

# Analysis and Evaluation of WebTrends Log Analyzer

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## Abstract

A good DSS tool can support users to make right decisions and assist designers to develop a sound DSS in small businesses. In this paper, WebTrends Log Analyzer 8.0 is the selected software for analysis. It will be divided four parts: overview of the three main functionalities; evaluation of the software product by using biasing and debiasing theories; applying Monash decision support systems development model to examine this product; and finally using Keen's model to analyze it.

**Keyword:** DSS, WebTrends Log Analyzer, evaluation

## 1. Introduction

Decision Support Systems (DSS) is an area of the information systems discipline that focuses on supporting and improving human decision-making (David, 2002). Decisions are often made by individuals or small organizations. During the period, many challenges are encountered by decision-makers. There is no doubt that valuable DSS tools can assist them to make right decisions.

The aim of this paper is to enhance comprehension of a couple of theories related to Decision Support Systems (DSS) by evaluating a software product that intended for decision making. Additionally, critical analysis will be presented based on different selected theories, like biasing and debiasing theories, Monash DSS development model, and Keen's adaptive design model for Decision Support System respectively.

The selected software product for analysis is WebTrends Log Analyzer 8.0, which is mainly utilized to track web traffic and provide assistance for business companies' decision-making. The overview of the functionality will be mentioned. However among several useful functionalities, only three of them will be extracted and described. Each theory will be used to evaluate whether this product is a DSS tool and why it is a good or bad.

This paper will be divided four parts: overview of the three main functionalities; evaluation of the software product by using biasing and debiasing theories; applying Monash decision support systems development model to examine this product; and finally using Keen's model to analyze it.

## 2. Overview of Main Functionality

For small businesses, the Internet presents a relatively inexpensive way to reach a much broader audience and an overwhelming majority of them are committed to using technology to meet their goals. A recent survey from Verizon Superpages.com revealed that 96% of small businesses plan to maintain or increase Internet expenditures in 2003 and 53% plans to change their Web site design (<http://www.smallbusinesscomputing.com/webmaster/article.php>). In line with this, NetIQ included more features in WebTrends Log Analyzer 8.0 to help small business users make smarter decisions about Web initiatives. Actually, small businesses have potential to get success on the web provided they can track how well the websites, general traffic, traffic visitors. Responding to this, Log Analyzer delivers the information, such as which content is holding visitors' attention, how visitors are navigating through web site and how well the site is performing technically for viewing information, product, and sales services, etc.

WebTrends Log Analyzer Series 8.0 gives small business users robust yet easy-to-use functionalities. It minimizes ongoing technical requirements while delivering relevant analysis to the people who need it. Here three primary functionalities will be introduced, included Dashboards, Customizable Templates, and Content Groups.

### 2.1 Functionality of Dashboard

Dashboard is a visual summary of important information for one particular template over a time range and prioritizes information users need in a single view. Currently predefined Dashboards are available on all major Web site activities, such as navigation and technical reports (<http://www.smallbusinesscomputing.com/webmaster/article.php>). Users can view several reports in different single view. As shown in Figure 1, it is a Dashboard sample that summarized information related to specific search engine. The reports regarding to specific search engines are recorded according to different views.



Figure 1. Dashboard of specific search engine

Moreover each title in Dashboard can be drilled down by clicking to show more complete information. The Figure 2 is Dashboard of sample WAP report whose one thumbnail is drilled-down to show completed Visitor Trend Report.

