-KEYWORD ADVERTISING ADVISOR (KAA)

An automated system to provide precise information for effective keyword-based advertising

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ABSTRACT

Keyword-based advertising is vital in online advertising as it is a significant technique that extends the business horizons. This technique helps to advertise in a timely and accurate manner by eliciting information about what potential consumers are interested in. However, keyword advertising is still in its development stage and many advertisers fail to use this effectively due to lack of experience and unawareness of related tools. This reduces the economic benefit advertisers can derive from this advertising channel. Thus, market research is seen as the most vital component on which the decisions should be based for effective keyword advertising. The research of this study consists of personal interviews, offline and online surveys and background reading. These techniques helped the author to come up with the best effective solution which fits the real need of keyword advertisers. The Unified Software Development Process (USDP) methodology is been used in this research as it is more beneficial and easy to capture and elicit requirements.The project uncovered that search advertisers should engage with search advertising related tools and cost effective, in developing online presence particularly focusing on how those tools facilitates technology towards achieving advertising objectives. The author's project concept was based on a web based keyword advertising support tool which provides precise information for effective keyword-based advertising. The objective of this research is to support keyword advertisers to be effective and efficient in their advertising campaigns by providing the advertisers with past and present information relating to competitor keyword advertising and projecting information with a view of enhancing search advertising strategy and then to expand the presence n the online market.

Keywords:

Online advertising, Keyword advertising, Search marketing, Integrated analytical tool

1. INTRODUCTION

Though the online advertising industry is still in its early stages of development, the Internet has become a key component of most businesses' advertising campaigns. Today the Internet has become a large market for businesses and most of the companies have grown by taking the advantage of low cost advertising through the Internet. The online advertising methods such as keyword-based advertising in Search Engine Optimization (SEO) have facilitated businesses to advertise a product to its target audience or to a specific person more effectively than any other method. Thus to be competitive in the business most of the companies engage in such methods and improve their presence in the online market.

The background research of this project is based on online advertising mainly focusing on keyword-based advertising needs backed by a support system that could help the advertisers to be more effective and efficient in carrying out day to day advertising activities by deriving the relevant information from the available data for successful advertising strategy in keyword advertising. Having right information on hand can give the company an edge over its competitors, given that it is used in an effective and efficient manner.

1.1 PROJECT ENVIRONMENT

Online advertising is a proactive form of visibility where companies pay to be visible in the Internet landscape and it is often referred to as Internet advertising or interactive advertising (Dreze and Zufryden, http, 2004). Generally, the overall goal of online advertising is to influence buying habits and change consumption patterns towards the advertised products and services.

Online advertising is much more effective if it is properly targeted. Online advertisements that reach customers who are looking for something specific that relate to advertisements message are much more successful than advertisements viewed by the general population (Schneider, 2000). Keyword based advertising supports the above important aspects of advertising than any

other online advertising method and it is proven in empirical studies. Researches indicate that keyword based advertising is about 40% of all online advertising and is expected to reach $11.1 billion, by 2011. In recent years there has also been a rapid move away from online display advertising towards search related advertising such as keyword based advertising (Misra et ol., http, 2000). Keyword based advertising is a leading, rapidly growing and effective Internet advertising method.

This project mainly focuses on keyword based advertising in SEO with regard to the magazine industry. This industry today is controlled by a few players in the market, namely Marie Claire, Teen Vogue, Wired, J-14, Seventeen, Girls' Life, Maxim, Twist, Pop Star and Discovery Girls (Amazon, http, 2009). To compete with these players in the market one needs to have a better Information System (IS) to gain a competitive edge among others. According to the industry experts in eMarketing, the use of such an IS is expected to increase the ability for an organization to specifically target the specific audience more effectively which would enable a specific online magazine seller to become competitive in the very dynamic online market by making use of the rivals successful advertising strategies.

1.2 PROJECT OBJECTIVES

- Apply project management and planning in order to control the project and realize, identify and scope out the problem domain successfully.

- Conduct a research in order to identify and assess best effective online advertising methods, tools and techniques having identified the industry.

- Evaluate the selected online advertising method, it's practical implication and essentiality in formulating the online advertising strategy

- Conduct a research to access the related tools, techniques and competitor strategies of the selected online advertising method

- Research and review on the best system designing tools, techniques and related work in order to offer more through the proposed system

- Conduct a research to identify and specify system requirements

- Do an analysis of requirements gathered, design and develop an interactive prototype of proposed system to show the implementation

- Validate the end product with the users

- Conduct a critical evaluation of the project in order to justify the relevant changes and the direction of the project

- Document the project report according to given criteria

- Apply critical evaluation of materials and sources to justify any conclusion made within the project.

