strategies and services (Reinartz & Kumar, 2003). In this line of arguing, customer value can be determined in two steps: firstly, by measuring how well the corporate website moderates the company RMS, which is expressed in how well it serves its customers online; and secondly, by inferring involved relationship economics (Palmatier, Dant, Grwal, & Evans, 2006). As a result, the evaluation of corporate online performance can be integrated with internal business measures and is substantial for marketing decisions (Weischedel, Matear, & Deans, 2005).

Similar to the spread of relationship marketing evaluation that mainly uses customer data, website performance assessment increasingly takes place on the customer/visitor-level, empirically using clickstream data (Ayanso & Yoogalingam, 2009; Hahn & Kauffman, 2004; Kalczynski et al., 2006; Olbrich & Holsing, Winter 2011–12). From the viewpoint of business practice, particularly the "easy-to-use" web analytic approaches that use internal web page-tagging, have been widely employed as they provide a fast

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[*] Corresponding author. Tel.: +61 7 5552 7370; fax: +61 7 5552 8068.
E-mail address: t.kummer@griffith.edu.au (Tyge-F. Kummer).

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method for surveying visitor behavior (Kohavi, Rothleder, & Simoudis, 2002). However, their scope of analysis is usually limited to a structural, aggregated level of internal page frequentation and related web metrics such as stickiness or prominent exit pages (Booth & Jansen, 2009; Olbrich & Holsing, Winter 2011–12), which are difficult to relate to customer value. Investigating whole visitor paths using clickstream data can set a much broader scope; further, this allows to infer business relevant website performance measures from visitor usage behavior, as specified in various web mining approaches (Lee, Podlaseck, Schonberg, & Hoch, 2001). Nevertheless, such elaborate approaches are highly underutilized in business practice due to their increased complexity in data storage, data preparation and analysis in comparison to typical web metric-based methodologies (Sen, Dacin, & Pattichis, 2006).

However, only an investigation on website performance based on the individual visitor session level enables a valid demand-actuated evaluation of customer/visitor value by quantifying the effectiveness of a company's RM effort in their website usage. Though, suitable methodological approaches that are able to enrich existing company data by providing internal measure of website performance in the context of relational marketing analysis are rare (Hahn & Kauffman, 2004; Hochsztain, Millán, Pardo, Pena, & Menasalvas, 2003). Furthermore, as far as we know, approaches that directly link the evaluation of a company's RM effectiveness to website performance, empirically based on customer website usage, do not exist.

In this study we attempt to overcome this shortage by presenting a methodological framework that aligns marketing analysis with web mining approaches on the theoretical level. Therein, we develop a methodological approach that integrates managerial perspectives into the modeling and analyzing of a company's RM effectiveness in website performance based on customer website usage data. The knowledge gained supports customer value determination by quantifying RM effective website usage behavior and also enables a demand-actuated website optimization and customization for different relational marketing strategies. Furthermore, we extend existing web mining approaches by integrating managerial perspectives on website usage. Addressing Internet based marketing communication environments finally enriches traditional marketing analysis approaches.

The paper is structured as follows: in the next Section 2 we outline the related research. In Section 3, we describe the developed methodology in detail. The practical relevance of our approach will be demonstrated in Section 4 by analyzing historical clickstream data of a corporate web site from the software development sector. Finally, we conclude our research contribution and the limitations of our approach in Section 5.

2. Related research in performance assessment

Corporate websites are an important channel for Internet based marketing communication in a company's multi-channel marketing efforts (Weinberg et al., 2007). They support three relational marketing strategies (RMS) in particular: (1) the building of brand equity, which is the sum of the intangible assets of the corporate brand that are supported by factors such as name awareness, perceived quality and customer loyalty (Aaker, 1993); (2) the creation and maintenance of relationships at reduced costs (Sheth & Parvatiyar, 2000); and (3) the creation of customer satisfaction by delivering superior products and services (Gale, 1994). Success in any of these strategies leads to an increase in repeat purchases, insulation from price increases and improved responsiveness to marketing communication by customers. Thus, a corporate website can maximize the impact of a company's RM efforts (Argyriou, Kitchen, & Melewar, 2006). The strength of this contribution depends on how well the website performs with respect to customer information needs. Therefore it is necessary to develop metrics that evaluate the effectiveness in relation to customer website usage of the RM effort in website performance.

For business orientated performance measurements, marketing analysis provides a rich set of methodologies, which have been adapted to the Internet context subsequently. Initially, business performance assessment was conceptualized as assessment of product and service quality (i.e. SERVQUAL: Carman, 1990; Parasuraman, Zeithaml, & Berry, 1988). In these studies, the general measurement model determines a gap (the deviation) between managerial expectations towards performance and the actual performance based on customer evaluation of products and services (Asubonteng, McCleary, & Swan, 1996; Teas, 1993). In the context of RM, the effectiveness evaluation uses data intensive methodologies based on customer purchase behavior (Vercellis, 2009). In related research this is commonly discussed in the notion of relationship economics that includes metrics such as customer lifetime value, acquisition, retention and cross-selling (Büchner & Mulvenna, 1998; Chi & Tavella, 2008). Subsequent, in IS an adaption of these marketing approaches took place. Website performance is either measured in terms of single marketing outcomes such as web-customer satisfaction and loyalty (McKinney, Yoon, & Zahedi, 2002), or by deploying so-called WEBQUAL studies that focus rather on quality assessment and benchmarking (Lee, Strong, Kahn, & Wang, 2002).

Additionally, other IS studies investigate website performance directly by inferring customer value of the customer-website interaction in methodological approaches similar to marketing intelligence (Senecal, Kalczynski, & Nantel, 2005; Spiliopoulou & Pohle, 2001). In these studies, different effectiveness metrics are deployed depending on the website type. For transaction-orientated e-commerce websites, performance is assessed in terms of revenue. Thus, metrics are used that relate the *customer lifecycle* to customer web usage such as reach, acquisition, conversion, click through and look-to-buy (Lee, Hoch, Podlasek, Schonberg, & Gomory, 1999; Teltzrow & Berendt, 2003). Investigating customer web site usage in terms of *customer behavior* on the other hand assesses the performance of information and service provision orientated websites. Here, the clickstream data is interpreted as implicit feedback for meeting customer information needs (Bucklin & Sismeiro, 2003) and effectiveness can be determined by evaluating the degree or amount of this serving (Stolz, Viermetz, Neuneier, & Skubacz, 2005).

3. Towards a methodology for RMS effectiveness evaluation

3.1. Relationship marketing website typology

Integrating relationship marketing strategies (RMS) with related research from website performance assessment, an allocation of typical RMS and related metrics is possible: according to the functions a corporate website possesses, different RMS are supported, and different effectiveness metrics need to be distinguished. Adjusting the typology of website functions and metrics suggested by Booth and Jansen (2009) for corporate website functions, as displayed in Table 1, we specify firstly that a *commerce orientation* focuses on getting customers who visit the site to purchase goods or services directly from the website. The building of brand equity is the most important RMS here, because it addresses customer loyalty in terms of repeated purchases and perceived product quality. Clickstream-based effectiveness metrics for commerce emphasize transactions such as purchase or downloads. Secondly, *content and media provision* focuses on drawing in visitors and immersing them within the site. The relationship

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