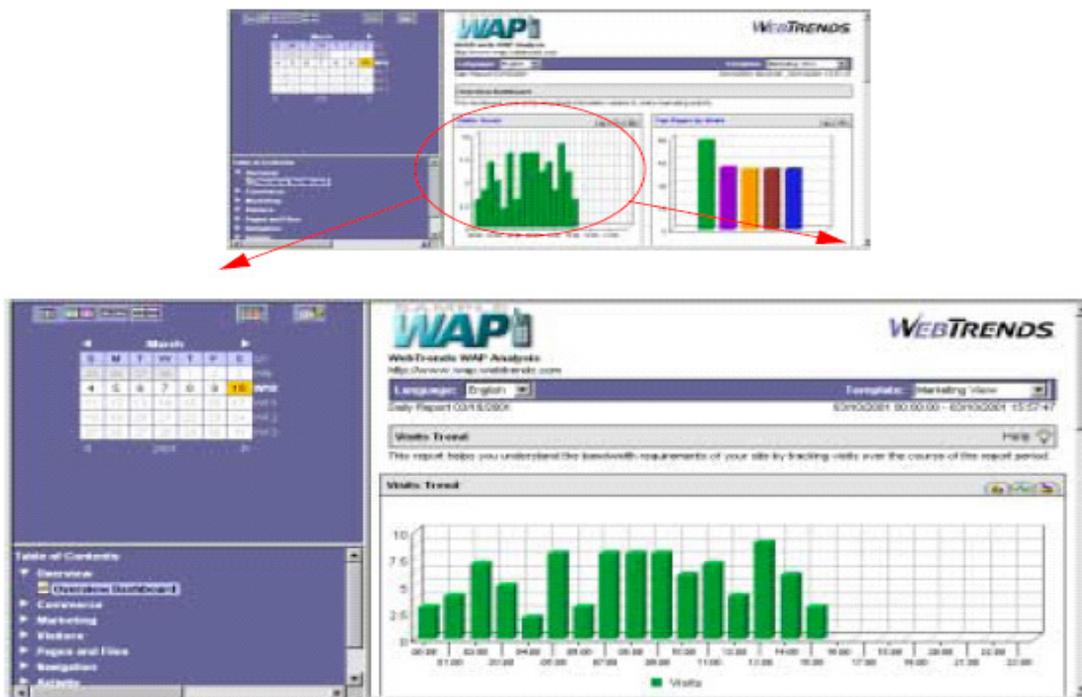


Figure 2. Dashboard “thumbnail” is expanded to show completed Visitor Trend Report

From the critical reports, users can know the information related to a single view for decision-making. For example, one changing reporting periods that shows everyday activities by visitors within one week can provide an overview of the web traffic in terms of different timing periods. Such a report facilitates users to analyze the traffic changing of websites for users.

### 2.2 Functionality of Customizable Template

As for Customizable Template, it customizes the content of the WebTrends Desktop for a specific business function or user, enabling each user to see only their most critical information. Different departments may need various kinds of information rather than all of them. Thereby, it is necessary to customize different content in templates in order to satisfy the different requirements of users. The Figure 3 is a sample of the use of customizable template to tailor the report on Dashboard for a specific user or business function. In the figure, users with different purposes can select any preferable view from the list with the red circle.