2. PROBLEM DOMAIN

"The right advertisement in the right location can generate results up to 100 times greater than the worst ad in the worst location. Not knowing the proper combination leaves a lot of value on the table. Brian McAndrews - CEO, Avenue A" (Morgan, 2000)

The keyword based advertising helps to advertise to the right customer at the right time by eliciting information about what potential consumers are interested in. A vast amount of data is being continuously collected electronically about consumer responses to search engine advertising thus it is easy to target the customers and potential customers. However, many advertisers fail to use these effectively, and some fail to use these data at all. It reduces the economic benefit advertisers can derive from this advertising channel (Misra et ol., http, 2000).

The greatest challenge in keyword-based advertising is to compete with the existing top competitors in the online market. This becomes a major issue especially when the product is new to the existing market or when the advertiser is inexperienced of about the existing market works and how to get hold of the competitors' customers. At this moment the advertiser will need to analyze its top competitors and to analyze their advertising strategies.

The problem which keyword advertisers face most of the time is how to create the most attractive advertisement body and to identify the most profitable keyword in search advertising. Most of online advertisers are having difficulties in finding the best profitable keywords to get the maximum traffic to their site. For this they need to analyze historical data and the strategies of the competitors. In other words, they need to find the best keywords which will be used by most of the customers who search for a particular product or service and the advertisement body which can attract most of the audience. Currently this process is done manually and the beginners in SEO marketing are unaware of the best tools which use for competitor advertising tactics analysis.

E.g. An advertiser who advertise on Teen magazines may need to publish some advertisements on Google adwords. For this he may need to identify the keywords he needs to advertise on such as "Teen magazines", "Magazines", "Teen articles", etc. Then he will need to create a heading and a phrase as the advertisement body which will attract the visitors who search on the selected keywords.

Advertisers spend millions of money on keywords which may not give them the expected results or this can cause them great losses. Most of the new SEO advertisers make decisions on their gut feelings and experience great loses. Therefore new advertiser should analyze and identify those proven best effective advertising keywords and body.

Moreover most of the new advertisers in the industry are unaware of any tools which can be helpful in gathering historical data and analyzing them. These tools used by advertisers are called Keyword tracker tools. E.g. Spyfu.com, ispionage.com, wordtracker.com, etc. Most advertisers use these tools without knowing its pros and cons. And yet they have to do everything manually to get the required output from the tool. In other words, they need to find the top competitors and then need to feed the domain name manually to get the keyword history data of the website. Focusing on the key aspects of search advertising and current problem areas it is vital to have a search advertising support system by integrating existing and related tools to provide a better outcome which help to identify the main competitors and their advertising strategies and therefore to project effective information for profitable keyword advertising. This will help to gain a competitive edge among the other players in the industry.

3. LITERATURE REVIEW

3.1. PROJECT BACKGROUND

As people began spending more time online, Internet became another channel via wh advertisers can market their products a services. Thus many advertisers moved towa Internet-based advertising from those traditio methods. As a result of changing consur habits and advertiser needs, the vast majority of companies now allocate part of their marketing budget to online advertising and it is currently the fastest growing advertising category.

Among Internet-based advertising methods search has become the primary driver of growth in online advertising.

The online advertising industry is still in its early stages of development. Online advertising began in any significant way in 1994 when HotWire sold the first banner advertisements to several advertisers (Barbara et ol., 2001) and most of the industry's norms, standards and policies have been established in the past two years and

continue to evolve (Online advertising industry background, http).

Today the Internet has become a large market for businesses and most of the companies have grown by taking advantage of low cost and integrated advertising strategies through the Internet. The internet has facilitated businesses to advertise a product to its target audience or to a specific person more effectively than any other medium or channel.

3.2 ONLINE ADVERTISING MARKET

The online advertising market can be divided into four main categories. They are Search & Contextual advertising which appears on search-results pages, Premium Display & Non-Premium Display which appears on non-search web pages and other advertising which includes classified advertising, email advertising, and email-based lead generation.

