Chapter XV
Web Site Performance Analysis
Success Assessment of
Information Driven Web Site on
User Traces

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ABSTRACT

With growing importance of the internet, Web sites have to be continuously improved. Web metrics help to identify improvement potentials. Particularly success metrics for e-commerce sites based on transaction analysis are commonly available and well understood. In contrast to transaction based sites, the success of Web sites geared toward information delivery is harder to quantify since there is no direct feedback of the user. We propose a generic success measure for information driven Web sites. The idea of the measure is based on the observation of user behaviour in context of the Web site semantics. In particular we observe users on their way through the Web site and assign positive and negative scores to their actions. The value of the score depends on the transitions between page types and their contribution to the Web site’s objectives. To derive a generic view on the metric construction, we introduce a formal meta environment deriving success measures upon the relations and dependencies of usage, content and structure of a Web site. In a case study we got aware that in single cases unsatisfied users had been evaluated positively. This divergence could be explained by not having considered the user’s intentions. We propose in this approach to integrate search queries carried within referrer information as freely available information about the user’s intentions. We integrate this new source of information into our meta model of Web site structure, content and author intention. Hence we apply well understood
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techniques such as PLSA. Based on the latent semantic we construct a new indicator evaluating the Web site with respect to the user intention. In a case study we can show that this indicator evaluates the quality and usability of a Web site more accurately by taking the user’s goals under consideration. We can also show, that the initially mentioned diverging user sessions, can now be assessed according to the user’s perception.

INTRODUCTION

Apart from privately owned and maintained Web presences, professionally organized Web sites have become a natural part of everyday life and work. Companies adopt private initiatives and expand these ideas to a large number of internet users. Hao and Mendes (2006) see it as essential for a company’s success. With ceased euphoria and growing realistic judgment about the possibilities of internet based business, companies focus on the profit generated by their Web sites. After more than ten years after creation of the World Wide Web, Jacoby and Luqi (2007) still ask in their work for measurable success indicators to evaluate and improve Web sites and their business models.

The assessment of success for a Web site can be approached from two sides, by direct enquiry or by observation of the Web site’s users. Both techniques differ in their field of application. Enquiries provide very detailed information of a sample of all users which can be extrapolated to the whole user population. Ongoing, long-term evaluation of large, corporate Web sites can not be accomplished by user enquiry. Thus, our work concentrates on the continuous observation of user actions. Beside cost advantages, this approach covers all users and can be conducted over long time periods allowing to take dynamically built content into consideration.

The observation of user actions can be performed from server or client side. Like shown in the work of Cheung and Lee (2005), the client side allows to track all actions and even mouse movements of the users within his browser whether there is a data exchange with the Web server or not. Similar to a direct enquiry the scalability of this approach is questionable, since the approval of all users would be mandatory. Therefore, we rely on server side observation of user behaviour, although the observable actions are limited to the facts, shown in section \ref{domain}.

It depends on the business model of a Web site whether actions exist, that allow a direct determination of success.

The business models for a Web presence can follow one or more out of the following categories: \textbf{e-commerce} Web sites sell products and services, \textbf{content}-based Web sites aim to deliver and provide potentially useful information to their users, \textbf{communication}-based Web sites enable their users to contact and exchange each other or communicate with the company. Especially the so called Web 2.0 Web sites are based on this business variant. Finally, \textbf{context}-based Web sites organize and rearrange content within a new context to improve the entropy for their users, like search engines do.

Depending on the business model, it is possible to distinguish between user actions that contribute to the Web site’s objectives and those actions without effect on the success.

Transaction Based Success Measures

Most e-commerce Web sites can evaluate their success by analyzing successfully completed transactions. Within these transactions users provide a direct feedback about the utility and the monetary value the Web site created for them.