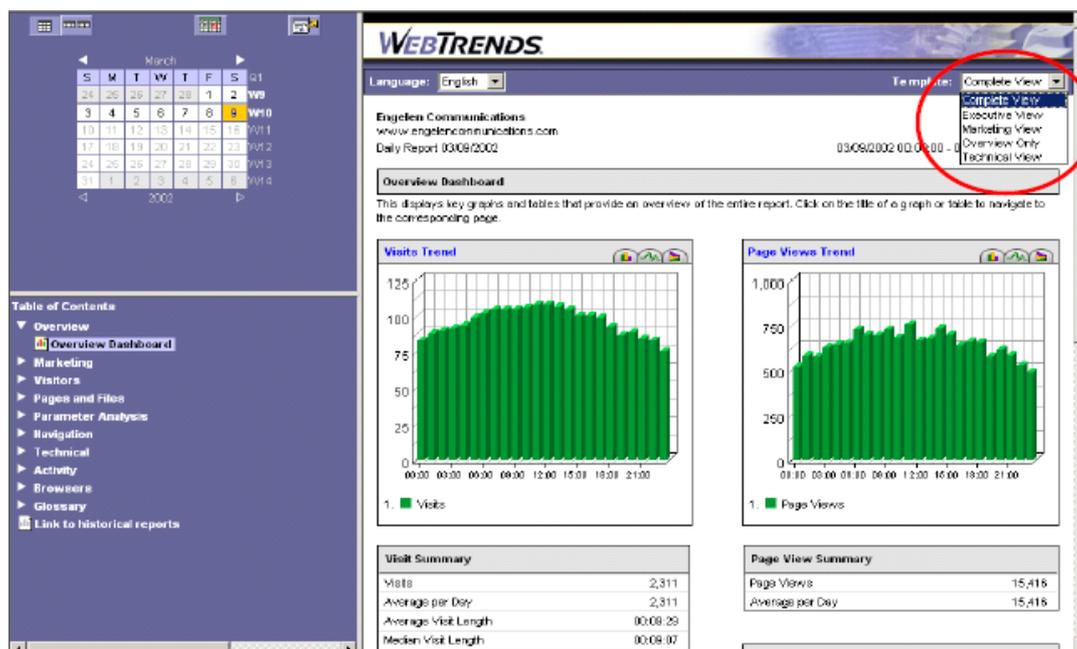


Figure 3. Customized template used to tailor reports on Dashboard for specific purpose

### 2.3 Functionality of Content Groups

Finally, Content Groups assign groups of pages to content groups to understand exactly what content is the most interesting to your customers on an aggregate level, in which there is a subfunction that is Path analysis, it applies to follow visitors click-by-click to ensure the design of website is effective and improve website navigation. Content group help users to find which pages and sections of website are compelling to visitors, just as showed in Figure 4 as following.