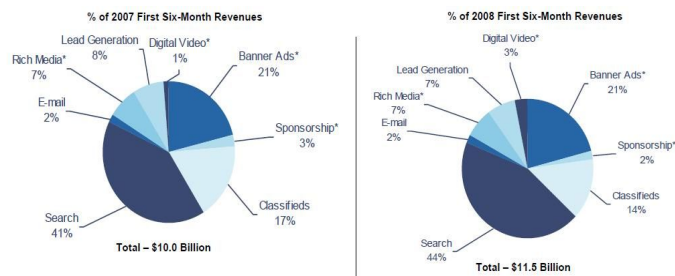### 3.2.1 INTERNET ADVERTISING REVENUE BY THE ADVERTISING FORMAT – 2007 VS. 2008

Figure 01: Internet Advertising Revenue by the Advertising Format (PricewaterCoopers LLP, http, 2008)

The search and contextual remain the largest revenue format, accounting for 44% ($5.1B) of 2008 first six month revenues. Moreover, among all the formats of advertising, the highest increment (3%) is shown in the search and classified ad market.

3.3 KEYWORD ADVERTISING (SEARCH ADVERTISING/MARKETING)

The above statistics show that the most popular method of online advertising is search

advertising which is also known as keyword advertising. It has been estimated that the size of the search accounted for 62% ($37B) whereas display advertising accounted for 17% ($10.3B) (Think Equity Partners LLC, http, 2007). Search advertising is a fast growing advertising method and it will represent more than half of the online advertising market share in the near future.

Keyword advertising is based on a principle of search engine optimization which refers to any advertising that is linked to specific words or phrases much like pop-up advertisements that are linked to a specific website. However, keyword advertisements are viewed by a targeted population who is looking for a specific need whereas pop up advertisements are viewed by the general population. Keyword advertising which is also known as Search Engine Marketing (SEM) helps to improve a site's search engine ranking. Common forms of keyword advertising are known by Pay Per Click (PPC), Cost Per Action (CPA) and Click Through Rate (CTR).

This practice helps keyword advertisers reach an interested audience since the advertisements are displayed only when the preferred search terms are entered. Moreover advertising on search engines is one of the cheapest and attractive online advertising vehicles available. A report from Piper Jaffray & Company reveals the cost per lead from converter search engines is $0.45; that compares to $1.18 for yellow pages advertising and $9.94 for direct mail inserts (cited in Mid-Atlantic Business Review, http, 2007). Therefore it is highly cost effective. The greatest advantage of search advertising is that results can be measured and can determine the efficiency of a search advertisement campaign. Thus keyword advertising ensures maximum success for each advertiser's campaign, delivering high Return on Investment and developing greater brand awareness.

3.4 IMPORTANCE OF SUPPORT SYSTEM FOR SEARCH ADVERTISING

In order to get a leg up on the competition, successful SEM needs to be armed with the latest tools of the trade. Thus support system for search

advertising which integrates the latest and most widely used tools is vital for successful advertising. Successful advertising strategies and tactics depend on accurate, effective and timely decision making. Advertising strategies are the means by which the company's advertising objectives will be achieved. The strategy development is more concerned with differentiating the company from the competition, by focusing more on the strengths of the company to provide a better awareness. The purpose of advertising strategy development is to establish, build, defend, and maintain competitive advantage. To develop an effective advertising strategy requires both comprehensive analysis of the competitor environments and a synthesis of useful information. (Mintzberg, 1994)

The ultimate purpose of support system is to facilitate advertisers' when formulating the strategy for search advertising by providing required information flow. The system provides the advertiser with the best information that the company can use in search advertising in order to achieve the advertising objectives. The function of support system is to provide the advertiser with timely and precise information to allow making and implementing the necessary tactics to optimize the advertising campaign.

3.5 SIMILAR TOOLS

There are tools which provide services to find the paid and organic keyword history of a given domain name, and there are tools which suggest better keywords for an initial seed keyword. But in order to get these details, the user must know the domain name of the seller which he needs to gather the keyword history and the user must key in the domain name or the keyword. But in this proposed system, even a fresh marketer who has no idea about his competitors or his business environment can gather and research for details he may require to publish effective advertisements. Instead of key-in data, the user can select his product category, and the best seller details in that selected category, including the domain name will be automatically retrieved from the database. Online keyword suggestion

tools provide services which are similar to some services provided by the proposed system. The following are the similar tools which are used by online advertisers.

- **Ispionage.com**

Ispionage is a keyword suggestion tool which provides better keywords for a given initial seed keyword. And it provides the cost per click and the clicks per day of the keywords. This provides details similar to Spyfu.com, which the author has used to integrate as a sub module in the proposed system. Ispionage provides domain names that perform better on a given keyword. But the proposed system focuses more on the best sellers and their keyword history performance rather than on one specific keyword.

- **Keyword Spy**

Keyword spy is also a famous keyword suggestion tool which provides more or less the same features provided by Spyfu.com. This also provides details such as clicks per day and cost per day, but does not provide many details used for reporting purposes such as the proposed system. And it has no expert system feature provided by the proposed system.

4. INDUSTRY RESEARCH AND ANALYSIS

4.1 REQUIREMENT CAPTURING METHODS

4.1.1 QUALITATIVE RESEARCH TECHNIQUES
- **Personal Interviews**

The gathering of requirements from online advertisers was mainly done through interviews. This information was useful to analyze the problems and to produce an effective solution which fits into the real need of the domain. This is the main information gathering technique used to analyze the problem domain. Moreover, this technique helped to identify the risks related to this work.

- **Background Reading**

Background reading includes all the essential readings relevant to online advertising, such as books, articles, white papers, academic journals, Internet and other electronic material. The background reading technique was effective as large number of documents is available on the area of online advertising. This helped to gain insights into online advertising, identify the problems associated with keyword-based advertising and how others have solved similar problems.

- **Observations**

Having identified that the most dominant method of online advertising is keyword/search advertising, the observation technique been used to observe and isolate the effect of keyword - based advertising related tools and techniques and to understand the contribution made.

4.1.2 QUANTITATIVE RESEARCH TECHNIQUES
- **Surveys (Online and Offline Questionnaires)**

In identifying the online buyer's viewpoint on online advertising, it was decided by the author to distribute questionnaires to the online shoppers and advertisers. It was a feasible method to cover a large number of users that obtain valuable information. Questionnaires were created in order to get the online customers' and online advertisers' point of view and feedback on online advertising. The survey sampling helped to accurately estimates the characteristics of a target population and is particularly useful when the population of interest is very large or dispersed across a large geographic area.

4.2 CRITICAL ANALYSIS OF CAPTURED REQUIREMENTS

Taking into consideration the results of the survey given to online advertisers and online buyers, it was found that keyword advertising is the dominant player in online advertising industry. **Figure 02** and **03** shows how the online

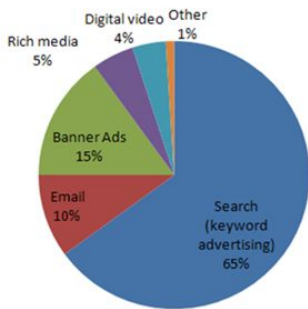buyers and advertisers rate methods of online advertising.

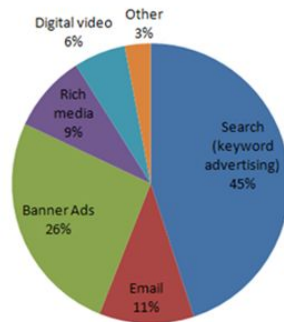**Figure 02: Online Advertising Method Which Caters to Customers Buying Requirements**

Figure 03: Online Advertising Method Widely Used By the Advertisers

Moreover, background reading on online advertising was a useful technique to find out and analyze the online advertising market. It is identified that the dominant method of online advertising is search.
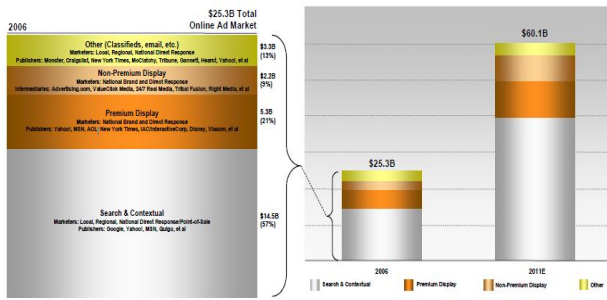

Figure 04: Worldwide Online Advertising Market, 2006-2011E ($U.S. B) (Think Equity Partners, http, 2007)

Figure 04 illustrates the breakdown of spending across the four categories and estimates the growth of each category through 2011. For 2011, among the four categories, search and contextual advertising has a high growth rate and its revenue represents the fees paid to Internet search providers to link the advertiser's Internet domain to a specific search term.

As search advertising is rapidly growing and represents the largest portion of online advertising market and taking into consideration the facts collected by carrying out the research, the author identified that the keyword advertising

is the most effective among other online advertising methods. Thus the author proposed a solution based on the analysis on search advertising in order to enhance search marketing and achieve an edge over other players in the industry.