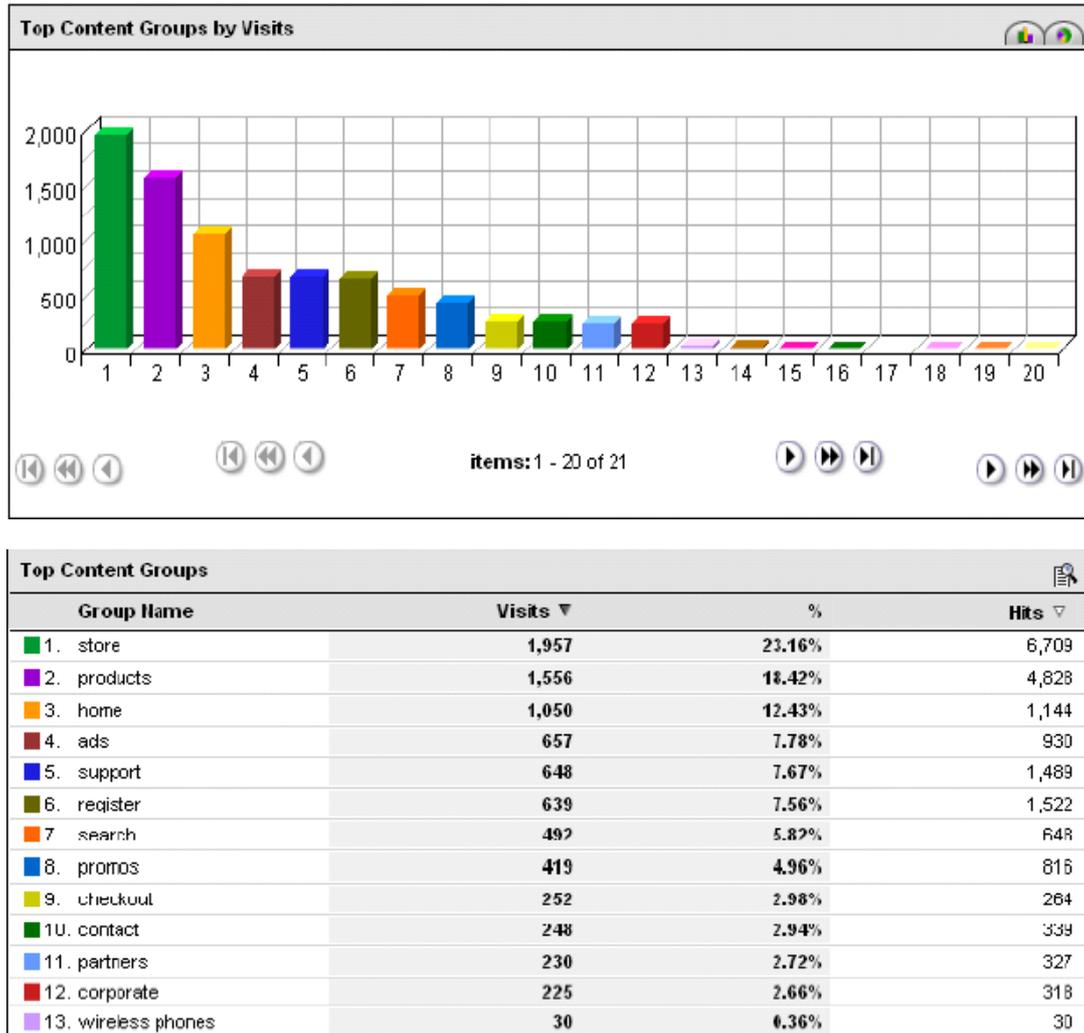


Figure 4. Content groups of visitors

Additionally, path analysis can improve the navigation of websites. Figure 5 shows one example. It can discover what kinds of access orders are often applied by users in website that is valuable for understanding the current situation and improving navigation of website effectively. As shown in Figure 5, the top paths through site are listed.

Starting Group	Paths from Start	Visits	%
products	products	3,689	22.28%
	products store	1,224	7.39%
	products store store	825	4.98%
	products store store products products	531	3.21%

Figure 5. Top Paths through Site based on the predefined content group in Figure 4

As mentioned above, three main functions are focused in this paper, while others are ignored presently although they are important as well for evaluating this product.

### 3. Evaluation the Software via Biasing and Debiasing Theories

Cognitive biases are a special case of decision bias that is mental behaviors to prejudice decision quality. Arnott stated (1994), “They are persistent and systematic deviations from rational decision-making.” Many researches have attempted to provide different sets of cognitive biases and taxonomy of cognitive biases coming from Arnott is very valuable (Arnott, 1998). He classified cognitive biases into the categories of memory, statistical, confidence, adjustment and presentation biases. The range of cognitive biases is very board in the Internet businesses, decision makers, especially those of small Internet businesses and websites are struggling to the challenge of cognitive biases.

In terms of functionality of this product, it can be applied to resolve some cognitive biases, like memory bias, statistical bias and confidence bias. The clear traffic report and sound content analysis can overcome imaginability and correlation, which are in the scope of memory bias and statistical bias respectively. For example, according to previous experience, users think world news channel should be the most compelling channel and they believe people are interested in the news more than others in their website. However, an emergent affair could probably change this situation, such as world cup and NBA final. Another example is that users believe that web traffic increasing means number of visitors increasing. However they ignore the possibility of increasing from regular visitors. These have negative influence on users’ judgments and decision-making about websites. Regarding to these, Content Group in the product offers sound report in particular period that reveal web traffic changes related to specific content. Meanwhile users also can get analysis of visitors by sending the requirement in Customizable Template. Definitely, it assists users to overcome possible memory and statistical biases.

This product also possesses the functionality to address confidence biases, like desire and overconfidence. Every manager desires the bloom of their websites, thus they perhaps overestimate operations. For example, an e-shop website, the manager decided to sell high-tech products to conform to the trend. They thought many customers should be interested in those products and they can achieve more profit, however what happened doesn’t like what they expected. Consequently the manager utilizes Content Group functionality in Web Trends Log Analyzer 8.0 to track visitors’ access path and evaluate whether navigations are effective. If the results show only a few people visit new pages, managers can understand it is hard to increase profits. Thereby, the critical reports with accurate data and information from this software can help users overcome confidence biases.

Moreover, this software product can impel users to understand and use debiasing approaches from Evans (1989). There, he outlined education and training to improve reasoning ability. Customizable Template is to customize the requirement of tasks. To do this, users must have a good understanding of task firstly. Training can be looked as an effective means that drive users to understand tasks. In this way, during customization, users are confident about what they do and reduce the emergence of biases.

To sum up, WebTrends log analyzer can address some cognitive biases and accord with a part of debiasing approaches. Thereby, it is a DSS tool for users.