The author decided that the product will give value to each online advertiser who is mainly using keyword advertising. As discussed above since many online advertisers are into search marketing industry and based on the interviews conducted with search marketing professionals, there is a high possibility that many online advertisers will prefer to use an automated system for keyword advertising which also has advisory component. The report generating functionality should be incorporated in the system which produces reports on keyword advertising based on the product criteria. These reports need to be generated separately in order to satisfy the advertisers' needs. These reports need to be categorized under product details.

The expert module was identified as a competitive advantage to the company, the reason being that it allows advertisers to advertise on the best profitable keyword based on the product category. The current situation of the market as the experts state that most of the advertisers are not aware about the keyword advertising related tool such as Spyfu, keywordspy, Adwords, etc. The expert system component was also a main interest for the experts, due to the fact that the expert system will guide the advertisers in giving out suggestions for effective search advertising information based on competitor analysis.

4.3 KNOWLEDGE ELICITATION TECHNIQUES

4.3.1 KNOWLEDGE ELICITATION (KE) TECHNIQUES USED

- **Interviews**

The author used this technique to gather information mainly on identifying functional requirements for the prototype development. The

author conducted several interviews with experts in the project context and was able to gather comprehensive information. The knowledge gathered from the experts helped the author in developing the prototype as well as in selecting knowledge-based expert system for the research solution.

- **Document Analysis**

By going through documents such as books, research papers and journals that are enriched with valuable knowledge about experts systems the author was able to identify the requirements precisely and accurately in documenting about the proposed system.

- **Questionnaires**

As with the KE technique, questionnaires have been given out to the online advertisers and buyers in order to identify the best effective tools to integrate with the proposed system. The tools considered were keyword cracker tools, and online selling tools. This technique helped to determine the best among similar tools.
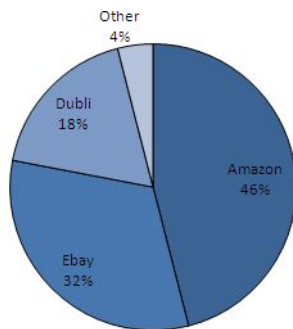
4.3.1.1 SUMMARY OF COLLECTED DATA

Figure 05: Rating of Online Sellers

Figure 05 shows how online buyers and advertisers rated the online sellers.
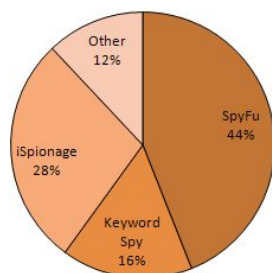

Figure 08: Rating of Keyword Tracker Tools

Figure 08 shows the rating of Keyword Tracker Tools according to the online advertisers.

By considering the above facts, the author decided to integrate the system with Amazon as the online seller and Spyfu as the keyword tracker tool, When considering these tools other factors considered were ease of use, reliability, cost, valid and up to date information retrieval.

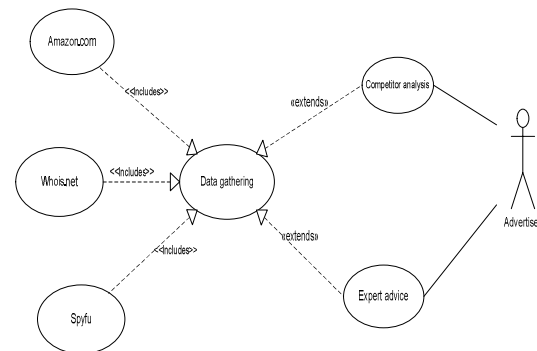### 4.4 STRUCTURAL VIEW OF THE PROPOSED SYSTEM

Figure 06: Use Case Diagram – Level 1

Use Case diagram has been derived after analyzing the gathered requirements. This represents the functional requirements of the proposed system and depicts interactions of the system with its users.

5. THE PROPOSED SOLUTION

The proposed solution can provide the online advertisers with timely and precise information for effective keyword based advertising. Information is provided using past and present competitor information on advertised keywords. This helps the advertisers in what necessary decisions need to be taken in order to survive in the market place. The proposed system is a web based tool which is integrated with Spyfu, Amazon.com and Whois.net

- **Best Seller Research**

The Amazon will provide the necessary best seller name list to find their domain name and then their effectiveness of keywords being used in KA. Each seller is categorized according its product criteria. The best seller list should be

updated to the database along with its criteria using a web crawler.