### 4. The Model of Software Evaluation

#### 4.1 Evaluation the Software via Monash Development Model

The Monash DSS development model shown in Figure 6 identifies two development levels, including major cycle level and development activity level.

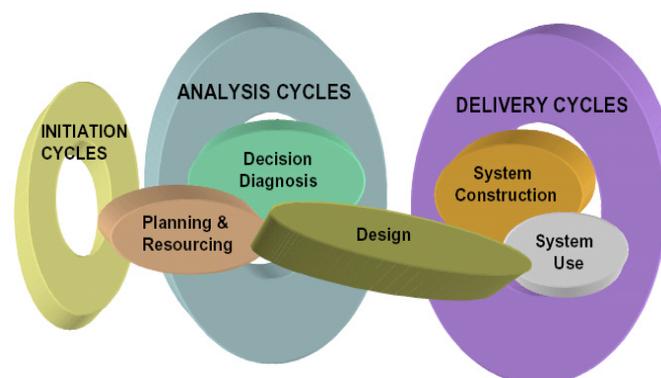


Figure 6. Model of DSS development from Arnott (2002)

Major cycle level involves initiation cycle, systems analysis cycle, and system delivery cycle. Development activity level consists of planning & resourcing, decision diagnosis, design, system construction, and system use.

Because majority of users of the selected software are small businesses that use Internet and some websites and their decision-makings in DSS are often associated with structure of websites, content of websites, and advertisement of websites, etc, consequently the software should provide significant data and information about these aspects to assist users make right decisions. During the whole process, the software not only covers major cycle levels but also impacts on development activity level that will be explained in detail as follows.

As described by Arnott (2002), initiation cycles are triggered when users realized the need for a decision support system, and general problem area or decision should be defined. Actually the software can drive users to realize the need for a decision support system. Meanwhile it provides part of resources for further decision-making. One main function of the software is to present the traffic reports about websites for users, which is the key element to evaluate how well the websites. In the traffic report, some valuable data and information that have been analyzed for decision-making may become resources to arouse users' attention about information that is crucial for a particular decision. However just the information from traffic reports isn't enough for making a decision. Consequently, in this stage, the significance isn't to provide all resources to users for decision-making, but to arouse users' need and begin to plan a new decision support system. Here a real sample occurring in 2000 can be given out, a company named www.tom.com wanted to purchase one sport website named www.shawei.com for enhancing their strength. Tom.com utilized prior Web Trends Log Analyzer version to view the traffic of shawei.com and its technical staffs tried to explore the development trend of shawei.com by comparing traffic changes within different periods. Whereas, undoubtedly, limited traffic reports aren't sufficient to decide the implementation. However it can be a window for purchaser to view the performance of shawei.com and give a broad space to consider other aspects at the same time. Hence, this software provides vital indications for users about the need for a decision support system.

In analysis cycle, this product can affect decision diagnosis activity; in which has three main tasks including describing the nature of the target decision, diagnosing decision problems, and identifying directions for change. For websites, one popular question is about how to make website run effectively. One of common solutions is to adjust content and channels. So decisions about which part should be adjusted or changed are significant for further operations. In this software, information about these can be sought. It can assist users to understand and describe the nature of target decision. A series of report show clearly which parts of content are compelling to visitors or not via Content Group. For example, a website aiming to improve the accessibility of major channels by reducing some invaluable channels uses Content Group to know the traffic of different channels and diagnoses which parts are popular or not. With the results, users can begin to design which parts should be removed or changed for their aims. Meanwhile, the data shown in reports is also basic resources for analysts to understand the decision and design the DSS.

Furthermore, the product can also regard as a tool to evaluate system use in delivery cycles. If the DSS runs effectively, the decisions of users made should be successful. Regarding to features of small businesses and websites, the influences from the decisions may arise in a short term, such as more traffic, more visitors, etc. These data and information that can be obtained from reports in this software can be compared with previous situation in order to critically analyze the outcome of the decision and DSS. Additionally, the software can drive users and analysts to think what should be done next and trigger a new analysis cycle. Users and analysts can acknowledge data and information coming from this software and ensure which parts still need to be improved although some advantages have been obtained from the previous decision.

According to the description, the product covers three cycles and affects many activities in Monash DSS model. Therefore, it is obvious that WebTrends log analyzer is an effectiveness DSS tool for small businesses and websites based on this theory.

#### *4.2 Evaluation the Software via Keen' Model*

Keen' model shown in Figure 7 presents an adaptive framework for DSS, in which includes three loops: the system-user link, the user-builder link, and the system-builder link (Keen, 1980). In this section, these loops are being used to evaluate this software.

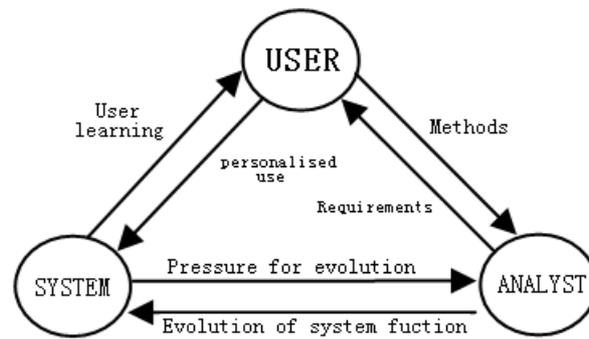


Figure 7. Keen's adaptive model from Keen (1980)

The system-user link is actually a cognitive loop. The link  $S \rightarrow U$  concerns managerial learning and  $U \rightarrow S$  is about individuals' exploitation of DSS capabilities. This software's Customizable Templates can drive users learning. Before users using it they must know what kind of information they need, such as web traffic, visitors path, or content analysis, and how to get them using this product. This step is a process of learning. Moreover, users will analyze the outcome after the software provides data and information that is another learning process. For example, managers can tell which parts of content are most compelling to the visitors from the visitor part outcome. Meanwhile, there are many departments in an organization with different requirements. The manager of news management may only focus on the traffic of this channel; while the manager of e-business department may probably concentrate on which kinds of products are popular. The Customizable Template in the software can basically satisfy different requirements. Therefore, it not only helps users make decision but also allow them to exploit their own use and widen the DSS capabilities.

In the user-builder link, this product help build a bridge to connect customers and designers, since the information applied by this software is valuable for both of them. For instance, visitor path can be used to analyze navigation efficiency. Designers need this information to find out the visitors' habits in the website, and users also need this to define the problems they are facing and come up with feedback and requirements to DSS designers. It is clear that this product can facilitate both users and designers to understand problems further.

The last loop is the system-builder link. Here,  $S \rightarrow B$  means that development needs to evolve, in another words: builders of DSS need to make changes quickly. This product just offers sound data and information to the designers. If a decision is made by DSS, The designers can evaluate the outcome from this data and graphics that is an easy way to find out the problems in decision making. What's more important, the software drives designers to identify and improve this problem as soon as possible. From another side,  $B \rightarrow S$  refers to builders' responsibility of adding new capability to DSS. Regarding to the software, the outcomes of analysis, such as web traffic, number of visitors and visitors, let designers know which kinds of information are significant. Meanwhile Customizable Templates customize the content of the WebTrends Desktop for a specific business function or user, in which includes many new requirements of customers. Thereby, this product conveys new requirements of users to designers. Then designers will consider adding some new capability to DSS to meet those requirements.

## 5. Conclusion

Based on the discussion above, a safe conclusion can be drawn that Web Trends log analyzer 8.0 is a fairly good DSS tool. It can support users' daily management and enhance their decision-making. Three theories are employed to evaluate this product. The functionalities of the software product help users address memory, statistical and confidence biases. Additionally, it accords with a part of Evans' debiasing approaches. Moreover the software covers three cycles and affects many activities regarding to Monash DSS development model. Finally, Keen's model further proves the software product is a DSS tool via critical analysis of three loops.

Undoubtedly, some limitations still exist in this DSS tool due to the rapid development of technology and ceaseless change of businesses. And because only three theories are chosen to analyze this product in this paper, it is hard to avoid some biases. However, Web Trends is a good DSS tool to support users to make right decisions and assist designers to develop a sound DSS in small businesses.

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