- **Domain Name Research**

The system will find out the best seller domain names using a web service. This information will be collected mainly from an online tool called whois.net which is a domain based research service which holds the domain name information along with company details. A programmed web crawler can be used to extract the domain name based on the best seller name.

- **Keyword Research**

This component will extract the keyword analysis report from Spyfu based on the domain name given. This report gives valuable information on competitor search advertising. The report of KAA analysis of each product will be updated to the database by use of web crawler. Each report should be stored based on the product criteria.

- **Report Wizard**

This module will generate reports based on the need of the user. The categories of the reports generated are as follows,

  o Provides best effective keyword, advertisement body, title and bidding price for any given product.

  o Provides summarized analysis of competitor advertised keywords

  o Provides summarized analysis of effectiveness of suggested keywords

The above categories were chosen based on the interviews conducted with search marketing experts.

This tool provides reports on profitable keywords for a given product by analyzing the keywords that competitors are bidding on. The main objective of this system is to help advertisers to improve their keyword advertising performance by providing valuable information

based on competitor advertising analysis. This improves advertisers' decision making in a timely manner. Having up-to-date competitor information it will help the advertisers to make effective decisions in search advertising and then to achieve marketing objectives.

5.1 OBJECTIVES OF THE SOLUTION

- To support online advertisers to plan KA strategy more effectively in a timely manner

- To provide best effective keywords, advertisement body & title and bidding price for any given product

- To provide a report based summarized analysis of competitor KA campaign

- To provide summarized data on the effectiveness of the information suggested by the system

- To eliminate unnecessary man hours by eliminating interventions with KA related tools

6. EVALUATION OF THE PROJECT

The author's review would attempt to discuss the successes and failures faced during the course of the project so far. Overall, the author believes that it was a successful project, primarily because of the possibility to meet all the deadlines in the allocated time period, although some tasks have been extended due to unavoidable circumstances.

The literature survey, requirement gathering, analysis and design phases were a success as the author was able to meet specialists in the online advertising industry, especially some individual in the magazine industry who advertise online using keyword-based advertising. Interviews helped the author to understand the problem domain more precisely and clearly. Furthermore, it helped the author to obtain views about how technology can be incorporated in their day-to-day business with a view to gaining competitive advantage and understanding how technology

such as integrated systems will assist them in the online advertising process particularly in keyword-based advertising.

It is the author's view that this application will provide the ultimate solution for the problem domain, which is to assist management in the keyword based advertising process. Moreover, the commercial aspect of the project has also being looked into in great depth. In addition, the user friendliness of the system consists of high standard.

The aim of carrying out a system evaluation is to find out whether it fulfils stakeholders requirements. Thus author introduced the proposed system proposed system to reputed online advertising companies called Monvia and eMarketingeye. Below are some comments that the author received on the proposed system,

"The proposed solution provides a good understanding of the business scenario and has come up with a best solution which caters to the real need of eMarketers" – (Marketing Head, Monvia)

"Effective solution addresses the current business problem in the search marketing sector" – (Online Marketing Executive, eMarketingeye)

7. CONCLUDING REMARKS

This chapter concludes the project 'Keyword Advertising Adviser' by giving an insight into each and every phase of the project.

The author had to investigate about an industry she had no prior knowledge on and gain expertise in order to successfully understand the problem domain. It is found that the effectiveness of online advertising is highly determined by the consumer's inherent interests in the advertised products or brands. Therefore, applying keyword-based advertising methodology will match the consumer's inherent interests in the products advertised on the Internet and improve advertising effectiveness as it only appears when buyers search for that particular related need.

The proposed system was a success and it is the hope of the author that it would be adopted commercially to give the optimal support to the search advertisers in the keyword advertising process. Moreover, it raises several further research directions for both online advertising and information technology fields. For information technology researchers, the implementation of these new practices is the major concern, whereas for marketing and advertising researchers, the effectiveness of these new practices and responses from the audiences should be further investigated.

7.1 RECOMMENDATION AND FUTURE WORK

The author found the following aspects as future enhancements, which can be done in order to improve the system.

- Use of Artificial Neural Networks (ANN) can be incorporated to the system, to analyze the trends and data mining aspects in the market or of the consumer as ANN provide more advance and accurate decisions.

- Even though "Spyfu" has been used as an integrated tool to the system, it has its own limitations and drawbacks. Therefore it is best to develop a new tool in replacement of Spyfu to serve the user with more latest and advanced data.

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